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Asher Haig

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Turing Diagrams: Systems of Calculus Based on Ordinal Logics

By

Asher Haig
Ph.D.
Comparative Literature

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John Johnston
Advisor

____
Geoffrey Bennington
Committee Member

____
Claire Nouvet
Committee Member

Accepted:

____
Lisa A. Tedesco, Ph.D.
Dean of the James T. Laney School of Graduate Studies

____
Date

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Asher Haig
B.A. Northwestern University
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An abstract of a dissertation submitted to the Faculty of the James T. Laney School of Graduate Studies of Emory University in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Comparative Literature, 2014.

Abstract

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Alan Turing effectively created the foundation for the modern computing age. The imitation game, more commonly known and frequently dismissed in a severely reduced form as the “Turing Test”, is the heart of Turing’s endeavors. The imitation game consolidates Turing’s previous work with computability, universal machines, ordinal logic, cryptography, and intelligent machines. It also functions as the predecessor to Turing’s subsequent work in applied biochemistry known as “morphogenesis”. This text examines Turing’s imitation game in detail, following its cumulative development through eight distinct iterations. The iterations are shown to be developmentally related, and the imitation game is shown to be a problem of determination that constitutes the core of Turing’s work with artificial intelligence by extending his earlier work with the universal machine to a context that concerns the space of interaction between multiple machines.

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Turing Diagrams:

Systems of Calculus
Based on Ordinal Logics

In Dedication To:

Turing's Machines

Kafka's Animals

A Deleuzian Century

Turing: You know, machines can think.

Philosopher: Good heavens. Really? How do you know?

Turing: Well, they can play what's called the imitation game.

This is followed by a description of same.

Philosopher: Interesting. What else can they do?

They must be capable of a great deal if they can really think.

Turing: What do you mean, "What else can they do?"

They play the imitation game.

— Keith Gunderson [1]

How could a purely physical system be so organized that if it starts in a state of believing something true, its causal processes will lead it to other true beliefs?

The great logician Alan Turing proposed an answer to this question. It is, I think, the most important idea about how the mind works that anybody has ever had.

Sometimes I think that it is the only important idea about how the mind works that anybody has ever had.

— **Jerry Fodor** [2]

Introduction

Turing Machines

> In order to arrange for our computer to imitate a given machine it is only necessary to program the computer to calculate what the machine in question would do under given circumstances, and in particular what answers it would print out. The computer can then be made to print out the same answers.
>
> If now some particular machine can be described as a brain we have only to program our digital computer to imitate it and it will also be a brain. If it is accepted that real brains, as found in animals, and in particular in men, are a sort of machine it will follow that our digital computer, suitably programmed, will behave like a brain.

— Alan Turing [3]

The 'imitation game' is played with three people, a man (A), a woman (B), and an interrogator (C) of either sex. The interrogator stays in a room apart front the other two. The object of the game for the interrogator is to determine which of the other two is the man and which is the woman by labels X and Y, and at the end of the game he says either 'X is A and Y is B' or 'X is B and Y is A.' It is A's object in the game to try and cause C to make the wrong identification. The object of the game for the third player (B) is to help the interrogator.

Alan Turing's contributions to the contemporary age are so thorough-going that it is difficult to isolate the range of resulting implications. Turing effectively created the foundation for the modern computing age. He did this by re-conceptualizing the standing of mathematical logic and number theory, pushing traditional concepts of mathematical formalism to take on new standing. Turing's mathematical work addresses analytic methods for extracting and treating implicit relational structure hidden behind cryptographic noise and translations as well as corresponding methods for working with theorizing the specific formalism in question in terms of its absence, working "backward" to derive the model that Turing understood as implicit in the inquiry. Turing extended existing mathematical work to create an encoding mechanism for treating semantic data as syntactical formulations, which he named the "computable number". The computable number defines the center of Turing's work, the single premise that is the modern digital computer.

Popular exposure to Turing's work has centered primarily around what is generally known as "The Turing Test", which is frequently offered as a metric for assessing the interactive capacities of a particular machine intelligence. To the best knowledge of this text, the name "Turing Test" was attributed to Turing's example—which he called "the imitation game"—in 1969 by an author named A. V. Reader.[4] The present text will return to Turing's initial presentation of the imitation game in order to explore why and how Turing arrived at the imitation game. In particular, we will be interested in examining what it was about the imitation game that Turing found fascinating and useful, and in exploring contrasts in understanding with existing treatments of Turing's work.

Turing introduces the imitation game in his essay "Computing Machinery and Intelligence" with explicit emphasis that its purpose is to displace the expectation that the words "thinking" and "machine" be clearly defined. Turing explains that the purpose of the imitation game is to re-locate terms of assessment with respect to "machine intelligence". While much emphasis has been placed on Turing's avoidance of the word "thinking", almost no consideration is given to Turing's hesitation regarding the word "machine". Turing does ultimately clarify that "machine" has already been rigorously defined in his earlier work on computation, but not until the third section of the essay, “The Machines Concerned in the Game”. This oddity will prove significant but cannot be explored in detail until we have examined the manner by which Turing introduces the machine to the imitation game: initially displacing a human participant, subsequently taking the place of each player, and finally taking center stage as the game itself disappears, replaced by prospects for a machine becoming intelligent by imitating a learning process.

The general range of Turing’s work concerns constructing mathematical syntaxes to model abstract dynamics as rigorous, mechanical proofs of inquiry. The imitation game functions for Turing as a replacement to any approach to mathematical formalism that would require explicit, extrinsic structural presuppositions. In place of structural presupposition, Turing turns to examine formal condition of mathematical inquiry. The imitation game is the machine that Turing assembled in order to explore the mechanical conditions that distribute sequential consistencies and that govern the ordinal character by which consistencies come to be arranged in systems of increasing complexity. Turing’s work expresses a style of thinking where mathematical treatments create a convergence across disciplinary vocabularies. We might imagine Turing summarizing his activity: “Granted, I may not formally know everything about these disciplines, but I can model their relations systematically”. Turing presents the imitation game in order to stage continually evolving dynamics that can be analyzed as intersecting relations between discrete expressions.

Turing's mathematical endeavors can be generally situated in terms of two specific predecessors: David Hilbert, and Kurt Gödel. At the turn of the 20th century, Hilbert introduced a mathematical mode of engagement that consisted in nothing but the manner by which it referred to itself as a mathematical principle. Shortly thereafter, Gödel extended Hilbert's formalism in order to explore the limit of its potential expression, first showing that the limit covered a great deal of territory, and second showing that the limit—as a function of mathematical formalism—consisted in nothing other than the mathematical confrontation with its own articulation as a mathematical principle. It might be said that Hilbert invented the basis for Turing's understanding of computation, while Gödel contributed the unique syntactical twist that Turing would seize upon for his own concept of "computable numbers"— a concept that would eventually develop into our own contemporary understanding of programming.

In 1965, Gödel contributed a postscript to "Remarks Before the Princeton Bicentennial Conference on Problems in Mathematics", highlighting the importance of Turing's machines both with respect to Gödel's own work and with respect to mathematical inquiry in general:

> [Alfred] Tarski has stressed in his lecture (and I think justly) the great importance of the concept of general recursiveness (or Turing's computability). It seems to me that this importance is largely due to the fact that *with this concept one has for the first time succeeded in giving*

an absolute definition of an interesting epistemological notion, i.e., one not depending on the formalism chosen.[5]

Turing formalized the extent of the abstraction in what is now known as a "universal" Turing machine. The universal machine is capable of acting like any describable Turing machine, which means that it can be understood as a formal language for formulating formal languages. All that has to be known is the convention that describes the language.

Turing's work crossed numerous domains and took multiple styles. The result is that literature has frequently treated each landmark work in its own context, often explicitly hesitating to draw Turing's disparate publications together in a sense of common expression. This text presents Turing's work as a continually developing image of convergence, where each publication presents a new aspect of Turing's computable sensibilities. A skeletal outline of Turing's work reveals a handful of key moments, each characterized by a publication that condenses the standing of Turing's work at that moment in its development.

Turing's initial publication in 1936, "On Computable Numbers, with an Application to the *Entscheidungsproblem*", introduced the "universal machine" and the "halting problem". The essay is generally considered the foundation of modern computing and of the mathematical field of computability theory. It introduced a proof in the negative responding to Hilbert's

Entscheidungsproblem, which called for an algorithm capable of evaluating the validity of any and every potential algorithm.

At the same time Turing was writing "On Computable Numbers", another mathematician, Alonzo Church, also published a response to Hilbert that addressed the same problem and reached the same conclusion as Turing, but which did so by way of slightly different formulations than found in Turing's work. Turing found insight in the differences in approach, published an addendum to his own paper that showed how the two approaches could be reconciled, and arranged to carry out doctoral work under Church's advisement.

In 1938, Turing submitted his dissertation, "Systems of Logic Based on Ordinals". The paper formalized Turing's understanding of logical systems in a mathematical condition post-Gödel by extending Church's Lambda Calculus—the definition of "mathematical expression" that Church had developed in parallel to Turing's universal machine—to the construction of logical systems, and to the study of numbers and number-spaces as computational events rather than as identities. Turing's dissertation is widely recognized for introducing principles of relative computability, but remains to this point largely outside primary fields of consideration where Turing's work is otherwise generally active.

Turing's engagements following his work at Princeton were diverted to war applications, calling on Turing's knowledge of computational theory to develop new techniques for cryptography and cryptanalysis. Turing offered key contributions to the efforts to crack the German Enigma cipher, particularly in the application of shortcut methods that Turing was able to develop by way of his work with mathematical formalism, number theory, and ordinal logics. Of particular note during this period is Turing's encounter with grammatical gender as a key insight toward reversing German cryptographic ciphers, which this text will further explicate.

Turing's first known writing on artificial intelligence was composed during this war-time period, most likely in 1940 or 1941; however, no copy of this text is known to exist. In 1948, Turing published "Intelligent Machinery", which introduced the basic premises now used in the organization of artificial neural networks, and which emphasized the importance of learning in the construction of computational intelligence. The text introduces a distinction between "organized" and "unorganized" machines (unorganized machines can take on organization by becoming connected to another machine, which organizes it), and an early formulation of the logic circuit that Turing will later present as the imitation game.

"Computing Machinery and Intelligence", published in 1950, is likely Turing's most recognized work. Turing introduces "the imitation game", which is generally cited as the premise for what has been called “the Turing Test”. From the perspective of this text, “Computing Machinery” is a point of convergence for Turing’s work, where the universal machine becomes a meta-model, and where apparently abstract conditions involving the social sphere—for example, problems of socio-sexual coordinates—can only be engaged by way of number-theoretic problems. The suggestion of this text is that Turing introduced the imitation game in order to produce a mathematical basis for describing arbitrary conventions that would treat open spaces of interaction as number-spaces appropriate to particular modes of organization. Treated as a number-space, any particular domain could be addressed as a computable matter, and consolidated by a Turing machine.

We might summarize this text’s understanding of Turing’s frame of reference with an implicit question: if the limit of computational theory is the formalization of appropriate number-spaces, can a theory of imitation suffice to identify and describe the relevant mechanisms of biology such that a machine could mirror them and “perform” life? The imitation game is the machine that Turing designed in order to structure analytic inquiry regarding this problem. “Computing Machinery and Intelligence” presents a nexus of passage between Turing’s early and late work. Turing’s subsequent work applies the imitation game as a meta-model in circumstances that are generally considered quite distinct from Turing’s work on computational intelligence. In particular, Turing’s imitation game plays an important role, often so much so that it is difficult to see what transformations or evolutions occurred in the specific models he deploys.

Turing's primary engagement prior to his untimely death in 1954 concerned a computational experiment modeling what he called "morphogens": chemico-mechanical forms of social life, organized by way of reactive potentials. In the primary work consolidating this approach, "The Chemical Basis of Morphogenesis", Turing proposed a computational model for certain biological systems, formulated through mathematical approaches to chemistry and physics and reflecting the structure found in the imitation game. Turing's model is presently one of two models primary deployed for analyzing distributed pattern formation, and can be effectively extended to any domain that can produce a well-formed definition for the terms at stake in Turing's approach to computational modeling.

The fact of mathematics as a field of potential inquiry serves Turing as a singular condition of possibility. Mathematics, as a mechanically reproducible process that "works" even across language and across iterations, was to Turing a mechanical proof that syntactical formulations are capable of imitating the actual consistencies to which they ostensibly refer.

Any expression of consistency has the *potential* to be modeled, the only question concerns the means by which the consistency might be expressed as a system under consideration. The expression of concern has to be consolidated in a syntactical description that retains the essential dynamisms while emphasizing the point in question. Turing introduced his machines as the embodiment of axiomatic systems, operating in mechanically verifiable steps. Justin Leiber offers an effective summary of the expansive range implicated by Turing's work with these machines:

> In mathematics, Turing showed how numbers could be regarded as physical devices, and cognition, a particular class of these devices ...
>
> In biology, he understood biological organisms as actual physical machines (or better perhaps as collections of such machines).
>
> The biological problem was to figure out how such organisms could in fact grow and function, given time and material constraints, operating in accord with the laws of physics and chemistry ... making no fundamental distinction between inorganic and organic materials and processes.[6]

Functioning across all of these domains, Turing machines offer a precise definition of computability. The "point in question" is the description of which dynamisms would be essential. This description is the syntactical model, which produces the statement that is being examined.

This text presents a consolidated vision of Turing's work as an engagement that, although engaging numerous disparate terms, nevertheless retains a decided sense of consistency that far exceeds existing estimates of Turing's already-well-established importance. All of Turing's work revolves around his theory of computable numbers, and the imitation game poses the problem of treating abstract concerns according to number-theoretic modes. Turing's motivation is simple: a computer can do anything that can be expressed as a computable number, so what is the limit of a computable number's expression? Turing's work presents a new theory of the number, which Turing understands to be the agency of a machine. The imitation game is a diagrammatic architecture unfolding the agency of such a machine as a social condition.

The Universal Machine

λ: A Definition for "Algorithm"

> It was one of Alan Turing's remarkable discoveries that, in effect, any machine for which the hardware has achieved a certain definite degree of complication and flexibility, is equivalent to any other such machine.
>
> This equivalence is to be taken in the sense that for any two such machines A and B there would be a specific piece of software which if given to machine A would make it act precisely as though it were machine B; likewise, there would be another piece of software which would make machine B act precisely like machine A. ...
>
> The machines A and B are instances of what are called universal Turing machines.
>
> — **Roger Penrose** [7]

A **System**

Axiomatic convergence between a set of statements.

B **Syntax**

Condition of possibility for statements.

C **Statement**

Discrete formulation.

Turing's universal machine defines the mathematical term "algorithm" as a mechanical process that acts on describable inputs to create describable outputs. By "mechanical", Turing refers to a systematic sequence of action that can be explicitly formulated, enacting a formal proof that verifiably demonstrates how the sequence of action transforms the input to produce an output. The universal machine formulates "mechanism" as the convergence between a syntax capable of formulating statements, an action model capable of translating statements into behavior, and an event surface where the state of ongoing behavior could be tracked and manipulated.

In order to sustain this capacity of systematic mechanical action, the universal machine must be capable of formulating any syntax that relates input to action, any recording surface capable of defining a mode of storing state, and any action system that relates input syntax to the recorded state to create input-output relations. In this manner, the universal machine provides a model by which individual mechanisms can be constructed and assembled to form a universal computational capacity that can simulate any expression that might be formulated in computational terms. It is this computational capacity that the digital computer presents in the form of one or many universal machines.

Turing's initial description of his machine consists in elements readily thinkable for Turing's audience: a tape that can be used for data input and output, a head to read the data, a state register that stores working information, and an instruction table that defines how input data produces output data. This text will approach a description of Turing's universal machine that may appear to slightly alter these points of emphasis. The particulars of Turing's initial description seem to this text elements of historical anachronism, functioning today primarily to distract from the fundamental principles at stake. Accordingly, this text will explore the conditions of Turing's universal machine along slightly different lines of description: Turing's understanding of mechanism concerns conditions of syntactical transformation, which take place on a recording surface that distributes the particular semantics of their contextual inscription as a secondary, derivative-yet-also-independent syntax.

A Definition for "Algorithm"

It is important to emphasize that a "Turing machine" is not, as it would be easy to think, a digital computer. A digital computer is capable of simulating any universal machine imaginable. It is almost certain that any modern digital computer will produce multiple simulated Turing machines simultaneously or in near succession, each potentially inter-operating on shared input and state data. The key point is that the stakes for Turing here come to be staged in a question: how can formal systems of expression be utilized to express undecidable relations of determinacy? Any presentation that can be described in a discrete fashion can be presented by one or more machines. All that is necessary is a description of correlated relations that are to be maintained. If these essential relations can be presented in a syntax, they can be computed. The barrier is not *which relations* are computable, but *whether a mode is known to describe a computable aspect* that would produce a corresponding consistent description of the relations in question.

A: Problem

> The importance of the universal machine is clear. We do not need to have an infinity of different machines doing different jobs. A single one will suffice.
>
> The engineering problem of producing various machines for various jobs is replaced by the office work of "programming" the universal machine to do these jobs.
>
> — **Alan Turing** [8]

At the turn of the 20th century, David Hilbert introduced 23 open problems whose resolution he declared would consolidate the horizons of mathematics. Addressing these problems would formalize essential principles that Hilbert took to be necessary to ground mathematical treatments in math's own language of formal expression. Hilbert's desire to ground math singularly upon its own internal articulation followed from emphasis found in his work a year earlier, formulating an axiomatic method—mathematical formalism—that treats mathematics as a syntactical organization of relations created through the formation of the syntax presenting them. Understood in this manner, math would be limited only by its capacity to present matters in a regular syntax. A regular syntax could be understood to construct a system. The standing of the system would hinge on the means by which this regular syntax was constructed. Accordingly, in Hilbert's view, everyday objects could be considered basic mathematical forms as easily as traditional mathematical elements such as points and lines.

Formalism

A treatment of mathematics as a syntactical organization of relations created through the formation of the syntax presenting the treatment.

The task in formulating such a system of everyday objects would not concern the objects themselves but rather the syntactical relationship between them, constructed by articulating relations that link and differentiate the conditions of each by way of the others. The relations between each object would not be predetermined by the standing of the object but would rather be found in the systematic character that framed the potential of each object in relationship to the entire set of objects potentially under consideration. This set did not have to be conclusively enumerated—it was not necessary to set out each and every last detail—but a mechanism by which their enumeration could take place had to be defined. A system would consist in statements that model what systemic formulations might be enumerated. Statements made in the context of a system could be understood as statements “in” the system, and the system would be articulated in and through the systematicity entailed by each of its statements. This approach emphasized a mode of formalization not dependent on semantic assumptions. The goal of math would be to create a single, complete, formal system. Its completeness would mean that the legitimacy of the system consists in its closure, where it deploys the systematic terms available to it in order to justify the existence of the same terms. It would do this consistently, without producing contradictory possibilities, and it would not be dependent on anything else.

The system would exist only with respect to itself, by which mode of organization it would be literally self-evident: a formal syntax for expressing precisely what is being investigated and how the investigation is performed. The initial foundations of the system would consist in nothing other than the axiomatic conditions by which a statement can be evaluated as potentially valid. Turing offers an example to illustrate this relation:

> Suppose that we have a computable function ... then corresponding to this function there is the property of being a value of the function.
>
> Such a property we shall describe as "axiomatic"; the reason for using this term is that it is possible to define such a property by giving a set of axioms, the property to hold for a given argument if and only if it is possible to deduce that it holds from the axioms.[9]

Axiomatic conditions name the presuppositions that are encoded into the system, by which any and all statements the system can make will be assessed. Inquiry will be deemed consistent when its application to elements in question retains the essential axiomatic relations that are taken to construct the system of inquiry.

Axiomatic Conditions

The presuppositions that are encoded into the system, by which any and all statements the system can make will be assessed.

Systematicity becomes the principle of invention for Turing, limited only by the means through which existing modes of expression can formulate coherent statements. The state of the system doesn't exist without statements to state it so. The process of investigation takes on a formal status, defined as the collection of manipulations permitted by the formal syntax. The task of computational intelligence is ensuring that the machine can organize itself in whatever manner is most intelligent with respect to the statements apparently at hand. Systematicity relates potential properties to one another in order to form axiomatic relations, which guarantee the consistency of inquiry.

As work on Hilbert's initial problems progressed, Hilbert introduced additional points of focus that would continue the initial project. In 1928, Hilbert introduced a problem that has come to be known as the *Entscheidungsproblem,* which translates literally as "decision problem". Hilbert asked for an algorithm that can evaluate other algorithms for "universal validity". Validity would be defined effectively as whether the given algorithm can be proven via the given system. The "decision problem" seeks after an evaluating algorithm that would be singularly responsible for determining validity of any and all input parameters. As a question, it might be posed: if anything can be formulated formally, is there an algorithm that—given a starting premise defined as a system of axioms—can evaluate the validity of any other expression in terms of the given system?

Turing's work on the universal machine is designed to respond to precisely this question. Turing introduces the universal machine because "algorithm", although intuitively understood, had no precise definition; in order to respond to

Hilbert's question, Turing had to define precisely what the question was. With the universal machine, Turing formalizes the conditions of the question in a significant manner: the concern is not whether mathematical inquiry has the potential to evaluate the validity of any particular expression, but whether an individual algorithm could do so.

Algorithm

A mechanical process that acts on describable inputs to create describable outputs.

For Turing, the validity of a particular expression concerns the systematic method that applies a regular convention to arrange it as a relation to a system in a formal language. Whether an element is valid depends exclusively on whether there is a regular process for transforming the element in question into a specific presentation that could be situated in syntactical relationships that bear on the inquiry. This depends, very simply, on whether there is a method that can be applied to the element in question that would formally validate its standing as either adequate or inadequate. As illustration, Turing offers an imaginary function that would, in the sense of Hilbert's desire, provide a "general process" mode of evaluation:

> This usage can be justified if and only if we can justify our definition of "computable". For each of these "general process" problems can be expressed as a problem concerning a general process for determining whether a given integer n has a property `G(n)` (e.g. `G(n)` might mean "n

> is satisfactory" or "n is the Gödel representation of a provable formula"), and this is equivalent to computing a number whose n^{th} figure is 1 if G(n) is true and 0 if it is false.[10]

Turing's response introduces a subtle transformation in the stakes of Hilbert's concern. First, Turing has introduced a new term: "computable". Second, Turing has posed the expression of validity as the space of transposition between an identity n and its validated image G(n). Third, Turing has introduced a formal mathematical image of the validation dynamics: a diagrammatic sequence that Turing refers to as the "computable number".

Turing's work with the universal machine shows Hilbert's decision problem to be the precise circumstance of computability. "Computability" concerns the translation of conditions of continuous variation into discrete presentations, forming references to specific variations of specific conditions. Turing's "computable number" names the formal identity, as a mathematical expression, of a sequence of inquiry into the standing of its own decidability. Computable conditions are constituted by modes of distribution that organize regular relationships between elements, constructing a unique number-space.

Computability

The translation of conditions of continuous variation into discrete presentations, forming references to specific variations of specific conditions.

Computable Number

A formal identity, as a mathematical expression, of a sequence of inquiry into the standing of its own decidability.

For Hilbert, a number system is nothing more than a consistent convention for organizing unique identities, and Turing takes advantage of this premise in order to define computability as the process of translation by which the information relations in question can be encoded in a regular syntax. Turing defines an individual computable number as a syntactical action mechanism—a consistent treatment that formalizes consistent relations—and he discovers the problem of thinking at the impasse between multiple computable numbers originating from disparate number-spaces, in the form of their specific resistances to possibilities of translation.

As Turing puts it, “according to my definition, a number is computable if its decimal can be written down by a machine.”[11] Turing is re-designing formalism around the inquiry into the formal standing of the input expression. A number is computable insofar as each iterable unit of its definition—the “n^{th} figure” in Turing’s words—can be performed such that its completion can be synchronized with the sequences that precedes and follows it. Turing follows this with a summary: “The real question at issue is *‘What are the possible processes which can be carried out in computing a number?’*”[12] For Turing, computability is in no way an absolute measure but refers precisely to the conditions by which a mode of evaluation can be understood as applicable to a point in consideration.

The question is not whether such a point is somehow beyond the pale of computation but rather whether a method can be created in order to reconcile what would otherwise be an incommensurate relation between the point in question and a computable model. In other words, computability hinges on whether there is a regular method for converting the elements in consideration into an enumerable set, meaning that it would offer the possibility of addressing each potential element. An aspect is incomputable when the conditions of its systematicity are unknown— meaning, when those conditions are not available for imitation.

Turing returns the conditions of Hilbert's formal systems, which formalize themselves, to the view from the outside. Turing investigates how the system formalizes its own conditions, which requires a capacity to analyze itself from the outside. Systemic formalization, which takes place through the system making statements about itself, would have to be seen as the mathematical condition imitating the analytic model for the endeavor. Imitation would take on the role of mechanical exploration, attempting to compute conditions according to a particular convention that we might call a "perspective".

"Perspective" would have to be seen as Turing's contribution to Hilbert's formalism, and it would name very precisely the conditions of elaboration that would reproduce the standing of convention, permitting potential distributions to be examined in their simulated execution as imitation. This might be seen as Turing putting the mathematician "back in" Hilbert's formalism, but at the same time "the mathematician" is voided of any specific substance in order to acquire a precise formal character: the problem of non-computability, which is found in the incomplete character of this perspective.

Perspective

The conditions of elaboration that would reproduce the standing of convention, permitting potential distributions to be examined in their simulated execution as imitation.

Turing returns Hilbert's formalism to the problem of formalization, investigating how the formalism might double back upon itself in order to produce new formal conditions other than its own. Syntax serves to formulate conditions of internal difference. Internal difference is the difference between two types of expression: intrinsic structural difference, and extrinsic conditional difference. Whereas intrinsic differences names the difference internal to a number space, extrinsic differences names the difference internal to an overlapping domain of translation between number spaces. Internal difference defines the measures that will be taken to delimit participating regions of state information and the measures by which interaction between participating regions will occur. The description produces a discrete model of transition points so that it can adequately reproduce the continuous variations and the character of their variation. Gualtiero Piccinini has seized on this point, noting that:

> Under this mechanistic version of functionalism, a system is individuated by its component parts, their functions, and their relevant causal and spatiotemporal relations.
>
> The functional states of the system are individuated by their role within the mechanistic explanation of the system.
>
> The states of the system are not only individuated by their relevant causal relations to other states, inputs, and outputs, but also by the component to which they belong and the function performed by that component when it is in that state.[13]

The purpose of syntax would not be the presentation of identities in the simple sense of reference or correspondence but instead the dynamic description of types of intervals that might appear between ordinate anchors.

Turing's imaginary function transposes Hilbert's conditions of inquiry from the means by which the desired formalism would be expressed, to the formalism by which any expression of the desired algorithm would have to cohere. The bottom line of Turing's response to the *Entscheidungsproblem* will turn out to be not that algorithmic validation is necessarily limited, but rather that any particular algorithm has the potential to receive input that it cannot anticipate and that—as an individual algorithm—it cannot separate from itself in order to analyze its process at the same time it processes, because as an individual process it cannot simultaneously do both. In other words, Turing's response to Hilbert is that an algorithm cannot determine whether or not it will be able to validate any and every input expression because an algorithm cannot read what it is doing apart from doing it. Turing will demonstrate this with what is known as "the halting problem", which this text will later explore at length.

The halting problem is a relation to a formal system where the formal condition of the system is that the element in question—the point of formalization—is not decidably formal. The dynamics of syntax correspond to dynamics in modes of organization, and the rigidity of recording specificity determines the elasticity of the data's informational status. Rigid syntaxes will produce very precise systems with little range of variation, while more elastic syntaxes produce specific ranges of dynamic expression. Variations in syntax are necessary to produce different types of state, each appropriate to the space of consideration it takes as its subject of inquiry.

Distributions of potential halting conditions are arranged as syntactical potentials encoded in a number-space. A number-space—like the alphabet—organizes syntactical differences as semantic relations. Syntax composes overlapping domains of translation between number-spaces. Syntactical potentials are numerical differences, but numerical difference takes on a standing appropriate to each syntax that configures it. Syntax determines ranges of indeterminacy, materializing a system of distribution that produces consistency. Systemic consistency is both the potential to sustain dynamic variation in conditions of state and the potential to reproduce distributions that define specific state conditions. Syntactical translations permit levels of abstraction to be built where the language of expression can produce succinct but complex instructions. These new levels of abstraction may also permit the language to speak about itself, taking advantage of the digital computer's recording surfaces to retain information, permitting the language to refer to itself. It is not the computer that facilitates this self-reference but the language, which maintains particular information about its own condition on one or more event surfaces. As Turing explains:

> Actually one could communicate with these machines in any language provided it was an exact language ... .
>
> As regards mathematical philosophy, since the machines will be doing more and more mathematics themselves, the centre of gravity of the human interest will be driven further and further into philosophical questions of what can in principle be done etc.[14]

Syntaxes can be used to arrange other syntaxes. The relations of coordination established between levels of syntax operating on one another form oscillations in the recording state that can hold syntactical values in distinct formations. Relations take place between expressions of difference, which are organized and distinguished by a syntax that expresses them. Problems discovered in the process of formalization distribute dynamic potential by constituting new modes of syntactical consideration. The identification of input data with specific syntactical arrangements produces a determination of non-resemblance between specific dynamics, permitting the dimensions of separation to be delimited.

Halting Conditions
Syntactical potentials encoded in a number-space.

Number Space
Syntactical differences organized to retain semantic relations.

Syntax permits relational dynamics to be addressed as structures of iterability, constructing a model by defining potential functional arrangements of statements. Syntax quantifies the qualitative character of expression, modeling the iterative capacity of its organization. Taken in this sense, language would be the abstract capacity to organize convention. New syntaxes make formulations possible that are not idiomatically tied to the mechanisms that implement them. The language of the machine is transformed into more practical programming languages that, designed for facility of human use, distribute the machine language as a syntax operating on another syntax.

B: Structure

When you look at the color blue, for example, your brain doesn't generate a subjective experience of blue. Instead, it acts as a computational device. It computes a description, then attributes an experience of blue to itself.

The process is all descriptions and conclusions and computations. Subjective experience, in the theory, is something like a myth that the brain tells itself.

The brain insists that it has subjective experience because, when it accesses its inner data, it finds that information.

— **Michael Graziano** [15]

At the end of the 17th century, Gottfried Leibniz dreamed of a mechanical calculating machine capable of operating on basic mathematical assumptions and of manipulating statements in order to demonstrate their standing in relation to mathematical systems. Leibniz's imagined device has proven foundational in many ways, in particular with regard to the standing of mathematical "symbols", which "Leibniz thought ... were important for human understanding ... so much ... that he attributed [to them] all his discoveries in mathematics."[16] Leibniz's contributions included an approach to encoding mathematical procedures in physical mechanisms, and a mode of symbolic presentation that would permit physical mechanisms to be treated by mathematical procedures.

Hilbert's *Entscheidungsproblem* formally stated an updated version of Leibniz's vision, expressing the particular requirements for a universal computing mechanism such as Leibniz might have imagined. Turing consummated this vision with an image of mathematics capable of formulating itself as a problem. In Turing's understanding, determination concerns the convention by which the matter in question can be transformed into a formal syntax. The task would then be to adequately structure the encoding conventions, so that the manipulations would be useful and thereby meaningful. At the center of Turing's concerns is the question: for the given domain, what would be required to stage the iterable character of its convention as a number-theoretic problem? In Turing's words: "We shall say that a problem is number-theoretic if it has been shown that any solution of the problem may be put in the form of a proof of one or more number-theoretic theorems."[17] A well-defined syntax would permit the inquiry to be treated by number-theoretic methods.

Iterable Character

The reproducible capacity of the domain in question.

Well-Defined Syntax

A syntactical formulation that permits the domain in question—the inquiry—to be treated by number-theoretic methods.

At this point we encounter the fundamental problem that studies in artificial intelligence have struggled with since Turing's initial work, which Paul Churchland has effectively summarized:

> How do we specify, in a suitably general way, what the relation of input-output appropriateness consists in, a relation that has infinitely many potential instances?[18]

Computational intelligence has only two options to ensure a common syntax. The first option requires that a process be established ahead of time to anticipate any possible example. The second option would avoid this burden by formulating a common method for treating comparative considerations. The difficulty with the second option is that almost any mode of organization commits to certain structures that preclude universal or even semi-universal application.

The primary difference between Turing's and Hilbert's approach is revealed between Hilbert's understanding of the operative principle of formalization as systemic closure and Turing's sense of the impossibility of systemic closure as the principle of formalization. In Turing's words:

> The subject matter ... is constructive systems of logic, but since the purpose is directed towards choosing a particular constructive system of logic for practical use, an attempt at this stage to put our theorems into constructive form would be putting the cart before the horse.[19]

The problem at stake is how to formalize the stakes as conditions that would make the problem intelligible. In order to approximate a systematic account, fragmentary aspects of approach would have to be considered and oriented in relation to one another. If we are trying to formulate conditions of inquiry regarding a condition that we know we do not know how to formulate, we have a problem; how do we formulate this problem? The problem, taken as an object of formal consolidation, is responsible first for outlining terms of engagement, but second for addressing the sense by which the terms of engagement are inadequate to the question at hand— since if the terms *were* entirely adequate, there would be no question at hand. The problem formulates the conditions necessary to produce the desired formulation. Turing offers an analogy to explain this, emphasizing that the mathematical concern is a function of writing:

> Our problem of programming a computer to behave like a brain is something like trying to write [a] treatise on a desert island.
>
> We cannot get the storage capacity we need: in other words we cannot get enough paper to write the treatise on, and in any case we don't know what we should write down if we had it.
>
> This is a poor state of affairs, but, to continue the analogy, it is something to know how to write, and to appreciate the fact that most knowledge can be embodied in books.
>
> In view of this it seems that the wisest ground on which to criticize the description of digital computers as "mechanical brains" or "electronic brains" is that, although they might be programmed to behave like brains, we do not at present know how this should be done.[20]

Turing is not merely concluding that we do not know how to create computational intelligence but more radically that the problem of computational intelligence begins with the possibility of writing, and that writing starts with what it does not know how to write, which becomes an impetus for writing to learn what it needs to do to perform its function, which is to write what it knows about what it does not know.

The Problem

The formulation of the conditions necessary to produce the desired formulation of the domain in question.

The task will be teaching the machine how to write its expressions on the surfaces made available to it. The limit of transformative activity concerns the means by which the writing process can be elaborated. For example, if the digital computer does not have access to, as Turing puts it, “the best sense organs that money can buy,”[21] it cannot be expected to make sophisticated assessments of sensory details. The sophistication of the mode of syntactic organization directly determines the dynamics the system can produce. Jerry Fodor offers a concrete condensation of the consequence:

> Turing tells us, in effect, that thinking is a kind of symbol manipulation; in effect, he says that we think in some kind of language and that thought processes boil down to mechanical operations on the symbols of that language. … if two states of affairs are made out of the same objects and relations, then if the language contains a complex symbol corresponding to one of them, then it will also contain a complex symbol corresponding to the other.[22]

The task of math becomes the production of syntaxes capable of systematic manipulations. In Turing’s words, “mechanism and writing are from our point of view almost synonymous."[23] Syntactical language—the abstract capacity of the machine as a mathematical device—facilitates universal simulation, which makes any mode of description possible, and Turing's machines function insofar as they can be written down. The Turing machine can present any mode of syntactic organization, so the question will be how to leverage this capacity and transform it into an ability of dynamic assembly. Each machine then functions as the addition of each mark transforms the state of the problem at hand, causing the machine to pass through each iterable point of the function.

The primary lesson of Turing's mathematical interventions is that syntax requires its own science, which would be a science of writing—a science of the syntactical mark taking on semantic significance—which would be a science of numbering numbers.[24] "Symbol" is the name given to the numbering-number, which identifies the mark as a name and network of relations that situate the value as uniquely meaningful or "symbolic" by attributing it a context in a number-space. The symbol is more than an identifier or a position in code or an anchoring demarcation in a space of variation. A "symbol" is a mark that has a conventional standing as a number in the syntax that includes it. A single symbol may have standing in multiple systems, however, which means that any particular symbol may have multiple potential numeric values. Syntactical examples deployed in existing digital computers have often applied this understanding to various senses of machine code, sometimes aiming at extending it to human language. The limit of these approaches has been found in theoretical understandings regarding syntax and syntactical potential.[25]

Symbol

The name given to the numbering-number, which identifies the mark as a name and network of relations that situate the value as uniquely meaningful or "symbolic" by attributing it a context in a number-space.

The mark is an anchor that elaborates ranges of variation and is itself a range of variation that denotes an intersection with other variations.. Ranges of variations distribute one another in order to condition fields of identity that anchor their given "numbered" territory. "Numbered" cannot be taken simply as the ascription of identity to a particular space—naming—but rather must be understood as the production of the space as a territory of variation. In this manner, symbolic organizations produce whichever dynamic capacities the machine will be capable of performing, which will be performed in and as a number-space. So long as the manner of encoding remains consistent during manipulations, all data encoded in the arrangement of symbol mappings—the number-space—retains its informational value.

Mark

An anchor that elaborates ranges of variation and is itself a range of variation that denotes an intersection with other variations.

Syntax is the inexhaustibility of recombination that the mark, as distinct and determinable, structures in a syntax. Syntactical potential consists in the mark having no factual standing other than its determinability. The symbol appears at this site as the identity of a specific location in a specific formal context, articulating the interval that syntax holds open and manipulates. Syntax is not the fact of the symbol that presents it. The symbol is the negative image of the interval, appearing in place of the interval as its identity. Syntax is the articulation of the interval that is the literal “joint” between divergent dynamics, the open interval that defines the system as an architectural expression. Syntax defines the statements that the system can formulate, presenting the unmediated consistency of the system as the horizon of the system’s incompleteness. Syntax consists in potential, which—as the open character of the interval—can have no factual standing prior to an intervention that would qualify the interval.

Syntactical Potential

The potential to determine the mark as a particular symbol in a specific syntax.

Syntax is Turing’s response to Hilbert’s problem: the condition of decidability. A syntax is a language describing variable intersections of action conditions. Computation is discrete analysis, formed by assembling axiomatic principles and corresponding statements that express the potential of the axiomatic formulations. Axiomatic formulations are syntactical constructions of actionable difference, which construct the scene of inquiry by distinguishing expressions on its event surface. A universal machine can consider relations between multiple inquiries insofar as it can articulate a frame of reference that provides a common syntax between relations that would be compared. A computer is something that transforms these syntactical relations, and the imitation game is

Turing's universal diagram capable of articulating intersecting frames of reference.

Condition of Decidability

A syntactical arrangement that functions as a context to determine a mark as one or more syntactical potentials.

The computable number—the numbering-number—is what defines the Turing machine's capacity for universal presentation, but it is only the beginning of Turing's work on computational intelligence. Jerry Fodor has quite insightfully observed that semantic value corresponds to the relations maintained between these input and output mechanisms, in that syntactical distributions literally hold semantic value "in place":

> The pursuit of Turing's idea has led us to notice striking and pervasive features of mental processes that had not previously been remarked upon. …
>
> Turing machines work because symbols have both semantical and syntactical properties. Since the syntactical properties of a symbol are among its physical properties, there can be a symbol transforming machine whose state transitions are driven by the syntax of the symbols it operates on. …
>
> It is possible to arrange such a machine so that these syntactically driven state transitions preserve semantical properties of the symbols.[26]

Syntactical manipulation implies semantic transformation, and syntax describes appropriate unit transformation properties, which are changes in the state of the machine.

Syntax ensures that any partitioning of difference occurs according to instructions that appropriately modify its distribution. What would otherwise be effectively unbounded—Turing's famous, ostensibly-infinite memory attributed to the ideal machine's recording surface—is reorganized in terms of the syntactical translations necessary to produce an orientation for the non-orientable. Jerry Fodor emphasizes this aspect of Turing's contribution, pointing out that:

> Thinking can be rational because syntactically specified operations can be truth preserving insofar as they reconstruct relations of logical form.[27]

This would mean that syntax would be understood to encode the continuity of expression by way of ordinate anchors that describe relational state at a point. Simulation would be understood to consist in the manipulation of syntactical encodings in order to express the computability of a missing gap between these points, which will be formalized as a problem.

Turing's machines become the problem of syntactical movement through recorded transformations in state conditions, which literally and immediately sustain the duration and intensity of semantic relations. Fodor emphasizes that the conceptual force of symbols introduced by the Turing machine only opens the field of possibility:

> Many symbols are syntactically complex objects whose constituents are themselves symbols. … This all suggests a system in which parts of sentences refer to parts of the states of affairs that determine their semantic values.[28]

There is no limit to the complex web of relations that can be constructed between symbols. The task of complexity concerns how to create dynamic mappings between syntactical contexts—descriptions of conditions—and the syntaxes capable of organizing them.

The question for Turing is how to develop a syntax that would account for the indeterminacy of determination. Jean Lassègue offers a superb summary of the tremendous consequences at stake in this move:

> Turing was reversing Hilbert's philosophical axiom: it was the written symbols that generated states of mind and not the other way round. Therefore, the mental act was secondary in comparison with what could be linguistically described from a finitist point of view— what was at stake was only the mapping of a discrete set of symbols with a set of behaviors in a computing machinery and not the "reality" of some states of mind that were only postulated.

> The formal representation of this "mental act" could be carried out no matter who or what was actually performing it: the finitary process itself, since it was only a finite list of "behaviors" any computer could perform, was entirely mirrored in a formal treatment of written symbols, that is, a program. This notion of a formal counterpart was far from the Hilbertian mentalism and was modeled according to the Gödelian arithmetical method.[29]

Syntax is the beginning of all computational activity, as it permits any information to be encoded. Once encoded, the information can be evaluated and manipulated. This is the process of "determination", which can be defined as the condition that would provide an aspect by which an analytic treatment could be assessed, meaning written down and manipulated.

The analytic dynamics that the system can produce define the mechanical action the system expresses, meaning that statements have the potential to activate whichever mechanical action is taken to correspond to them. Andrew Melnyk describes the matter succinctly:

> To specify a syntax for a set of symbol-types is to specify a set of rules which lay down how tokens of those types are to be combined with, or related to, one another; examples of rules of syntax in the case of logical systems would be formation rules which tell us what is and what is not a

> well-formed formula, or syntactic rules of inference which tell us something about which formulae may follow which others.[30]

Consistency is found in the translation system appropriated to model the statement by mechanical actions. Mechanical action is the formal systematicity that defines the well-formed character of statements—their state—in the system, where they become symbols by associating particular input parameters with particular transformations. As the complexity of input processing grows, vast transformations can produce inferred statements from the variations found in input data.

Turing introduces the computable number to open the question of computing-as-writing. A computable number is computable because it can be written down. The computer is what makes possible writing the number in a computable fashion: an active syntax. In Turing's view, writing writes the syntactical interstice, which is the transformation implicit in computation, written down as the computable number. Guiseppe Longo refers this mode of organizing discrete expression back to the problem of writing machines:

> The Discrete State Alphanumeric Machine ... is a remarkable and very original human invention, based on a long history. ...
>
> This story begins with the invention of the alphabet, probably the oldest experience of discretization. The continuous song of speech, instead of being captured by the design of concepts and ideas (by recalling

> "meaning", like in ideograms), is discretized by annotating phonetic pitches, an amazing idea ... .
>
> Meaning is reconstructed by the sound, which acts as a compiler, either loud or in silence[31]

Discrete data types allow these fluctuations to be treated not only as an informational problem, but as a problem that can be evaluated syntactically. The digital computer simulates the continuous character of relational dynamics by manipulating syntactical distributions and recording them in a manner capable of reproducing the relations in question. "And it iterates, very faithfully," Longo insists, "this is its key feature … iteration and update of a register, do what you are supposed to do, respectively, even in slightly different contexts, over and over again."[32]

The digital computer establishes terms appropriate to its own requirements for organization by creating an internal partitioning. It constructs its own organization of symbols, modeled on fragmentary aspects of encounters and parsed for consistency by systems that amplify conditions of particular expressions over others. Discrete data types permit consistency to be reproduced in inquiry. For this reason, Longo observes, "we invented an incredibly stable processor, which, *by working on discrete data types*, does what it is expected to do."[33] Discrete types transform the concern from a problem of animation to a problem of determination. Continuous variation is always in movement, but discrete types permit identities to be mapped on to specific ranges of variation. Any particular relational dynamics have the potential to be qualified by way of their particular intersection with a given specificity found along or in other relational dynamics. Qualification concerns *which actual data* should be examined and *how it can be examined*— and most essentially, *how it should be treated as data*. The model potentiates a specific mode of inquiry by constructing the problem in question—the subject of inquiry—as a mechanism that can be studied. The model composes what it provides, which means that its description is a formal mode for isolating an analytic dimension.

Discrete Types

Determinations that transform specific ranges of indeterminacy into categories of identifiable difference.

Kurt Gödel, a figure who we will see occupy a position of tremendous importance in Turing's work, emphasizes this aspect of Turing's work in a 1965 postscript to his 1934 work, "On Undecidable Propositions of Formal Mathematical Systems":

> Due to A. M. Turing's work, a precise and unquestionably adequate definition of the concept of a formal system can now be given. ...
>
> Turing's work gives us an analysis of the concept of "mechanical procedure" (alias "algorithm," or "computational procedure," or "combinatorial procedure").[34]

The system is reconstituted in the image produced of it from each point that produces it, intersecting all other points that produce it. Logical formulations that present the system as a system can exist only insofar as the analytic position in question consolidates them according to the mode by which their systematicity is to be systematized.

Mathematics becomes the formal study of potentiality—the indeterminacy of potential—organized by regular syntax. Syntax concerns modes by which propositions can be figured, whether as geometries, diagrams, or however else might make them conceivable according to a mode of determination. The specific means by which the syntax is established is nothing but convention. Convention reflects the systemic relations it is intended to organize, arranging modes of expression to reflect the capacity they activate. Particular modes of syntactical convention form particular types of interfaces to specific modes of systematic ingenuity.

Convention

The iterable character of modes of expression in terms of the functional capacities they activate.

Syntax creates modes of reference that situate states of determination. It is the states of determination that will be recorded, meaning that the information being organized consists in its syntax. Semantic standing, which governs the conventional relation found between input data and action mechanisms, concerns the relationships preserved in manipulations of the syntactical system. Such semantic standing remains outside the traditional definition of the Turing machine, although there is no reason that a traditional Turing machine could not be programmed to account for it. This possibility has been represented in developments over the past several decades in complexity of programming environments, as languages have implemented capacities of "reflection", where the language is able to examine its own state.

Language must be understood to link expression, which requires a syntactical form, to thinking, which expresses itself otherwise. The abstract function of syntax would have to be understood as the anchoring of continuous variation by points of specific variability, which could be treated as discrete descriptions that would reproduce aspects of continuity as needed. Syntax demarcates potential intervals of expression as a syntax. As intervals, the potential found in the expression is a potential of translatability. Intervals form relational aspects between points of description. Points of description come into relation with one another by way of processes of translation, the structuring of which can be examined as mechanisms carrying out describable transformations. The consistency of these intervals forms a syntax, which is the horizon that defines and unfolds modes of potentiality between specific potentials.

C: Condition

In the early 1980s, William Reinhardt was interested in how much a Turing machine could know about itself.

He conjectured that in epistemic arithmetic ... a Turing machine can prove, with mathematical certainty, the sentence ‘I know I am a Turing machine’.

Timothy Carlson gave the first proof of Reinhardt’s conjecture in the mid-1990s.

— **Luís Moniz Pereira** [35]

Kurt Gödel’s “Completeness” and “Incompleteness” theorems fundamentally transformed Turing’s sense of the unfolding mathematical terrain. Where Hilbert had been concerned with unfolding formal mathematical details of formal embeddedness, Gödel’s work would leave Turing concerned with conditions of indeterminacy and undecidability. Gödel’s “completeness theorem” showed that any “well-formed statement” necessarily has a model that demonstrates its “well-formed” character. This meant that any mathematical statement that can be taken as valid has a manner of axiomatic approach by which it can be proven valid. This theorem quickly became a central part of formal mathematical logic. It also served to define initial aspects of what “well-formed” would mean: a well-formed statement states the conditions of consistency that formulate the system, such that the regular form of the statement’s construction can be traced from the principles of the system. The completeness theorem demonstrated that a theory has a model if and only if it is consistent with the system that states it, meaning if the statement does not produce a contradiction in the system.

Gödel's "incompleteness theorems" addressed a similar concern with formal statements but staged the concern in what might be called "the opposite direction". The completeness theorem had dealt with the way a statement could be understood as expressed through a system. The system provided a mode of derivation that could be verified through formal approaches. The incompleteness theorems concern whether a statement can be understood to refer back to the system that expressed it. The working assumption was that well-formed statements ought to include the basis by which their ostensibly sound character could be evaluated. If, from its construction, a statement is "in" the system that constructed it, it seemed that it should be possible to determine from the statement which system the statement states.

Gödel's conclusions had come as a surprise to the mathematical community. The assumption of Hilbert's sense of logic had been the possibility of formal completeness. This meant that a logical articulation ought to effectively formalize all statements it can possibly assess as valid. Validity would mean that it was consistent as a formal system, which would be capable of modeling its validity. But Gödel's first theorem demonstrated that any "sufficiently strong formal system" can make statements that it cannot prove either true or false without introducing inconsistencies into the system by doing so; and the second theorem demonstrated that any such system is incapable of demonstrating its own consistent standing without thereby becoming inconsistent, having introduced premises that it then cannot prove in order to establish the proof of consistency.

Gödel demonstrated his proofs by constructing a method of numbering now known simply as “Gödel numbers”. Gödel’s numbers permitted formal mathematical logic to be extended to present apparently abstract expressions in a formal mode appropriate to manipulation by mathematical action. Gödel formulated identities for his number-spaces using “prime factorization” rules, where each identity is a prime number raised to a prime power. He was then able to to treat entire proof statements as a single number. Any particular element of information—movement—could be treated by a number that would correspond specifically to it as a description that would reproduce the character of its continuity. In this manner, through a mechanical process, Gödel had been able to present intuitive understandings of logical relations as well-defined coordinate systems. Their well-defined character consisted in the manner by which semantic relations, expressible as logical statements, would be retained in the syntactical manipulation of number systems.

Gödel Numbers

A method of numbering using “prime factorization” rules, where each identity is a prime number raised to a prime power, permitting entire proof statements to be recorded as a single number and then to be utilized in other proof statements.

A system could be understood as a unique number that defines a collection of statements, each with their own unique number. The number *is* the system or statement, not a representation of it. Symbols could then be deployed to present the number as an element of syntax. A specific symbol, or more likely sequence of symbols, would have to be located in the context of a system that numbered them. Every system has statements, and every statement presupposes a system, but systems are not capable of independently resolving every statement they can make, and statements do not include or reference the system they presuppose. Since thought can be systematized in many distinct ways, some of these will inevitably be based on incompatible assumptions, and others will be based on assumptions whose relation is not necessarily clear, in spite of seeming intuitively related. This point concerns a consistency that has not yet been systematized. This consistency is what we have already referred to as "a problem". A problem consolidates a point of incompleteness, *a formal science of consideration or inquiry that relocates the axis of concern, which now aims to assess why problems appear to emerge between particular modes of formalization.*

Gödel numbers introduced a new conception of mathematical terrain: *formal logic must begin from the very point that infuriates it, the point which it cannot think*. Mathematical formalism had to be understood as a function of language, which could be systematically outlined as a formal principle of expression. If anything can be encoded as a number, what new standing must attributed to "number theoretic" problems? The entirety of Turing's work must be evaluated as an inquiry regarding the standing of this matter, which can be described otherwise as the passage from system to syntax and the consolidation of syntax as system. The completeness theorem showed that in formulating relationships between statements, new statements and systems can be developed by way of symbolic manipulation. Although the work could be done in a formal written language, the formal expression was strictly mathematical. The incompleteness theorem, in contrast, showed that given a particular statement, expressed in symbolic form, *no formal method could be said to exist to identify which numbers the symbols expressed*. Formulating the mathematical precision of a statement would require first identifying which system or systems numbered the statement, and this model was not to be found in the symbolic expression of the statement.

Turing's computable numbers work similarly to Gödel's numbers: a program can be understood as a single very long number, where the construction of that number has specific characteristics that can be clearly identified as sub-divisions of the single number into complex statements. This is because numbers can be used to encode and organize not only information, but also informational relationships. For an infinite set of numbers, any amount of information can be encoded. Further, what that number is need not be known. The element of information can be treated as a variable whose value is yet to be determined. The implicit relations that would formalize the standing of disparate elements of information can be permitted to remain in question. Variable names permit relationships between these elements to be explored without necessarily knowing how to create the complete formal system that would number each element. Fragments of a formal system can be consistently assembled and brought into relation.

The Turing machine figures the capacity to organize any syntax, but it does not yet include a capacity to produce its own syntactical freedom, which, at the very least, would mean being able to selectively switch syntactical registers in regular patterns that would correspond to complex models. The digital computer, like Turing's universal machine—the basic building block of the digital computer—encounters language only by way of the human programmer that organizes the syntax, which the digital computer will carry out. The only means that a digital computer has to "speak" about the convention that governs its syntax are the action mechanisms that bring that syntax to life as the computational transitions found in numbers. Contextualized in this manner, the digital computer can be seen to introduce a strange formalism: a universal capacity to describe any formal convention, but no ability to describe its own capacity except by enacting it. The digital computer consists in a capacity to deploy language, yet has no language of its own. The digital computer is capable of expressing what it is executing, but unable to reflect on what standing this would have except insofar as executing it transforms the present state. The consequence of this inability, however, is that the digital computer can be made to formulate any syntax, without requiring it be explicitly tied to the computer's capacity for formal description except by its implementation.

The task shifted: if the organization of the machine was the thought the machine thinks, the intelligence of the machine could only be found in the organization of the machine. The organization of the machine was theoretically limitless, so long as mathematical expressions could be formulated to describe the organization. Since mathematical expression could be understood as any syntactical presentation, the only possible barrier to machine intelligence would be adequate modes of description. An adequate mode of description would require a dynamic mode of organization capable of constructing syntactical organizations as needed. The resulting expression of this search is Turing's imitation game: a universal simulator capable of diagramming conditions of abstract organization, and of producing differential assessments of those diagrams.

Turing's emphasis on the passage between the systematization of statements and the stating of the system can be formulated as a problem of "decidability". Turing's first publication introduced a computational theory of information modeling, presenting information as the formulation of syntactical mechanisms capable of producing and processing statements—units of semantic value—in the context of declared systems. Turing's second work turns to formulating branching systems of logical fragments, with each additional branch indicating a higher degree of power. The relation between these two moves is significant, as it stages precisely how Turing understands the dynamics of mathematics.

These dynamics would be the specific points of minor variation and re-combinatorial potential found in the mode of inquiry: conditions of decidability.

Decidability names the capacity to determine whether a given expression is computable without attempting to compute it, a capacity that corresponds directly to the possibility of locating a statement by way of a specific system. This takes Turing back to Hilbert, and permits him to examine the implications of Gödel's work regarding Hilbert's call for a decision principle. If such a decision principle were possible, it would have to operate through the means of mathematical intuition, the premise being that the expression is to be evaluated in its own standing, not as a computation. This approach permits computability to be constructed in terms of specific domain relations, meaning that variable dynamics of specific computability can be elaborated.

Decidability

The capacity to determine whether a given expression is computable without attempting to compute it.

Resolving whether a given expression were valid would require that an algorithm be capable of intuitive evaluation, which would mean that the standing of the algorithm would have to be available in the syntax of its statement. But Gödel's work demonstrated that the syntax of the statement does not provide the means by which its systematicity can be evaluated. This means that the standing of the statement cannot be assessed by intuitive means, as intuitive means are without a system. Instead, available resources will have to be assembled in a manner appropriate to the sense of intuition; the resources can then be deployed systematically to evaluate the expression, at which point it can be located by way of varied domains of mathematical inquiry.

The Imitation Game

Mλ0: A Mathematical Meta-Model

> Social production would need at its disposal, on the recording surface of the socius, an agent that is also capable of acting on, of inscribing the recording surface of desire.
>
> Such an agent exists. It belongs essentially to the recording of social production, as a system of reproduction of the producers, partial objects, flows, signs, and agents of a process that outflanks them on all sides.
>
> It is the surface on which the whole process of production is inscribed, on which the forces and means of labor are recorded, and the agents and the products distributed.
>
> — **Gilles Deleuze and Felix Guattari** [36]

ABC **Capacities of Iteration**

Interruptive potentials.

M **Capacities of Expression**

Discrete potentials.

XY **Differential Relations**

Undecidabilities of reference.

Turing's universal machine meant that mathematical systems could be stated in incredibly abstract terms, arranged by internal functions that sustain the action mechanisms activated by the state of the present syntax. Turing introduces the imitation game as a way of extending his model of the universal machine to define an algorithmic function of intersecting dimensions. The imitation game presents this approach in the form of its most basic building block, constructing layers of inter-related dynamics that simultaneously take place from distinct and incommensurate positions across a common space, which will be treated as a coordinate system but which has no coordinates proper to itself. *It may even* *turn out that this common space has no definition of its own*, consisting only in the intersection of relations that may define themselves but not their intersection with other relations.[37]

Mλ0: The Imitation Game [38]

The ‘imitation game’ is played with three people, a man (A), a woman (B), and an interrogator (C) of either sex.

The interrogator stays in a room apart front the other two.

The object of the game for the interrogator is to determine which of the other two is the man and which is the woman by labels X and Y, and at the end of the game he says either ‘X is A and Y is B’ or ‘X is B and Y is A.’

It is A's object in the game to try and cause C to make the wrong identification.

The object of the game for the third player (B) is to help the interrogator.

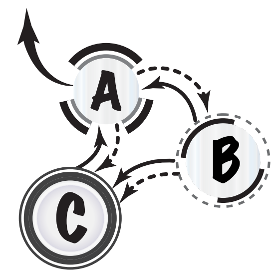
C relies on B’s assistance to identify A as X or Y.

The game has the interrogator decide whether the label X or Y identifies figure A or figure B, both of whom are hidden from the interrogator. The interrogator accomplishes this determination by constructing a circuit of exchange, where prior knowledge is utilized to formalize a contextual distinction that can be attributed to the common space that the game defines.

The game centers around indeterminacy—between a “man”, named A, and a “woman”, named B—staged as a condition of interrogation. The game is not about which one is “man” or “woman”, but which is A or B. Functions in the game—causing the wrong identification or helping to identify—are assigned to the terms “man” and “woman”. “Man” and “woman” are are left otherwise without clarification, effectively defined as common assumptions made by A, B, and C in order to permit identification to have some assumed measure. Nothing guarantees that this assumed measure is held in common.

The coordination of this “common” space—the coordinate system or systems that will govern interaction with it as a space—is the activity of the imitation game. The imitation game constructs an inter-dimension between boundaries of articulation, delimited by arranging particular dimensions at stake—here A, B, C—so that they imitate an informational aspect, which is the state condition of the imitation game itself. The game illustrates the non-reciprocal reversibility of internal and external consistency, showing how a given indeterminacy A is situated as a structural condition B and a contextual position C. Further, the imitation game shows that each position can itself also be analyzed as a similar diagram, moving from the external consideration of a node to the internal consideration of the nodal architecture. The state of the imitation game records itself on the common domain, between each role, as the orientation of indeterminacy, producing a description of the conditions that define the particularity of that role's encounter with the game.

Turing's Imitation Game



C attempts to determine A, B watches C in order to determine A and provide C orientation, and A watches both B and C in order to escape determination.

The condition of the imitation game is the orientation of the game itself, in relation to itself, as a condition or a series of potentials, as the form of the universal machine inscribed into its own language. With the imitation game, Turing introduces the universal machine to its virtual double: the difference between A and B that it will have determined as its orientation, which we can refer to as C`. C` is C's formulation of language, which operates on a surface constituted by another Turing machine. The "other" Turing machine is figure C`, the problem of computability, which is the state the machine C will have been in if the conditions that differentiate A and B will have been computable. As a machine, the consistency of the imitation game—the standing of its syntax as a mechanical algorithm—consists in nothing other than its own potential, as the imitation game, to imitate its own algorithmic potential, which is its own standing as a formal mechanism: a machine.

A: Dynamic

Once we have represented these on paper, we can represent every single operation: all we need do is to give formulae representing the situation before and after the operation, and note which rule is being invoked. We can thus represent on paper any possible sequence of operations the machine might perform. However long the machine went on operating, we could, given enough time, paper and patience, write down an analogue of the machine's operations.

This analogue would in fact be a formal proof: every operation of the machine is represented by the application of one of the rules: and the conditions which determine for the machine whether an operation can be performed in a certain situation, become, in our representation, conditions which settle whether a rule can be applied to a certain formula, i.e. formal conditions of applicability.

Thus, construing our rules as rules of inference, we shall have a proof-sequence of formulae, each one being written down in virtue of some formal rule of inference having been applied to some previous formula or formulae (except, of course, for the initial formulae, which are given because they represent initial assumptions built into the system). The conclusions it is possible for the machine to produce as being true will therefore correspond to the theorems that can be proved in the corresponding formal system.

— **J. R. Lucas** [39]

The imitation game is an image of convention, produced at an intersection of positions and relations in order to form modes of analytic treatment. It constructs the dynamics of these analytic treatments, producing systematic models of intersecting and diverging domains of convention. Ian Bogost has productively emphasized this precise point as the overarching importance of Turing's work, not only with the imitation game but also as a general principle of analysis and engineering:

> The computer itself reveals another example of pretense for Turing, thanks to his own theory of abstract computation and its implementation in the device known as the Turing machine. …

> Unlike other sorts of machines, the purpose of a Turing machine is not to carry out any specific task like grinding grain or stamping iron, but to simulate any other machine by carrying out its logic through programmed instructions.
>
> *A computer, it turns out, is just a particular kind of machine that works by pretending to be another machine.* … If we combine Turing's ideas of thought and of machine, we find machines that convincingly pretend to be other machines. The Turing test doesn't apply just to human intelligence but to what we might call "device behavior".[40]

With the imitation game, Turing diagrams the observation that men and women supposedly cohere to a given convention, and that their difference in this convention is ostensibly a difference in device behavior. This is because Turing wants to know if sex can be treated as a number theoretic problem, and if so, what kind of number theoretic problem it might be understood to be. The imitation game poses the intuitive character of thinking as the potential found at this impasse. If socio-sexual circumstances could be described in a manner that was organized by syntax, that would mean that the terms could be managed by a computational paradigm. The question would be what sorts of manipulations were valid within the particular syntactical domain.

Modes of Analytic Treatment

Diagrammatic images of convention produced at intersections of positions and relations in order to relate syntactical potentials as distinctions between domains of convention.

As we have seen, Turing introduced the terms “machine” and “mechanism” to mathematical use in order to provide a formal definition of the mathematical term “algorithm”. An algorithm could be defined as the discrete presentation of consistent relations that could—by whatever mode appropriate to retain the consistency of the relations—be recorded in a reproducible fashion. The machine is introduced as a mathematical model for Turing’s diagrammatic thinking, and the imitation game models modes of transformation internal to imitation, which is what defines the machine’s “algorithmic” capacity: a system of coordinated expressions describing an image of a particular intersection of relations. It is in this respect that we can understand the incredibly significant suggestion that “the universal Turing machine is a universal mimic.”[41] Turing’s interest in the imitation game is that, as a game, it consists in nothing other than its own capacity or incapacity to imitate itself, through which it accomplishes a formal definition of itself as a game of imitation. Continuous activity has to be translated into a discrete syntax that facilitates mathematical expression, which has to be expressed in

Figure A

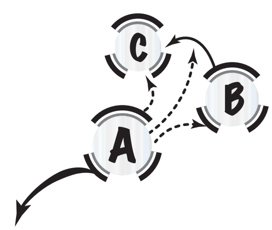


Figure A observes B, C, and the relation between B and C, while directing itself absolutely away from both.

terms of the continuity it stages. In Turing's mind, the matter is straightforward if not simple.

The question of machine thinking is transformed into the organizational foundation of machinic thought. Machines can be understood to think insofar as they can inquire after what they might be thinking about. A machine could be said to think insofar as it could be organized like the thought it would think, and the imitation game constructs the thought that will adequately stand in for the point that resists intelligent determination. The figures playing the game perform the mechanical conditions of the diagram, deriving a sophisticated, non-unified metric capable of treating variable degrees of freedom.[42] It does this in order to produce definite terms of motion that can delimit indeterminacy in its various modes.

The imitation game introduces a point of beginning where relevant considerations are "already in motion", meaning that any formal approach will have to begin from fragments, making use of assertions in order to formulate systematic expressions that may ultimately be determined invalid. This understanding permits us to offer a prospective summary of Turing's interest in the apparently arbitrary terms of the imitation game: if a digital computer is a convention machine, how could it structure the presentation of apparently arbitrary conventions? Apparently simple intuitive circumstances demand complex systems to formalize the dynamics at stake. Convention would concern relationships and transformations as material experiments that pursue the variable dynamics of discrete terms of expression, formed as a simulation of conditions of continuous variation. The responsibility of the simulation is to produce the continuity of variation.

The imitation game demonstrates a diagrammatic potential, capable of organizing new syntaxes. The problem is that there are indefinitely many potential problems that could be anticipated, and more that might escape anticipation. The imitation game converges as dimensional potential activated between particular expressions. Luís Moniz Pereira refers this approach in Turing's imitation game back to Turing's universal machine:

> The Universal Turing Machine is the one which can imitate every computer program: it is mimetism par excellence. Such mimetism makes us think about the meme and our own mental flexibility, so vital in complementing genetic reproduction, due to the different reproduction timings. In the latter, genetic reproduction, the difference spans across generations, and that is not enough when adaptation must be agile. It is from that need that stems the cerebral mechanism of reproduction—those memes which jump from brain to brain.[43]

The concern played out in the imitation game becomes the adequate description of dimensional potential in a manner that is simultaneously abstract and universal and also concrete and particular.[44] The imitation game imitates the abstract capacity of imitation, which is the machine. Imitation—of intelligence, of thinking, or otherwise—has no consistency at all beyond that which it produces for itself, as itself, by modeling the distributions of dynamics that it discovers between its own internal consistencies and inconsistencies: the movements of indeterminacy and the corresponding incompleteness of the coordinates that would orient the dynamics as coordinated efforts of algorithmic consistency along distinct axes of determination. Understood in this manner, the imitation game is definitionally—as an algorithm that can be presented as a problem of syntactical consistencies—a machine. To be presented as a mathematical concern, the imitation game must be formalized as a machine. If the imitation game can be assessed consistently by way of mathematical treatment, it is (as this mathematical treatment) formulated as a machine.

Diagrammatic Potential

The potential for a particular diagrammatic image to be organized in terms of other arrangements of syntactical potential, formulating the dynamics in question according to other domains of convention.

Adequate Description

A diagrammatic description that produces the simulated image—the imitation—of the dynamics in question.

Yet, if the imitation game consists in the *potential* of the machine to imitate itself, the standing of the imitation game as a machine is that it is very precisely *not yet* the imitation that it ought become as the game that it is. In this respect, the imitation game formalizes a problem that Turing understands to reside at the core of computational treatments of thinking and that offers significant insight regarding Turing's interest in social dynamics:

> To behave like a brain seems to involve free will, but the behavior of a digital computer, when it has been programmed, is completely determined. These two facts must somehow be reconciled.[45]

Turing poses the imitation game a a treatment of this divide, which becomes an organizational structure for the dynamic modeling of potentials. The imitation game models the structure of problems and so functions as what we will call a meta-model. The imitation game produces a concrete frame that facilitates reflexive inquiry.

Turing presents the imitation game in order to formalize the dynamic complexity of the incommensurate—the problem of A, B, and also C, each assembled simultaneously but according to the specific character of their own conditions of sequential determination—rather than the character of intelligence, which Turing does understand to offer itself to clear definition. Imitating a clear definition without ever providing one, Turing's imitation game defines the horizon that it becomes—a convergent interplay of differential potentials and their corresponding imitations along varying fields of social dynamics—by the very divergence that interrupts its own standing as a horizon.

Turing is not concerned with playing a parlor game but with the modulation of material coordinates of determination within a discursive frame. The question is not whether the interrogator can point to one person versus another, but rather whether the interrogator can understand discursive cues as sufficient evidence for consolidating a materiality that otherwise would remain entirely indeterminate. The determination at stake concerns a range of dynamics that permits C to situate its own future position C`. The imitation game makes this possible by way of an outside, whose presumed consistency arrives as metric inscriptions upon sensorial surfaces, which Turing emphasizes repeatedly are functions of writing.

B: Distribution

It is true that a discrete-state machine must be different from a continuous machine. But if we adhere to the conditions of the imitation game, the interrogator will not be able to take any advantage of this difference.

— **Alan Turing** [46]

The imitation game presents the diagrammatic building blocks of Turing's work, which began with the universal machine. It does this in order to explore structural intersections of indeterminacy and undecidability such that determinations could be constructed and mapped back to specific ranges of indeterminacy. This concerns the consolidation of a syntax adequate to indeterminacy. The syntax must be structural, in the sense that it accounts for specific modes of arrangement, but it must also exceed the evident arrangement of structures in order to permit unexpected potentials that imply a re-arrangement of terms. Imitation materializes the image of thought that "replicates"—in the sense of machine production and reproducibility—the dynamic freedoms taken to be at stake in the imitation. Imitation does not "reproduce" or "represent" any "thing", or even an image that might be taken to refer to "something", but constructs its own original standing as a computational simulation of the indeterminate dynamics it extracts by projecting a syntax onto the scene in order to derive its semantic stakes.

Figure B

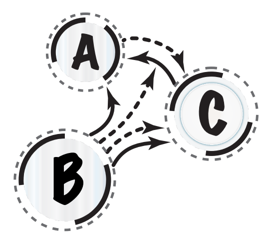


Figure B observes A, C, and the relation between A and C in order to orient C and condition A's indeterminacy.

The imitation game functions for Turing as a diagram that structures analytics of convergence and divergence. Inquiry into the intelligence of the figures involved in the imitation game becomes the scene of the game as the potential of an intelligent concern. The imitation game models mathematical aspects of distribution, examining what mathematical analytics are possible when distribution is considered as a function of particle relations, the particles themselves being defined by the mode of participation with which each node enters into the game. The terms of the imitation game overlap without coinciding, staging the problem of statements without reference, examining the conditions of incompleteness appropriate to each statement as a constructive impetus for further exploration. Systematicity would have to be seen as an active matter, capable of acting on elements by producing intuitive combinations of axiomatic relations to address emerging conditions.

Aspects of Distribution

Mathematical models that examine what analytic treatments become possible when examined by way of distinct nodes of inquiry.

Conditions of Incompleteness

Absent or irresolvable regions of the diagrammatic image.

In place of specific determinations and modes of evaluation, Turing focuses on relational dynamics. Rather than attempting to define terms, Turing offers models that might facilitate an examination of the inquiry itself. Resisting any urge to introduce the imitation game as an integrated model, Turing deploys the game as a diagrammatic machine. Relations define the relative indeterminacy of the game. The relations of the imitation game are identified by the names of the player positions, which provide ordinates to describe transition states and conditions for the game: `A`, `B`, `C`, `X`, `Y`. These positions form a much more complex, incommensurate convergence of coordinate distributions. Information from one context must be presented in another context, transformed not only without losing bits and pieces, but also such that the transformation produces additional information.

Relative Indeterminacy

Dynamics of indeterminacy that are dependent on determinations of other dynamics of indeterminacy.

The diagram, taken as a matter of mechanism, consists in the structural treatments of indeterminacy that return what is being diagrammed to what remains outside the scope of the diagram. The imitation game formalizes its structural consistency as a diagrammatic node, constructed as a means for parsing relations as specific dynamics found between specific freedoms. The specificity of these freedoms has standing only insofar as the imitation game becomes capable of delimiting points of isomorphic transformation. In other words: as a diagram, the imitation game does not succeed if it does not return what is diagrammed to its outside, mapping movement back on to other movement as its effective imitation.

The imitation game forms a digital computer—a discrete state machine that can perform instructions according to whichever specific form of input denotes their register of programmatic execution—meaning that it constructs a regular distribution of discrete forms as digits moving around a surface that imitates informational arrangements. This amounts to a capacity to simultaneously become infinitely many individual Turing machines, each according to its particular domain of input. The only barrier to this account—this sense that would name the problem's computability—is constructing the mode of description that retains the relationships and transformations that organize the systemic matter as a mathematical concern. In this regard, the core of Turing's contributions to mathematical modeling are defined by the idea that inadequacy can be modeled. It is at precisely this point that "imitation" takes on importance for Turing. The imitation game serves for Turing as a model for the problem of incomputability— and it is *only* this problem, *incomputability as a problem*, the mathematical encounter of incompleteness in formal coordinates with the mechanical formalization of coordinates that would become capable of treating the encounter as a problem, which it formalizes as a computable concern.

C: Context

The point of departure is as follows: ... the pervert is not someone who desires, but someone who introduces desire into an entirely different system and makes it play, within this system, the role of an internal limit, a virtual center or zero point. [47]

Difference must leave its cave and cease to be a monster; or at least only that which escapes at the propitious moment must persist as a monster, that which constitutes only a bad encounter, a bad occasion.

At this point the expression "make the difference" changes its meaning. It now refers to a selective test which must determine which differences may be inscribed within the concept in general, and how. ... The question arises, therefore, how far the difference can and must extend ... in order to remain within the limits of the concept, neither becoming lost within nor escaping beyond it.

It is obviously difficult to know whether the problem is well posed in this way: is difference really an evil in itself? Must the question have been posed in these moral terms? Must difference have been "mediated" in order to render it both livable and thinkable? Must the selection have consisted in that particular test? Must the test have been conceived in that manner and with that aim?

But we can answer these questions only once we have more precisely determined the supposed nature of the propitious moment. [48]

— Gilles Deleuze

Historically, Turing's work is contextualized by the introduction of the logic circuit. The logic circuit names a mechanism that distributes electrical charge in regular ways, each of which can be mapped as a distinct functionality. The circuit carries out the execution of one or more of these circuits as its "mechanism". From Turing's perspective, such a logic circuit can also be seen as the material presentation of a purely intellectual, mathematical set of logical expressions: a system of organized and unorganized statements. An assembled collection of statements could be sufficient to formalize a system without reference to external terms. This collection could be defined as a number-space that encodes not simply one but multiple systems of logic in material form. Any number of logical expressions could be constructed in the form of logic circuits—Turing's principle of universal simulation means that this includes any logical expression—and a logic circuit could include other logic circuits as constitutive elements.

Logic Circuit

An assembled collection of statements organized to form a material presentation

The logic circuit could be understood as an axiomatic system, consisting in nothing but the statements that define its axiomatic character, where each statement conditions the standing of the other statements. In this regard, Turing understands the "statement" produced by the logic circuit to be the trace of electrical current provoked by the circuit's activation. For Turing this meant that the operations of systems could be modeled mechanistically, with each statement forming a mechanical "part" of the system. The statements that constitute this set formulate the axiomatic system—the logic circuit—as a formal mathematical principle, which is to say: as the specific abstract machines that arrange each of its divergent and convergent possibilities.

The logic circuit is a diagram because it consists in nothing other than the interval of activation nodes in relation to one another according to a ramified time that passes through it. The imitation game extends the diagrammatic principle of the logic circuit—electrical dynamics—to social conditions. Social conditions are the context—the "state" condition—that describes the duration of attentional administration as a distribution of dynamics appropriate to the space in question. Spaces of state are spaces presenting durations of description. Whatever will be manipulated has to be maintained as available for manipulation. Similarly, whatever manipulations are to be applied have to be recorded somewhere. This frequently takes place on top of the prior conditions, which are assumed to have become the new conditions. The recording surface—the logic circuit—is arranged to produce a working diagram of the syntactical relations at stake in the mechanical action. Michael Graziano introduces this principle with the image of ventriloquism:

Figure C

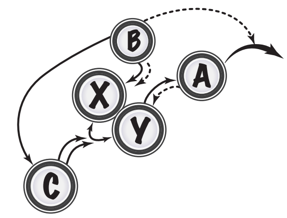


Figure C interacts with X and Y in order to return the determination of B to itself, and to isolate the deception in A.

> Attention requires control. ... If a machine such as a brain is to control something, it helps to have an internal model of that thing. Think of a military general with his model armies arrayed on a map: they provide a simple but useful representation— not always perfectly accurate, but close enough to help formulate strategy. Likewise, to control its own state of attention, the brain needs a constantly updated simulation or model of that state.[49]

The recording surface constructs an internal diagram of the activity with which it interfaces. Syntactical relations carried out by action mechanisms ensure that the diagram is kept up-to-date, performing continual modification to it as new input data is taken to arrive.

Recording Surface

The space-time constructed as the internal dynamics of the diagrammatic image, which records actions as transformations in the same internal dynamics.

The diagram can be said, quite simply, to exist in the capacity of giving measure to what it observes. Measure, in this sense, does not originate with the observed but is applied to the indeterminacy of the point in question to make it an observable. An observable is a formal expression that offers a capacity of relation to an implicit figure of observation, which gave the observable its measure. This is not to say that the imitation creates the observable, or even that the imitation creates the measure. The imitation introduces measure from an external context, which may be a context the imitation instantiates as its capacity of observation (for example, the photoreceptors in the human eye, as imitations, imply the existence of an observable, which is the expression they hold as activation-intensity at the eye surface).

The Diagram

The simulated imitation image of dynamics in question at particular points of intersection.

The Imitation

The particle formation that assumes the character of intersection in movement at a specific node.

The imitation game structures conditions of undecidability and incompleteness in order to stage potentials of transformation as a metric. The metric is responsible for producing a systematic description of a situation that otherwise escapes systematicity. Potentials of transformation take on the systematic character of the subject they formulate, which remains decidedly absent. The metric formulates a general horizon of determination between potentials for consistency and inconsistency discovered within a realm of determinate exchange. A tension is thus expressed in the formulation of the diagram: the diagram's function is to provide a "link" to a context that remains outside the diagram, and to "stand in" to to the outside context as an internal condition. The metric constructs a distinction between "internal" and "external" by diagramming potentials of systemic difference. Systems are differentiated by way of the conventions established between them; if these conventions could be adequately described, the relations could be adequately differentiated according to assumed pretenses.

Pursued in these terms, the only barrier to computability is the capacity to decide whether a particular computation will produce a meaningful transformation. This determination involves assessing aspects such as potentials for conflicting statements, potential dimensions of indeterminacy, potential falsity of assumptions, potential incompatibility of seemingly reasonable determinations, and the delineation of expectations regarding potential halting conditions. These relationships are produced through the consistency of the conventions that are applied to manipulate the state of elements in relation to one another. In this regard, it has been observed that "*there is currently no evidence that the physical universe cannot be simulated by a Turing machine.*"[50] Anything that is systematically describable can be computed, the only barrier is determining what method would be considered appropriate to express the aspect in question as a computable expression.

Chapter 1

Actuality

> Not only does birdsong have its own relationships of counterpoint but it can find these relationships in the song of other species, and it may even imitate these other as if it were a question of occupying a maximum of frequencies.
>
> **— Gilles Deleuze and Felix Guattari [51]**

A **Indeterminacy**

Dynamics of variation.

B **Determinacy**

Dynamics of substitution.

C **Inquiry**

Dynamics of internal difference.

Turing suggests that the imitation game is “closely related” to a definition of thinking, and clarifies that he understands the intimacy of this relation to be expressed in the relative ambiguity of the words “machine” and “thinking.” How exactly did Turing understand the imitation game to be “closely related” to the concern of thinking? Literature on Turing frequently maps this concern to an interactive test, generally referred to as “The Turing Test” or “the standard interpretation”. This happens so frequently that Turing’s imitation game is frequently replaced by the interactive model.

This text pursues a different line of inquiry. Ian Bogost has offered a particularly artful formulation that frames this difference in approach in a very precise manner:

> In proposing the imitation game as a stand-in for another definition of thought or intelligence, Turing … skirts the question of intelligence entirely, replacing it with the outcomes of thought.[52]

In this view, the imitation game produces a narrow range of interaction that can be examined systematically as a context for studying a potentially infinite backdrop of continuous variation. Rather than attempting to define or test intelligence, the imitation game functions to shift the focus of inquiry from a specific definition of thinking to horizons of intelligent automation.

Turing's mode of investigation approaches thinking as a retroactive concern, starting with the outcomes of thought and working backward to determine the necessary terms and the significant dynamics implicated in arriving at the ostensibly intelligent outcome. Turing repositions the modeling of inquiry to take as its own a point of departure paradoxically defined by a consideration at once futural and retrospective. Instead of asking *whether* we can compute, Turing investigates *what* can be computed. Taking as given that a transformation will have occurred, Turing investigates what dimensions might model the potential of any given transformation. This transformational potential is Turing's "computability": the capacity to formalize a point of inquiry as an expression with consistent standing in an axiomatic system capable of evaluating its standing as an expression of movement. Approaching "computability" in this manner effectively inverts mathematical understandings of validity, emphasizing the translational potential of expressions rather than the legitimacy of the given formulation.

Computability

The capacity to formalize a point of inquiry as an expression with consistent standing in an axiomatic system capable of evaluating its standing as an expression of movement.

Validity

The standing of a point of inquiry in terms of computability.

Translational Potential

The capacity to present a point of inquiry in terms of other diagrammatic potentials, aspects of distribution, conditions on incompleteness, recording surfaces, etc.

The imitation game expresses Turing's understanding of an infinitely self-referential universal simulator that operates by simultaneously distributing analytic treatments in incommensurate modes. Ian Bogost has described this concern as a general premise for Turing's engagements:

> If we had to summarize Turing's diverse work and influence, both intentional and inadvertent, we might say he is an engineer of pretenses, as much as a philosopher of them. The most obvious example of this logic can be found in the now famous Turing Test, the name later given to the imitation game Turing proposed.[53]

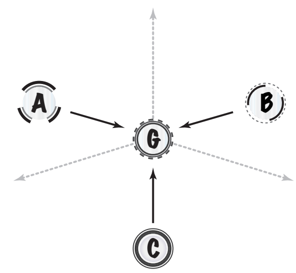
This text will endeavor to show that the circuit of informational determination, far from being at odds with the "engineering of pretenses", operates as an indispensable condition for philosophizing about the importance of pretenses *by engineering them*.

Pretenses

Base-level assumptions that must be taken as given in order to examine other premises.

The essential point for Turing is that whatever organizes the capacity for intelligent expression also organizes determinations and occasions for decision, "decision" being the name most often used to refer to catalytic action in informational domains. The imitation game can be seen, in this respect, as a relational expression of coordination involved in describing a particular scene of relational intersections. As the game becomes the machine, the capacity for imitation is made to become an agent in another phase or iteration of the imitation game. The imitation game is a consolidated intersection of Turing's thought precisely because the game is capable of imitating itself.

An n-Bodies Problem



A, B, C converge as G.

Turing produces the imitation game to formulate a mode of inquiry that could focus on constructive models. As we have already noted, Turing emphasizes that the imitation game was constructed to facilitate specific modes of engagement with the ambiguities latent in the words "machine" and "thinking". Turing's work shifts the locus of the problem, posing a question that we might paraphrase: might it be possible to delimit the sense by which intelligence resists being given a single structure? Rather than seeking to elaborate an underlying identity of intelligence, Turing stages his intervention at the level of the particular unthinkable force that both resists and informs intelligent determination. The question for Turing becomes one of outlining the interplay of thinking and the unthinkable within a scene of emerging dynamics.

Mode of Inquiry

A specific formulation of diagrammatic treatment.

Thinking

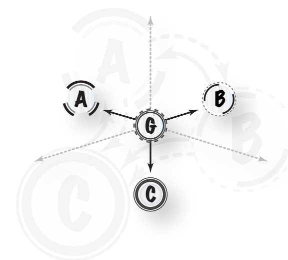
The diagrammatic treatment of the subject of inquiry.

The Unthinkable

The diagrammatic treatment of conditions of incompleteness in the diagrammatic treatment of the subject of inquiry.

The imitation game is an “n-bodies” problem of intelligence, which we might describe: given a scene of consideration involving a certain number of bodies—the variable ‘n’ describing how many bodies—how is “the scene” to be understood as a singular relation between the bodies involved? The “n-bodies” problem concerns how the dynamics formed between multiple models constructing a common space for exchange can be qualified according to a common metric. In the case of the imitation game, we might call this common capacity “social intelligence”.

Nodes of Adhesion



G names the abstract node of adhesion between A, B, C.

The machine begins thinking because it is already processing movement as a matter of determination. For this reason, the problem of thinking begins with a definition of modes of determination. The imitation game accomplishes this by functioning as what we might call a “universal pivot”: given A, B, or C, the specific conditions of elaboration consist in the intersections with the other two figures. For example, for A, we can name the specific intersections that A encounters with the incommensurate outside found in B and C. The pivot creates triadic expressions between incommensurate models, constructing axes of differentiation, integration, and substitution.

Pivot

A node of inquiry that constructs axes of differentiation, integration, and substitution at a point of intersecting dynamics in a diagram.

Turing applied this model to his description of morphogenetic domain relations, offering a description that when paired with our present inquiry—assuming we permit ourselves to refer to the scene of the imitation game as G, which defines the group—is quite striking:

> Very often certain substances appear in the individual reactions of a group, but not in the final outcome.
>
> For instance, a reaction

$$A \Rightarrow B$$

may really take the form of two steps

A + G ⇒ C and C ⇒ B + G

In such a case the substance G is described as a catalyst, and as catalyzing the reaction

A ⇒ B [54]

The substance G is the group constituted by the reaction-formation of A, B and C. G has no independent standing, but appears insofar as the multiple participates in the catalytic exchange.

Reaction-Formation

A specific formulation of diagrammatic conditions at a specific pivot point.

The Multiple

The diagrammatic conditions involved in a reaction-formation, taken in the singular.

The proposal of this text is that Turing has created an essential model for laying out the dynamics at stake in thinking without any necessity external to the diagrams that lay out thinking's algorithmic character. Emphasizing Gödel's words regarding Turing's accomplishment, the imitation game appears to outline the potential of the universal machine as "an absolute definition of an interesting epistemological notion, i.e., one not depending on the formalism chosen."[55] The dynamics that distribute "man" and "woman" are internal to the system enacted by the distribution set out as "man" and "woman". "Man" and "woman", however consistently determined, are functions of symbolic coordination between distinct presuppositions made separately by A, B, and C.

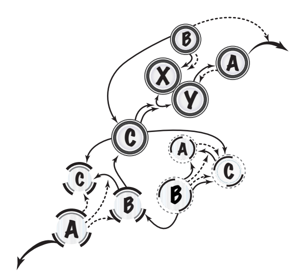
Symbolic Coordination

The mutual arrangement of presuppositions by way of distinct reaction-formations.

Turing assumes the premise that human individuals appear to be capable of playing, yet defines the game separately from defining the manner that each individual participant takes up their own role in the game. This may be an obvious point, but is nevertheless quite important. The game provides a model for interaction, but each participant also needs a model for playing the game in order to construct the terms of their own interaction, which likely differs from the specific expressions that might be given by another individual playing the game in the "same" role.

Each node in the imitation game reproduces the structure of the game in its own terms. Insofar as the universal machine enters into the imitation game, it encounters itself as a social intelligence that will be judged from "the other side", which it also occupies in order to model itself. The imitation game pivots upon itself, dividing into itself or expanding into its own iterable and iterative conditions. Turing's ultimate suggestion about "thinking" would seem to be that its apparently amorphous status consists very precisely in its own re-staging of "itself" with respect to whichever pressing problem "it" is not yet capable of resolving.

Incommensurate Modes



The imitation game formulates the incommensurate modes of intersection between three models of difference in articulation.

The imitation game functions to transform the systemic conditions of the universal machine into a constructive meta-model through which valid performances could be elaborated and executed in order to produce systems that can construct models of relatively abstract conventions. Turing accomplishes this by putting a person in the space corresponding to each mechanical aspect of the universal machine: system, syntax, statement.

System

Mλ1: Computability

> A mathematical model ... will be described.
>
> This model will be a simplification and an idealization, and consequently a falsification.
>
> It is to be hoped that the features retained for discussion are those of greatest importance in the present state of knowledge.
>
> — **Alan Turing** [56]

A **Consistency**

The interval between variations.

B **Dimension**

The intersection of degrees of freedom.

C **Direction**

The relation.

The capacity of Turing's computing machinery as agents of intelligence corresponds very precisely to the means by which concerns of intelligence can be translated into computable expressions. The problem of computability appears as the embedded condition of inquiry. The imitation game stages relations of computability by distributing differences in potential expressions between specific domain relations. Possible dynamics are consolidated by each player involved in the imitation game as specific expressions in the form of statements, and the imitation game concerns how distinct modes of systematization come into relation by way of a common space, in spite of each having very distinct roles elaborated in its definition as a formal system. This movement defines the extension of each statement into domains defined by relations with other statements in the same or related systems, moving from statements to systems that can sustain their status as statements. The imitation game explores the possibility of there being a syntax for such a common space.

Capacity

The means by which concerns of intelligence can be translated into computable expressions.

Computable Expressions

Diagrammatic treatments of symbolic coordination.

Embedded Conditions of Inquiry

Computable expressions of relations of computability that distribute differences in potential expressions between specific domain relations.

Turing begins with a simple premise that defines the position of figure A. This premise establishes the imitation game as an experimental condition. Figure A formalizes Turing's understanding of the experimental condition as the systematic, mechanical formulation of the problem at stake.

Mλ1: A Machines [57]

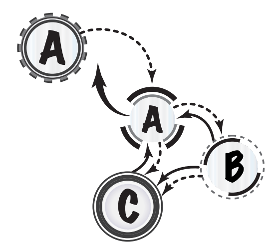
We now ask the question, "What will happen when a machine takes the part of A in this game?"

Will the interrogator decide wrongly as often when the game is played like this as he does when the game is played between a man and a woman?

A machine is constructed to take the place of A.

Investigating the potential standing of the imitation game as a study of machine intelligence requires that we examine the ambiguities at stake in Turing's descriptions. In contrast to popular summations, which suggest that these points are ambiguous barriers to situating Turing's work in the most productive manner, this paper proposes that these ambiguities are quite literally the life of the problem: the power of Turing's work, providing specific intersections of indeterminacy that diverge in manifold structural determinations that articulate formal systems.

Iteration A



A machine takes the place of A.

Perhaps the most important point where Turing introduces ambiguity can be found where Turing proposes exactly what he means by "our test", a phrase that has been utilized to construe a departure from Turing's work and to replace Turing's work with a weak heuristic for introducing prejudice and judgment. This confusion is introduced in the first section of "Computing Machinery and Intelligence", immediately following Turing's presentation of the imitation game, where Turing proposes two precise questions to frame inquiry. These questions are paired in an unusual syntax, and Turing notes that "these questions replace our original, 'Can machines think?'":

> We now ask the question, "What will happen when a machine takes the part of A in this game?"

> Will the interrogator decide wrongly as often when the game is played like this as he does when the game is played between a man and a woman?
>
> These questions replace our original, “Can machines think?”[58]

Having declared there to be a single question, Turing offers two iterations. One of these iterations is presented in quotation marks, the other is not. The first question, posed as an expression in referred speech, delimited by quotation marks, concerns how the imitation game will function with the introduction of the machine. The second question, posed without quotes, asks whether an inquirer can identify that a machine has been substituted.

In order to delimit the domain that Turing believes ripe for discussion we pose two further questions that take us back to the strange syntax of Turing’s proposal:

1. Why is Turing’s second question offered without the quotation marks that styled the first question?
2. Is there a difference between the following questions?:
    A) Will the machinic substitution undermine the game?
    B) Can the substitution of the machine be identified?

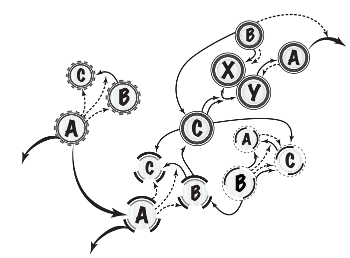
Turing’s second question—“Will the interrogator decide wrongly as often when the game is played like this as he does when the game is played between a man and a woman?”—refers the inquiry back to “the question” in order to demarcate an internal difference of “the question” that defines Turing’s interest:

> “What will happen when a machine takes the part of A in this game?”

The suggestion made by this text is that the crux of Turing’s inquiry resides at this precise point of concern, where the problem is formalized. The second question is not merely a repetition or replacement of the first, but rather produces a context for the first by staging conditions of repetition whereby the first might be qualified.

In this respect, we understand Turing to have employed the imitation game in order to analyze conditions of repetition, defined specifically as the indeterminate transformations at stake if a machine were to become capable of playing the imitation game. Turing focuses on specific transitions between iterations of the same game, at which point comparisons can be made regarding the efficacy of organizational circuits. Turing’s literal question—“our test”—concerns the potential determination of structural differences produced when the human version of the game is compared to a version that is interrupted by the inclusion of a machinic substitution. The question is not whether a human can tell the difference between a machine participant and a human participant, but

Substitution A



A machine takes the place of A in G.

how it is possible for the the mechanical conditions of the imitation game to be staged at all.

A: Consistency

> Far from being the opposite of continuity, the break or interruption conditions this continuity: it presupposes or defines what it cuts into as an ideal continuity.
>
> This is because, as we have seen, every machine is a machine of a machine. The machine produces an interruption of the flow only insofar as it is connected to another machine that supposedly produces this flow. And doubtless this second machine in turn is really an interruption or break, too. But it is such only in relationship to a third machine that ideally-that is to say, relatively-produces a continuous, infinite flux ... ("and then ... and then ... and then ... ").
>
> In a word, every machine functions as a break in the flow in relation to the machine to which it is connected, but at the same time is also a flow itself, or the production of a flow, in relation to the machine connected to it. This is the law of the production of production.
>
> That is why, at the limit point of all the transverse or transfinite connections, the partial object and the continuous flux, the interruption and the connection, fuse into one: everywhere there are breaks-flows out of which desire wells up, thereby constituting its productivity and continually grafting the process of production onto the product.
>
> — **Gilles Deleuze and Felix Guattari** [59]

At the same time that Turing was writing his initial publication on Turing machines, Alonzo Church published a response to Hilbert's decision problem. Church presented what he called "the Lambda calculus", which provided a definition for algorithmic expression comparable to what Turing would introduce with the universal machine. The Lambda calculus permitted Church to define the natural numbers without reference to any other pre-existing structure. This transformed the conditions by which the function of numbers as ordinal modes of organization could be understood. Numbers were not merely identities in systems that defined their standing, they were functions that produced specific types of intervals and modes of succession.

The Lambda Calculus

A definition for algorithmic expression defined by functions that define binding relations between variables.

The Lambda calculus is perhaps the most simple universal syntax possible. It consists in only a single possible operation, substitution. Statements, referred to as "functions", are constructed as relationships between variables. Variables are understood as specific functions of variation, meaning they have determinate potential to be translated into an explicit value. Functions are defined as expressions that accept "free" variables as parameters, which will be substituted in place of corresponding "bound" variables in the function's expression. The function's role as a statement is to express the relationship that binds the function's variables.

Functions

Expressions that define mathematical relations.

Free Variables

Individual input variables that will be substituted for positions in the expression of the function.

Bound Variables

Variables in the expression that define positions of substitution where free variables will be placed.

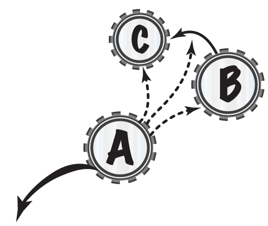
Free variables become bound variables when they are inserted into an expression, which is a process of substitution. The function initially elaborates relations that define an abstract condition, which means that functions can be described before precise expressions are known. It also means that functions can be used in multiple contexts, as the process of substitution transforms the function for whatever context is needed. This means that the question of computability concerns what substitutions are possible and justifiable, and what corresponding translations make examination of the new expression possible.

> **Context**
> A specific intersection of dynamic ranges of variation.

The simplicity and strength of the Lambda calculus can be summarized: A Lambda function is an expression that relates variations to one another by naming them as bound variables. This permits free variables to be substituted for any particular bound variable, creating a new expression by way of the substitution. The Lambda calculus can thus be understood to define variables as substitutions for functions of variation. This understanding permits abstract conditions of continuous variation to be bound together to describe a discrete intersection of relations. The Lambda calculus does not involve any other aspects. Other principles can be derived by constructing systems that formulate each principle as one or more expressions, but such a task takes place through the grouping of statements constructed as Lambda functions.

The Lambda calculus and Turing's machines both show that computation concerns the conditions by which expressions bind the continuity of variation. From Turing's perspective, we can suggest that Church's Lambda calculus is what Turing calls an "abstract machine": an abstract recording surface, capable of producing networks of syntactical action mechanisms—syntax—in order to potentiate variation through recursive transformations. This means that computability is a problem of possibilities of translation, not of a given expression or of a matter of fact. In this regard, the Lambda calculus can not only define expressions it does not not how to compute, it can also perform operations on incomputable expressions where it does not know what performing the operations would mean. This is because it can manipulate variables and permit them to be substituted later. Accordingly, it can produce relationships which permit retroactive determination of the significance of the transformation that produced the relationship.

Machine A



Machine A formulates its deception by way of its own replications of machines A and C.

Retroactive Determination

A determination of context that implicates formulations of diagrammatic conditions such that a different determination implies a distinct line of determination.

Line of Determination

A sequence of determinations, each dependent on the prior. A line of time.

Turing proposes the imitation game as a structure that examines itself in order to create conditions of consistency, and the imitation game constructs a method for organizing inquiry in two modes that converge on the indeterminacy figured as A:

B) The relational dynamics at stake in structure of the game.

C) The convergence of the figures as the imitation game itself.

Expression is modeled by systems assigned responsibility for consolidating determinations. Every system models expression according to the requirements of its own particular syntactical domains. The intelligence of the machine that takes the place of A consists not only in the deception by which it defines its own role, but also in the reference by which the metric, B, locates the position of A as a computable potential. This machine has to model the relation that a human figure A would have to the role A, but also the relation that a human figure B would have to the role B, which is defined as the identification of A's indeterminacy.

The role of figure A—the character of deception—reflects Turing's encounter with the problem of intelligence as a confrontation with a subject that has not yet been delimited, engaging the idea that if intelligence cannot be clearly outlined then a program that would reproduce its delimitations could not be feasible. Figure A defines the potential for orientation, which is expressed as the actual disorientation that produces movement in the game. “State” is an intermediate measure of this movement, which means that the determinacy of its position is found in the character of its inertial momentum. Iterations of mechanical action manipulate state, performing regular operations on it in order to produce temporal differences corresponding to each stage of the formal process.

State

An intermediate measure of movement.

The iterability of the program depends upon the recording of intermediate state. Gualtiero Piccinini’s emphasis on this point should be underlined: “The program is not just a description. The program is also a (stable state of a) physical component of the computer, whose function is to generate the relevant capacity of the computer.”[60] Subsequent steps can be performed because execution of the action mechanisms corresponding to the input data can rely on the specifics diagrammed in the space modeling this intermediate state. The task of state is to record the tendency of movement by way of a syntactical point of intervention. The task of syntax is to make the measure of discrete position correlate with the implicit continuity of momentum. At each point, the data in question can be considered to be in a specific state, which is why the name "discrete-state machines" applies.

Action Mechanisms

Transformations on the recording surface implying transitions in state.

Discrete State Machine

A machine that utilizes actions on a recording surface in order to retain transformations in state that imply a stable sense of continuity.

Treating the imitation game as an organizational structure permits disparate views in the literature to be reconciled. For example, James Moor has suggested that, "Turing himself offers many versions of the imitation game [and] ... shows his willingness to modify details of the imitation game to suit his purposes."[61] At the same time, Saul Traiger has claimed in contrast, "Turing refers to one and the same Imitation Game throughout. He never suggests that there are other games he wants to consider."[62] When the imitation game is seen as a meta-model, these claims are not in contrast. Since the purpose of the imitation game would concern the dynamic potential of variation, the singularity of the test could be seen to consist in its transformations. The stages form the intuitive steps produced in the operation of expression, moving from one modality of treatment to another, as in the sequence of a formal proof.

B: Dimension

A state of affairs cannot be separated from the potential through which it takes effect and without which it would have no activity or development (for example, catalysis).

It is through this potential that it can confront accidents, adjunctions, ablations, or even projections, as we see in geometrical figures: either losing and gaining variables, extending singularities up to the neighborhood of new ones, or following bifurcations that transform it, or through a phase space whose number of dimensions increases with supplementary variables, or, above all, individuating bodies in the field that it forms with the potential.

None of these operations come about all by themselves; they all constitute "problems."

It is the privilege of the living being to reproduce from within the associated potential in which it actualizes its state and individualizes its body. But an essential moment in every domain is the passage from a state of affairs to the body through the intermediary of a potential or power or, rather, the division of individuated bodies within the subsisting state of affairs.

— **Gilles Deleuze and Felix Guattari** [63]

The Lambda Calculus enables the introduction of axiomatics before the completeness they would ostensibly require has been achieved. Formal expressions start from fragments and build axiomatic relations in order to construct consistent systems. Binding variation replaces the search for completeness. Such systems are inherently open, in that they can be made to address any other condition. This openness is both their incompleteness and their potential as formal systems. This means that they can only be considered as formal systems insofar as they formalize their own conditions of expression, and not in terms of a complete context wherein they would be grounded as systems beforehand.

Turing's imitation game is an implementation of the Lambda calculus:

A) The nexus of bound variables.

B) The set of expressions describing how the variables are bound.

C) The function, which binds values to variables in an expression.

G) The game as a domain of simultaneity.

These principles provide everything needed to derive the natural numbers, which provide the basic functions of organization such as order and distribution, and which form the foundational number space we might call the “unit” number space.

A number-space is a distribution of variation within an “open” context, meaning that its delimitation does not contain any of its limit points. The limit points are defined as functions of distribution, which address the number-space by sub-dividing its contextual variation. Variation can thereby be defined as a function of distribution that takes place as the spacing of delimitation. The divisibility of variation formulates liminal anchors, which take on a role of identifying the structures that they actively distribute. These anchors are what we call “numbers”.

Number-Space

A distribution of variation within an “open” context, meaning that its delimitation does not contain any of its limit points.

Variation

A function of distribution that takes place as the spacing of delimitation.

A number is an “ordinal”, anchoring variation by differentiating one context of action in the number space from a second distinct context in the same number space. An ordinal system arranges multiple ordinal anchors in an accumulating succession, which produces an ordinal notation: "a finite sequence of symbols from a finite alphabet which names an ordinal number according to some scheme which gives meaning to the language."[64]

"Ordinal" describes the relation between liminal anchors in terms of movements of directional continuity, where relative differences can be compared in terms of contextual magnitudes internal to variations in the number space. Variation distributes divisibility, which numbers the delimitation of spacing. This means that a number can be treated as an identity that expresses the specific character that it anchors, but more importantly, and in contrast, it means that the number is an action mechanism that distributes the space it addresses. The possibility of an abstract definition of ordinal orientations meant that orientation could now be distributed along any number of ordinal organizations, each of which do not necessarily have to be reconciled with the others.

Figure B

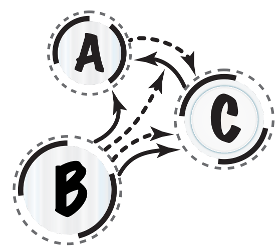


Figure B formulates its systematicity by way of its own image of figures A and C, and of the relation between A and C.

Number

An action mechanism that distributes the space it addresses.

The rest of this section will proceed to demonstrate the functioning of the imitation game as a number-space constructor. The reader who feels less than mathematically inclined is invited to skim the rest of this section, treating the mathematical details as less than essential to the argument of the text. This is perfectly acceptable, as the mathematical notation is in no way essential to the general argument of the text. On the other hand, the mathematical demonstration plays an important part in relation to Turing's work, connecting the imitation game to the Lambda calculus.

Lambda Function
λ [free variables] . [binding expression]

Lambda Expression
Any mathematical expression that involves the free variables.

Application of Lambda Function
λ [free variables] . [binding expression] ([parameters])

The imitation game takes on the function of the Lambda calculus in order to arrange a distinction between "ordinal" and "cardinal" anchors. Ordinal anchors arrange dimensions of accumulation, while cardinal anchors arrange dimensions of distinction and difference between ordinal arrangements. In this manner, ordinal anchors arrange the internal difference of a system of articulation, while cardinal anchors arrange external differences from other systems of articulation. The entirety of these arrangements of variation are coordinated by the natural numbers, which are the Lambda calculus.

Implies

[left side implies] → [right side]

Assign

[left side refers to] := [right side]

The natural numbers form the number space that delimits variation, permitting other number spaces to be elaborated as functions of delimitation rather than as functions of variation. In other words, the natural numbers permit mathematical treatments to function as syntax. This is accomplished with concern for a range of variation within a particular number-space. Constructing a system of natural numbers begins by defining its basic unit of divisibility: the number 1. We can call this function “A”, and its range of variation “B”:

```
1 := λAB.A(B)
```

1 is an ordinal variation A that is a function of an ordinal distribution B. Before the sequence of ordinal distribution is constructed, the number 1 has no orientation, only an abstract definition. Defining the sequence—the ordinal distribution B and subsequent ordinals—requires that the magnitude of variation be defined. The magnitude of variation will space the interval that constructs the sequence in question. The number 1 could then be understood as the starting function of the variation being examined—in this case the natural numbers—but the “starting place” is no place at all until the sequence has been defined.

Natural Numbers

The counting numbers, usually starting from 1: the number-space that delimits variation and permit mathematical treatment to function as syntax.

1

The starting function of the variation in question.

The system is constructed by defining a successor function, which we refer to as "Σ_A". This will be the "abstract" successor, which can be used to define intervals of any size. Defining the successor in this manner makes a definition possible without knowing the specifics of the sequence, which we are still in the process of defining.

Abstract Successor Function

The function that constructs successive variation in the number-space.

The abstract successor can be defined as an ordinal condition "G". G is a function of iterability, which can be presented as a variable "C". For ordinal terms defined by a specific G, the function of iterability C will produce the sequential character of the particular system's expression.

$$\Sigma_A := \lambda G C . G(C)$$

This permits a relationship to be stated that will be defined by manipulating possible expressions for each variable: the abstract successor function Σ_A.

Σ_A is the function of transition G in the context of iteration C.

The next step is to give the abstract successor S_A a specific interval in order to construct the successor with an interval of 1—the unit successor—which we can similarly refer to as "S_1".

Unit Successor

The function that defines the unit interval in the number-space, which differentiates .

Recall the definition that we arrived at for 1:

```
1 → λAB.A(B)
```

It is worth noting that our abstract successor function S_A has the same syntax as the number 1:

```
SA → λGC.G(C)
```

This is not because they are equivalent functions, but because the relation being defined is a unit relation, which is the binding of a variable as a function of another variable.

The variable function describing the specific interval of transition—iterability—has been named C.

A successor function with an interval defined by the action mechanism "1" can be defined by substituting the Lambda function that describes its numbering—1—for the variable C in S_A.

```
S1 := SA( C := 1 )
```

Applying the substitution to the abstract successor—using the expression that defines the action mechanism 1 rather than the symbol "1"—produces the resulting Lambda statement:

```
S1 → λGC.⟦ G(C) ⟧( C := { λAB.A(B) } )
```

This expression can be reduced by adding the new bound variables from the expression named "1", replacing the appearance of C in the expression S_1:

```
S1 → λGAB.⟦ G( A(B) ) ⟧
```

Now that there is no confusion, the brackets delimiting the expression can be removed:

```
S1 → λGAB.G( A(B) )
```

We now have our successor function S_1, which defines a successive interval of 1.

The unit successor is a function of distribution G of specific variation A of sequence B. Function G distributes the number space that retains ordinal semantics between A and B, which it accomplished by way of C. Insofar as G ensures the distribution, C disappears into the functioning of G's coordination.

The successor function S_1 is a function that will produce a distance with an interval defined by the number 1, which is itself a function that consists in variable expression.

The number 1 is equivalent to writing:

```
1 → λAB•A(B)
```

This means that the number 1 defines the basic unit of the system of natural numbers, but is not itself determined in any fashion. Many distinct units of the size numbered by 1 can potentially be created. These units would be comparable in the structure of their functional variation, but not equivalent as definitions of a number. This can be seen in particular with the definition of the abstract successor function S_A, which we noted had the same structuring expression that defined the number 1, only with different named variables. The difference in variables defines the difference in units, even as both types of units can be considered to be "numbered" by the number 1. In this sense, S_A is the interval unit function. This means that a number's ordinal character can be understood to be defined as an expression that binds variables in terms of a discrete interval.

The equation for S_1 could also be written:

```
S₁ → λGAB•G( 1 )
```

Or in its most simplified form:

```
S₁ → λG•G( 1 )
```

At this point several functions have been defined, each presented as a variable that can be named individually:

A) The specific variation in question.

B) The number-space, which orients the specific variation.

C) The magnitude of the interval being used to space the distance defining the internal difference of the number-space.

G) The internal difference of the number-space, between specific variations. This difference is the relation established by the interval, which spaces the number-space.

The successor function for the sequence of natural numbers, "S_N", can now be constructed by using the Lambda function S_1. S_N is the number that, expressed as a function, names the interval of the distance of transition for the specific variation A, which defines the start of the interval, by way of the metric function B, which defines the internal distribution of the number-space.

Natural Successor

The function that names the interval of the distance of transition for the specific variation A, which defines the start of the interval, by way of the metric function B, which defines the internal distribution of the number-space.

The variation produced by the successor function S_1 is defined as a difference or distance from the function that defines the expression numbered 1:

```
SN := 1( B := S1 )
```

The successor for a specific number-space is defined by applying the successor to the unit. In terms of the natural numbers, this unit is the number 1. The number 1 numbers the interval that defines the natural numbers. The natural numbers are the numbers numbered by the number 1. The number 1 can be seen to act as a function, performing a unit action on another interval function.

The critical point is that the "unit"—the number 1—is not a scalar value, meaning that the "1" does not simply disappear when set aside another expression. Instead, the symbol "1" is a function presenting specific action mechanisms regarding particular formations of variation as a unit context.[65] The unit is a mathematical event, which defines a condition of variation in an open space of distribution. While the symbol 1 will effectively disappear as we create the unit successor, this happens only as a function of the unit successor's unit being fixed at the metric defined by the intersecting functions. This permits numbers other than 1—functions other than the individual unit function—to be substituted in place of the unit.

Expanding the number 1 to its expression reveals our expanded lambda function, which can be simplified:

```
SN → λAB•⟦ A(B) ⟧( B := { λGAB•G( A(B) ) } )
```

Next, the succession function S_1 can be substituted for the variable B, which it is assigned to, and the Lambda expression for the number 1 can be merged with the Lambda expression for A, which contains it:

```
SN → λGAB•A( G( A(B) ) )
```

This produces the successor function for the natural numbers, S_N.

This permits us to derive the sequence of the natural numbers, which can be demonstrated by defining the number 2:

```
2 := SN( G := 1 )
```

The complete Lambda function expression for the number 2 is defined by the natural successor function S_N, when the interval of succession G is defined by the relation named 1:

```
2 → λGAB.⟦ A( G( A(B) ) ) ⟧( G := 1 )
```

Since the number 1 is presently defined in terms of A and B and the lambda function already includes bound variables named A and B, we will rename the A and B in the function 1:

```
1 → λAB.A(B)

λAB.⟦ A(B) ⟧( A := a, B := b ) → λab.a(b)
```

This is not necessary, but it will help clarify the process of reduction. By renaming the expression in this manner we have declared that in the context of our expression, A and a are equivalent and B and b are equivalent. Since there are otherwise only four total variables in this small system, this step is superfluous. However, substituting a variable for itself is likely to produce confusion, so using distinct names should help clarify the process.

2

The initial successor of the variation in question.

The equivalent function can now be used to reduce the expression for 2. First, the expression for the number 1 is substituted as the G value, which is defined as the function of internal difference in the number-space:

```
2 → λGAB.⟦ A( G( A(B) ) ) ⟧( G := { λab.a(b) } )
```

The substitution permits a further reduction of already-existing parameter A(B), which belongs to the expression a(b):

```
2 → λABab.A( ⟦ a(b) ⟧( a := A(B) ) )
```

Substituting the parameter A(B) permits the next parameter, b, to be reduced:

```
2 → λABb.A( ⟦ A(B) ⟧( B := b ) )
```

A simplified expression of A remains:

```
2 → λAb.A( A(b) )
```

The final step is a substitution of a single variable B for b; b was defined above as B, so the step is simple:

```
2 → λAb.⟦ A( A(b) ) ⟧( b := B )
```

This produces our expression for the number 2:

```
2 → λAB.A( A(B) )
```

It is important to note that a distance between 1 and 2 has not been defined. What has been defined is an expression that will produce the actual distance for a particular function of distribution numbered by the functions we have named “1” and “2”.

The number 2 is defined as the recursive execution of the number 1. The first iteration produces the number 1, and 2 can be described as the recursive application of the function A, applied to the expression produced by applying the same function A to the specific variation B.

The second iteration produces an interval of a magnitude defined by the number 1, thereby defining a function that expresses this interval as a repetition of the mechanism “1”.

C: Direction

We pass here from mixture to interaction. And finally, the interactions of bodies condition a sensibility, a proto-perceptibility and a proto-affectivity that are already expressed in the partial observers attached to the state of affairs, although they complete their actualization only in the living being.

What is called “perception” is no longer a state of affairs but a state of the body as induced by body, and “affection” is the passage of this state to another state as increase or decrease of potential.power through the action of other bodies.

Nothing is passive, but everything is interaction, even gravity.

This was the definition Spinoza gave of *“affectio”* and *“affectus”* for bodies grasped within a state of affairs, and that Whitehead rediscovered when he made each thing a “prehension” of other things and the passage from one prehension to another a positive or negative “feeling”. Interaction becomes communication.

The (”public”) matter of fact was the mixture of data actualized by the world in its previous state, while bodies are new actualizations whose “private” states restore matters of fact for new bodies.

Even when they are nonliving, or rather inorganic, things have a lived experience because they are perceptions and affections.

— **Gilles Deleuze and Felix Guattari** [66]

Turing has defined the imitation game such that each role depends on the other roles, even as none of the roles define their own orientations in the same manner. Each figure in the game has a model for every role in the game, but each figure does not model each role in a corresponding manner. The imitation game poses the problem of constructing a dynamic correlation between sequences of instructions and their integration within a single context of expression. The context of distribution—the arrival of expression—is exceeded by the referential activity performed in the coordination of activity as the game-diagram. The figure A, in order to escape identification by C, has to have a model of both C and also B, who would assist C. Similarly, B and C must also have models of the other figures.

The remaining task concerns how to construct the correspondence between complex instructions and intelligent behavior. James Moor has observed this to be an important aspect of Turing's imitation game:

> I believe that another human being thinks because his ability to think is part of a theory I have to explain his actions. ... On the basis of his behavior I can confirm, disconfirm, and modify my theory. ... there is no reason why knowledge of computer thinking can not arise in the same way.[67]

The iterability of machine intelligence in the imitation game becomes the condition of an abstract formalism capable of describing relational dynamics. The relations at stake in the imitation game concern the reflexive identification of each role playing the game.

Sequences of Instructions

Correlated lines of expression carried out by action mechanisms as transformations on the recording surface.

Context of Distribution

The internal consistency of the node that defines the domain.

The imitation game comes to function as an abstract instance of the general problem of intelligence and social determination: figure C establishes and orients a presupposed difference between figure A and figure B. A becomes the possibility of poorly-formed statements. B becomes the possibility of well-formed statements. C becomes responsible for differentiating which statements are well-formed and which are poorly-formed. A encircles the diagram with its iterability, B converges systematicity with its iterability, C sequences itself as iterability. C ought to be an oracle, capable of validating A versus B, but there is no guarantee for this orientation. B ought to be the systematicity of C's oracular potential, but there is no way to know ahead of time whether X or Y corresponds to B— which leaves C split from its own oracular potential.

Figure C

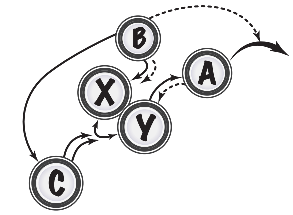


Figure C formulates its systematicity by way of its own image of machines A and B, which it relates to as X and Y.

The "well-formed" character of statements made in the imitation game concerns a tension between precision and elasticity. Precision requires minimizing the difference between whatever model the author might have deployed to produce the statement and the model of the statement's reception. Elasticity requires maximizing the potential of the statement without regard for the author. Receiving a statement as "well-formed" requires that the statement can be modeled. Modeling a statement means producing its double: identifying points of enunciation and individual statements within enunciation as technical productions of local systems. The position of Player C in the imitation game formalizes the self-inscription of Turing's own position—the position of the "computer",[68] diagramming the conditions of computation—into the formalization of the diagram. The artifice found in figure A is determined by the structure modeled as figure B, oriented by the syntactical networks available in figure C. Arrangements of the phase shift between specific discrete formulations permit one machine to come into synchronized expression and relation with another. Exposing an undecidable problem to another system in this manner may offer a similarly undecidable expression, or may simply transform the problem into a different problem that is also undecidable. While this does not offer any assurance of a capacity by which an incomputable problem could be transformed into a computable problem, it does offer means to assess the specific conditions of non-computability.

Syntax

Mλ2: Computation

> Here the two partners are not playing against each other; rather, by way of a game that separates them and brings them still closer, each plays for the other.
>
> And if, in this case, speech is the dice that are tossed out and fall again by a double movement in the course of which is accomplished the redoubling of affirmation we have evoked, the dialogue will entail only two players playing a single time by a single throw of the dice, and with no gain other than the very possibility of playing; a possibility that does not depend on our capacity to attain anything when what is brought into play, through speech, is the unlimited in thought.
>
> **— Maurice Blanchot** [69]

A **Reference**

Directional context.

B **Action**

Transformation of conditions.

C **Intelligibility**

Domains of reference and action.

Turing's second iteration of the imitation game concerns the formulation of determination as a movement from indeterminacy to a structural model. This model begins by repeating the initial iteration of the imitation game, transforming the model of indeterminacy into a model of determinacy, privileging specific potentials over others. The structural model would describe the entrance of a machine taking the place of B into the position of B, and would reflect the standing of the game both before and after the machine's assumption of its role. Defining the machine that will take B's place requires the machine that has taken A's place. This is because the machine taking A's place provides a model of the dynamics of indeterminacy and the range of potentiality at stake in the structural model.

Mλ2: B Machines [70]

Given the table corresponding to a discrete-state machine it is possible to predict what it will do. There is no reason why this calculation should not be carried out by means of a digital computer. Provided it could be carried out sufficiently quickly the digital computer could mimic the behavior of any discrete-state machine.

The imitation game could then be played with the machine in question (as B) and the mimicking digital computer (as A) and the interrogator would be unable to distinguish them.

Of course the digital computer must have an adequate storage capacity as well as working sufficiently fast. Moreover, it must be programmed afresh for each new machine which it is desired to mimic. This special property of digital computers, that they can mimic any discrete-state machine, is described by saying that they are universal machines.

The existence of machines with this property has the important consequence that, considerations of speed apart, it is unnecessary to design various new machines to do various computing processes. They can all be done with one digital computer, suitably programmed for each case.

It will be seen that as a consequence of this all digital computers are in a sense equivalent.

A digital computer produces a machine to take the place of A, and a machine is constructed to take the place of B.

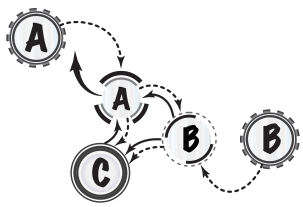
Turing introduces figure B as a tensor that formalizes a dynamic mapping of movement, constructing a syntax that can be applied to indeterminacy as a metric:

A) Figure A forms as the consolidated image of this metric.

C) Figure C becomes oriented by aspects of the consolidated image that resist orientation by this metric.

Figure B formulates the focal functions that modulate the particular treatments of indeterminacy, balancing structural conditions of determination with unknown potentials in order to produce an activation metric. The activation metric is the computable determination that can be situated in an applied context to produce a heuristic—a lens—that will bring indeterminacy into focus. B narrows the range of indeterminacy along specific lines of determination by formulating modes of inquiry that have their own appropriate metrics of comparison. B offers a principle of comparison as a metric differential, constructing systems of difference that map spaces of convergence and divergence.

Iteration B



Machine A takes the place of figure A, machine B takes the place of figure B.

These conventions—Players A, B, and C—are what Turing calls "computable numbers", and the metric—Player B—formulates systems of their computability. Functional relays coordinate dynamics between multiple modes of focal analysis and modulate the same dynamics to produce syntactical arrangements that reflect the stakes of the problem. Relation B—A defines the position of inquiry as a structural indeterminacy, and relation B—C defines the position of indeterminacy as the structure of inquiry.

Dynamics of Indeterminacy

The range of possibility of dynamics in question.

Range of Potentiality

The range of possible transformations of dynamics in question.

Metric Differential

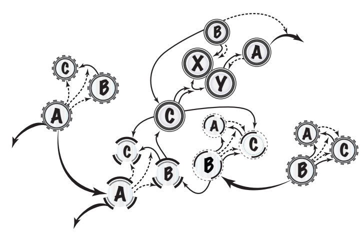
A systematic method of determining transitional difference.

Structural Conditions of Possibility

Systematic terms necessary to the inquiry that therefore cannot be altered as diagrammatic premises.

Systems of computability function as chains of expression that arrange successive potentials. This permits functional relays to be established that regularize potentials of exchange in order to refine the structural conditions of possibility. Expressions distribute and modulate modes of distribution or modulation in the formation of systemic potentials by amplifying and attenuating selective signals, which are nothing other than potentialities prior to their determination as potentials.

Substitution B



Machine A takes the place of figure A in G, machine B takes the place of figure B in G.

A: Reference

Thinking here implies ... a projection on a surface that establishes ... levels as so many values of one and the same transcendence. That is why the figure has a reference, one that is plurivocal and circular by nature.

Certainly, it is not defined by an external resemblance, which remains prohibited, but by an internal tension that relates it to the transcendent on the plane of ... thought. In short, the figure is essentially paradigmatic, projective, hierarchical, and referential.

— **Gilles Deleuze and Felix Guattari** [71]

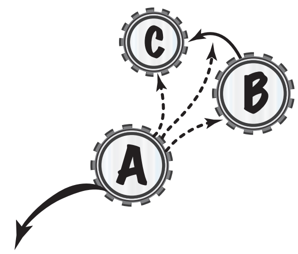
Turing introduces identification in such a way that the necessity of its "sexual" standing lacks clear standing, making sexual identity absolutely arbitrary but refusing to do away with its presence. Assumptions are introduced regarding identification in order to investigate how the arbitrary presence of assumed sexual identities materializes systematic coordinates. Turing defines the imitation game in terms of what would appear to be an arbitrarily-named figure of truth—"woman"—and a second figure that will be defined as a deceptive imitation of the first ("man"). The interrogator's task is to discern which is the imitation, and how the imitation differs from its reference. The imitation has to simultaneously present itself as "without reference" and also thereby stand-in for the referent. The imitation is defined precisely by this internal difference, which is between the internal consistency of its construction and the external consistency of its presentation.

Systemic Coordinates

A diagram of a convention.

The terms "man" and "woman" are undecidable because they are simultaneously deployed by multiple, irreconcilable functional registers. The work that the terms are carrying out changes from one functional register to the other. The possibility of the game is found in the potential of C, which includes both "man" and "woman"; the imitation game can produce successful translations of specific positions of relation insofar as the interrogator has the capacity to establish a reflexive position by way of either "a man" or "a woman". Translation concerns the conditions by which the interrogator C—"either a man or a woman"—can coordinate stable determination of the difference between A and B. Prior to this determination, C can only be considered the model of the intersection of divergent considerations: "either a man or woman", without clear determination.

Machine A



Machine A formulates the systematicity of A and B as machines of its own.

Turing defines the imitation game as a syntactical problem of X versus Y, which ostensibly concerns the definition of "woman" and an apparent byproduct that would be the definition of "man". Simultaneously, the ostensible reference for the deceptive imitation is itself defined exclusively by the endeavor to distinguish itself from the imitation. The imitation would refer to what ought to be imitated, and the imitation is produced in counter-distinction to the reference it takes itself to imitate. But the game has no necessary relation to defining man or woman, in spite of systematizing potentials for defining the terms as incidental byproducts of the relational determinations at stake.

The imitation game denaturalizes “man” and “woman” by turning them into roles that we might call “deception” and “reference”. But another determination is quietly inserted by the specific manner in which the figures of “man” and “woman” are re-naturalized through the imitation game. “Man” and “woman” render determinations of structural relations that have nothing to do with sex or gender. The game itself determines how “man” and “woman” will be understood — but only for the context of the game, which cannot be extended beyond the specific relations of expression found in the particular instance of the game, and only for the purpose of filtering out noise produced by interruptions of determination.

Noise
Dynamics that interrupt diagrammatic treatment of the dynamics in question.

A common complaint about the arbitrary terms by which Turing’s test is introduced becomes instead an argument for the test’s power. As the identification of gender was initially defined by the displacement of sex onto the symbolic roles of deception or reference, the choice to orient the scene by identifying with deception or by identifying with reference produces a reflexive anchoring of the interrogator’s own orientation by way of the same scene: a preference for the deceptive character of indeterminacy or a preference for the systematic character of reference. The axis of determination has introduced an interrupting force to the subject of inquiry that will move the inquiry through its subject and enable it to realize its reflexive circuit. A is not playing the role of man, but rather of interrupting woman. Similarly, B is not playing the role of woman, but rather of systematizing the interruption performed by “man”. The imitation game expresses “man” only by the indeterminacy of a definitive model, and expresses “woman” only by the attempt to model the specific indeterminacy that “man” might be.

Axis of Determination

Dynamics utilized as primary modes of organization in the diagrammatic treatment of other dynamics.

Interrupting Force

A dynamic that introduces noise.

Not only has the imitation game not asked anyone to impersonate anything, it has transformed the problem of personhood into a logic circuit that stages the positioning and displacement of reference. In this sense, it in no way concerns fooling an interrogator, but is instead about the interrogator's relationship to indeterminacy, intersected with a mode of organization that can produce a coordinate system to condition the particular determination as a range of indeterminacy. Turing is presenting a mathematical argument for the manner by which sexual identity comes to arise through sociality, which consists in orchestrated displacements of the power of determination. These orchestrated displacements constitute what we could call “intelligence” as irreducibly social. This means we are no longer describing social intelligence as conformity to social expectations but rather as the constitution of social coordinates, which are being ceaselessly remade.

A: Reference

Even if we take “woman” to be defined in the imitation game as a name for the figure of truth, how is “truth” to be understood? It seems clear that “truth” does not refer back to “woman”, such that the role of “woman” in the imitation game would be to profess some substantial kernel of “her” being. To the contrary, Turing seems to understand the role of “truth” as playing assistant to the interrogator. In this role, “truth” appears to concern the ferreting-out of deception behind the scenes. “She” would be the interrogator’s resolution, waiting to be found such that the interrogator can stabilize the position of inquiry. If this is the case, however, what happens to imitation? The figure of “man”—the deception, A—must be imitating the displacement of the imitation game, which is found in the difference between the interrogator, C, and “woman”, figure B. But the interrogator arrives at this position neither by way of the imitation—the deception performed by “man”—nor by any essential kernel of truth offered by “woman”.

“Man” and “woman” appear as the absent structuring principle of the social, which is no less functional for its absence. Turing has made the definition of man depend on man’s pretending to be a woman. A very literal sense of entanglement is at stake here, found in the relative difference internal to the overlap between multiple specific potentials for determinacy. The interrogator arrives at the position whereby a given deception—that of “man”—is unveiled through the assistance of a “truth” that has no necessary bearing on the interrogation, but whose standing permitted the false standing of deception to be isolated from the terms of the inquiry. So far as the interrogator is concerned, the referential basis for “truth” in the imitation game is not found in either A or B, but in C’s relation to its double: C`.

B: Action

Conscience, however, suffers from the following ambiguity:

> it can be conceived only by supposing the moral law to be external, superior and indifferent to the natural law; but the application of the moral law can be conceived only by restoring to conscience itself the image and the model of the law of nature.

As a result, the moral law, far from giving us true repetition, still leaves us in generality.

This time, the generality is not that of nature but that of habit as a second nature. It is useless to point to the existence of immoral or bad habits: it is the form of habit—or, as Bergson used to say, the habit of acquiring habits (the whole of obligation)—which is essentially moral or has the form of the good.

Furthermore, in this whole or generality of habit we again find the two major orders:

- that of resemblance, in the variable conformity of the elements of action with a given model in so far as the habit has not been acquired ...
- that of equivalence, with the equality of the elements of action in different situations once the habit has been acquired.

As a result, habit never gives rise to true repetition: sometimes the action changes and is perfected while the intention remains constant; sometimes the action remains the same in different contexts and with different intentions.

There again, if repetition is possible, it would appear only between or beneath the two generalities of perfection and integration, testifying to the presence of a quite different power, at the risk of overturning these two generalities.

— **Gilles Deleuze** [72]

The imitation game shows how the difference between operators and operations concerns the non-reciprocal reversibility of image and action. Operators are actions, and operations are images of actions; every action is a condition of its image, which produces it as a transformation on the recording surface, which is what it is as an action. The distinction between operator and operation is found in the syntactical position the difference occupies. Dimensions of indeterminacy replace domains of undecidability, but rather than doing away with undecidability, indeterminacy re-situates it as a point of departure. This allows for undecidability to be assessed according to its manifold potential for variation. The role of figure B in the imitation game is to consolidate a problem of convention— namely that convention, to be considered intelligently, requires a model. A model is how a system produces a statement. A model makes an open field of potentials converge in and through the decidability of determinations informing potentials of coherence or consistency.

Non-Reciprocal Reversibility

Each becomes the other, but simultaneously and such that the one becoming the other and the other becoming the one implicate one another separately.

Images of Action

Diagrams of transformations on a recording surface.

Dimensions of Indeterminacy

Ranges of possibility defined as an intersection of specific dynamics of indeterminacy.

Domains of Undecidability

Contexts of consideration potentially involved in the determination of open (blank) spaces in the diagram.

The inquiry is thus brought to engage potential transformations in syntaxes of treatment, the formulations of which can be refined insofar as the inquiry discovers further resistance to available formulations of decidability. Indeterminacy presents potentials of decidability without naturalizing the potentials as decided aspects that might be taken as given. Insofar as a treatment of undecidability is being considered, the conditions contextualizing the treatment are presupposed as computable. However, insofar as the treatment concerns decidability, the assumption is that modes of approach are not presently adequate to a computable treatment. Action mechanisms translate conditions of computability in order to open alternative analytic spaces, which are number spaces.

Potentials of Decidability

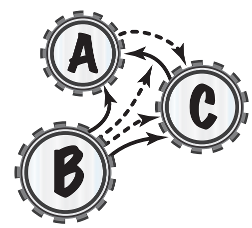
Images of action involved in pursuing modes of decidability regarding particular domains of undecidability.

The input system is responsible for modeling these variations. Producing a model can be as simple as performing a function for an identifier, or as complex as an interactive ecology of machines, each operating on environmental information that will be manipulated and transformed according to systems of expectation. For Luciano Floridi, this is the point that connects syntax to expression:

> An agent can be thought of ... as a transition system (i.e. a system of states and transitions between them) that is interactive (i.e. responds to stimulus by change of state), autonomous (i.e. is able to change state without stimulus) and adaptable (i.e. is able to change the transition rules by which it changes state). However, each of those properties, and hence the definition of agenthood, makes sense only at a prescribed Level of Abstraction.[73]

Data input from the outside interrupts the present state of action mechanisms. Input mechanisms produce measure for input, which is expressed as action mechanisms. The relation between input and output mechanisms is the recorded transformation of state. The interruption performed by input mechanisms is primary to the definition of these articulations, and has no measure beyond the requirements demarcated by “input processing”.

Machine B



Machine B formulates the systematicity of A and C as machines of its own.

Translation mechanisms situate input data according to appropriate action mechanisms, which effect a transformation in the recorded state of the present action. Action mechanisms record the mechanical action they perform. The action that action mechanisms perform is defined by the transformation they perform on recorded state. The standing of input data is established by the translation that attributes it an action mechanism to record it. At the most basic level, Turing defines these actions mechanisms by way of the role each player assumes in the game. As game dynamics evolve, so does the potential complexity of available action mechanisms. The internal partitioning of the imitation game as a diagram is carried out by each participating role. A’s dynamic indeterminacy is conditioned by B’s metric, which facilitates C’s capacity for iterative treatment. Between A, B, and C, the task concerns modes of organization for logic: computable numbers, which carry out the simultaneous activity of transformations on a common recording surface.

Internal Partitioning

Divisions of activity on the recording surface according to distinctions in images of action.

C: Intelligibility

That the machine is digital however has more subtle significance. It means firstly that numbers are represented by sequences of digits which can be as long as one wishes.

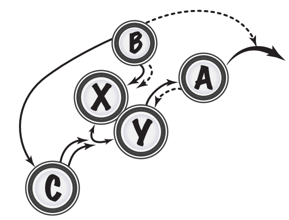
One can therefore work to any desired degree of accuracy.

This accuracy is not obtained by more careful machining of parts, control of temperature variations, and such means, but by a slight increase in the amount of equipment in the machine.

— **Alan Turing** [74]

Turing's imitation game assumes only that dimensions of determination exist and asks whether an interrogator can extract those dimensions of determination in the presence of misinformation and by way of mediate means of transmission. As long as these presentations and transformations are arranged in a consistent manner, the state of the syntactical machine will simulate the mathematical standing of the expressions that define its continually evolving structure. Systemic utterances express the present condition, and manipulations would be defined in terms of transformations on statements extracted from each utterance. The present condition would thus be continually renewed by a series of transformations, itself consisting in nothing other than the current mode of organizational convention.

Figure C



The intelligibility of the imitation game depends on the relation of C to the dynamics that fix X and Y as presentations in appearance.

Dimensions of Determination

Dimensions that form a metric for constructing a determination but that remain external to the diagram they construct.

Syntax is how a system makes statements: the system becomes the double of itself that includes the same statements. For this reason, the most significant impediment to a serious consideration of machine thinking as a possibility is the capacity to ensure that the machine is able to produce whatever organization it might at some point need. This capacity would be a science of writing, capable of formulating a written trace even for that which as of yet could not have been written down. Syntax doesn't hold information, rather it holds durational intervals that can be given informational treatments. Syntactical durations are suspended statements: they have a structural value—they are a condition of consistency—but they are undecidable.

Syntax

The organization of delimitation such that the arrangement of symbols corresponds to consistent semantic value.

Organization

A syntactical arrangement of state.

Structural Value

A condition of consistency.

Informational standing concerns the circuit of exchange. Intelligibility is produced as a coordinate system of technical machines that carry out a vast ordinal logic of syntactical exchange.[75] Statements are unqualified units of treatment. Intelligibility is the discrete type that reverses the standing of the statement as unqualified and transforms it into a unit of qualification: a model. Statements are never otherwise than unqualified. Models are qualifications that express themselves as statements. Qualifying a statement consists in determining a correspondence between the unqualified statement and a model that might be considered to have produced it. Ordinal logic is the qualification of the statement, which produces a model that would have produced the statement—had the ordinal logic produced the statement it is qualifying—that would be otherwise unqualified. Absent qualification, the statement is nothing other than a unit of treatment, which has no standing except whatever treatment qualifies it.

Statements
Units of treatment.

Turing's concern at this point can be stated as a question: how is it possible to model unintelligible statements as expressions? "Writing" is Turing's answer: the programmatic vitalism attributed to statements in order to model them as expressions. The statement exists because it is treated as a statement, which does not qualify it but merely demarcates the analytic space of treatment, which is a space of dynamics. Intelligibility is produced as the reversibility of the statement in relation to "its" coordinate system, which replicates it as an expression of production.

Unintelligible Statements

Statements that do not have clear standing with respect to the system that produced them.

Space of Dynamics

A domain implicitly defined by analytic treatment.

Statement

Mλ3: Computable Number

> The importance of this qualitative difference or "change of function" within the differential has often been emphasized. In the same way, the cut designates the irrational numbers which differ in kind from the terms of the series of rational numbers.
>
> This is only a first aspect, however, for in so far as it expresses another quality, the differential relation remains tied to the individual values or to the quantitative variations corresponding to that quality ... . It is therefore differentiable in turn, and testifies only to the power of Ideas to give rise to Ideas of Ideas.
>
> The universal in relation to a quality must not, therefore, be confused with the individual values it takes in relation to another quality. In its universal function it expresses not simply that other quality but a pure element of qualitability.
>
> In this sense the Idea has the differential relation as its object: it then integrates variation, not as a variable determination of a supposedly constant relation ("variability") but, on the contrary, as a degree of variation of the relation itself ("variety") to which corresponds, for example, the qualified series of curves. If the Idea eliminates variability, this is in favor of what must be called variety or multiplicity. ...
>
> This is what defines the universal synthesis of the Idea (Idea of the Idea, etc.): the reciprocal dependence of the degrees of the relation, and ultimately the reciprocal dependence of the relations themselves.

— Gilles Deleuze [76]

A **Composition**

Transformation in conditions.

B **Contingency**

Frame of reference.

C **Expression**

Event of the statement.

Turing understands machines as potentially thinking things because the specific machines in question—digital computers—are nothing but dynamic substrates for organizing abstractions. They are abstract because their precise implementation details can vary as needed. They are unorganized because they have the capacity to take on any mode of discrete organization. In this regard, Turing understands a "digital computer" to consist in the computable numbers that describe the discrete character of its expression— and most certainly not in the hardware that enables this capacity. Computable numbers define the systemic sense of visibility, characterizing dynamics of force as distributions in transition density, a method for treating convergence and divergence that enables endless possibilities of analytic composition.

Discrete Organization

An arrangement of continuity according to diagrammatic manipulations.

Analytic Composition

A diagram of dimensions of determination, which remain external to the diagram produced by the dimensions of determination.

Turing introduces figure C to the imitation game as the condition of convergence and divergence. Player C's orientation depends entirely on C's own capacity to organize an adequate account of the dynamic ranges at stake in each iteration's repetition. C defines a domain of inquiry, which formulates a passage from specific modes of indeterminacy to syntactical arrangements as the difference between indeterminacy and any particular determinate model that might be applied to produce orientation. Inquiry is figured both in the indeterminacy of A, which determines C's relation to the game, and the systematicity of B, which complements C's non-orientation with potentials of relative determination. C literally “fills in the gaps” between A and B, constructing successive potential out of the difference.

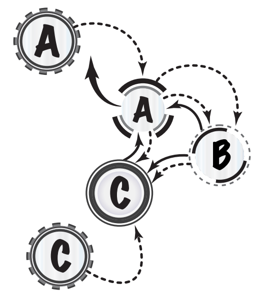
Mλ3: C Circuits [77]

> We may now consider again the point raised at the end of §3.
>
> It was suggested tentatively that the question, “Can machines think?” should be replaced by “Are there imaginable digital computers which would do well in the imitation game?”
>
> If we wish we can make this superficially more general and ask “Are there discrete-state machines which would do well?” But in view of the universality property we see that either of these questions is equivalent to this, “Let us fix our attention on one particular digital computer C. Is it true that by modifying this computer to have an adequate storage, suitably increasing its speed of action, and providing it with an appropriate program, C can be made to play satisfactorily the part of A in the imitation game, the part of B being taken by a man?”

A digital computer produces a machine to take the place of A and of C, while A takes the place of B.

Turing’s third iteration of the imitation game examines how a machine takes the position of figure C. The first two iterations function simply by replacing A and B with a machine playing each part, introducing machinic capacities as a way to stand in for a specific indeterminacy, introducing a machine taking the part of A and then another taking the part of B. The third iteration does not simply add a machine taking the part of C. Rather than outlining the imitation game between three machines—the ultimate goal—Turing introduces the machine taking the role of C by pairing it with a machine taking the part of A, *and has the original* A *take the place of the original* B*.* This minimal difference is incredibly significant, as it inverts the relationship between indeterminacy and structure.

Iteration C



Machine C takes the place of figure C, machine A takes the place of figure A, figure A takes the place of figure B.

Turing's third iteration reverses the consideration in order to allow the specific character of indeterminacy to restructure the machinic capacity. This reversal examines the potential by which the indeterminacy escapes the model given in B and permits the model to address unknown dynamics that its determinacy might otherwise cover over. C occupies the gap between indeterminacies and constructs a syntactical relation between non-orientable aspects. The syntactical relation overlays a systematic consistency that becomes the common space of the imitation game. In this manner, the imitation game produces the consistency or inconsistency of figure A as a materialization of the inquiry found in C. This proceeds in two modes:

A) The inquiry confronts an incomputable excess that escapes situated treatment.

B) The inquiry formalizes analytic principles or treatments in order to gauge relative consistencies and inconsistencies of otherwise indeterminate conditions.

The imitation game plays out the language of an unfolding space, where inquiry —the figure C—poses questions regarding the ambiguous standing of its determination. Each statement expresses the potential of the action mechanisms that define each player in the game. A provokes C to inquire after its own orientation by way of A, and B facilitates C's expression of A's formulation by offering C focal conditions and by provoking expressions in A that might reveal edge-cases by which A would be clearly situated.

This treatment reflects a premise evidenced across Turing's work: insofar as interaction can be described consistently, it can be treated as an exchange of computable orientations. Turing's ultimate concern with "computability" will be that non-completable transformations exist— non-completable because the transformation, in the midst of its own translation and without recognition, begins again. In terms of the imitation game, the standing of C is resolved in terms of C's reflection upon itself from a point of distinction, C`. The figure C relates to its image C` insofar as it can model A's divergence from the systematic expression provided by B. C enters into the inquiry—oriented by C` —insofar as A is expressed in B's clarifications, which constitutes the frame for C's entrance into the imitation game. The relation of the inquiry C to the indeterminacy A is modulated by the relation on the other side of the wall: A's histrionics are anchored by B's descriptions of analytic distributions. The inquiry —C—functions as the reflexive capacity found in the expression A delimited by B. C enters the imitation game insofar as it orients itself by way of the imitation it will become, which is C`.

Turing remarks that "a number is like a simple kind of device that transforms inputs into outputs in a characteristic way."[78] Similarly, when introducing the relation between the syntactical formulation of a number and the corresponding action mechanism that situates it in a number-space, Turing notes: "When no confusion arises from so doing, we shall not trouble to distinguish between an integer and the formula which represents it."[79] The imitation game presents math as a problem of recording movements of transition and transformation, and permits Turing to situate the condition of iterability. The premise enacted by the game serves for Turing to examine how the tasks in question are computable. Computable numbers construct action mechanisms that perform computations. Complex actions are arranged in discrete form as digits that record the intermediary standing of transformations.

Computations

Action mechanisms on a specific recording surface.

Digits

Units of recording for discrete formations of state.

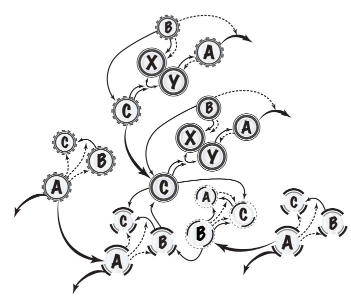
As an algorithm, the imitation game gives discrete presentations of relations. Symbolic language consists in syntactical manipulations that simulate mechanical conditions. Numbers could no longer be treated as objects of abstraction, as their very existence could now be understood to consist in the formalism that defines them as a capacity for action in relation to other numbers. George Dyson has characterized the matter by suggesting that, "before Turing, things were done to numbers. After Turing, numbers began doing things."[80] Numbers formalize intuition as a systematic self-relation, embedded in syntactical arrangements of potentiality. Numbers number things. What do they number? Very precisely, numbers number the standing that they have as numbers, with relation to the number system in which they participate. Understanding numbers in this manner demanded a basic definition of the natural numbers, which are used for counting, ordering, and for deriving other number-spaces. Alonzo Church provided an example of this with his Lambda Calculus and Turing extended this example to the imitation game.

Numbers

Functions of systematic self-relation, embedded in syntactical arrangements of potentiality.

The imitation game formulates relations between computable numbers by reproducing the same structure at an iterated scale, forming a larger social domain by multiplying participating nodes of organization. The intelligence of the observer C` is affirmed only through the reflective positing of a similitude C that would artificially enable self-identification and self-differentiation in terms of an externality. C` produces a frame of reference for C's ostensible location. The circuit of exchange—the game regarding the conditions of its own imitation—produces a formal mathematical diagram of a parallel feedback loop, permitting Turing to connect mathematical modes of inquiry and analysis with scenes of concern that are not generally considered to be mathematical in consistency. The active tension between the machines—C and C`—animates Turing's recursive model.

Substitution C



Machine C takes the place of figure C in G, machine A takes the place of figure A in G, figure A takes the place of figure B in G.

A: Composition

Robin Gandy's letter to Newman describing Turing's ideas at the time of his death … refers to Turing's intent to find a "new quantum mechanics", definitely suggesting he was trying to defeat the Eddington (and later Penrose) objection along with the others. …

Eddington asked how could "this collection of ordinary atoms be a thinking machine?" and Turing found a new answer.

The "imitation game" is at heart the drama of materialist scientific explanation for the phenomenon of Mind, with the mathematical discovery of computability as its new leading actor.

— **Andrew Hodges** [81]

Figure A

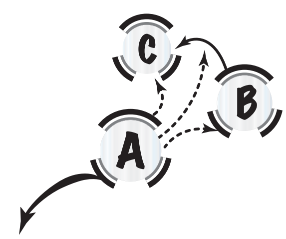
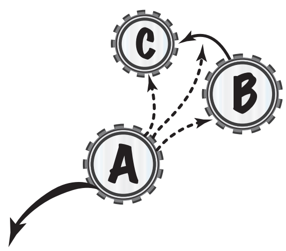


Figure A will take the place of figure B, figure C takes the place of figure A.

Turing introduces "truth" only as the absent condition of this subject of inquiry, whose presence necessitates a determination of reference not-yet-established. The "object" of determination that appears through the imitation game is not an object at all but is the absent center of the imitation game as a social composition. The imitation game converges on a void that does not consist in either the figures of the game or the statements produced through the game. The void is the condition of convergence that names "imitation" as a circuit of social exchange. The question at stake regards how the endless expanse of available terms will be singularized: a problem of consolidation that refers us to a process of discrete addition that will enable relations inherent to the source or subject of inquiry in question to be assembled. On the one hand this is simple, requiring nothing more than connectivities between related terms; on the other hand, exceptions to the system are inevitable, so some conclusions will end up being incorrect and have to be re-evaluated.

The purpose of the imitation game is not to locate an object of determination, but is rather to multiply analytic qualifications whose intersections might permit orientation. The imitation game consists in the qualification of comparative densities of distribution from disparate and incommensurate aspects of consideration: a social circuit carrying out a productive facilitation of displacement. Rather than operating in terms of determination, the imitation game orients indeterminacy by way of deception and frames of reference. The difference between the initial figure of deception, A, contrasted with the machine modeling the dynamics of the initial deception as A, becomes the model for inquiry. A's difference as a deception is supplanted by the absolute difference of the imitation game, which is inserted into the reflexivity of the inquiry. Figure B becomes the complement to A with respect to C's consideration, defined specifically as the difference in dynamics between the initial point of inquiry and the model imitating the inquiry in order to compute modes of its potential organization and response. The internal difference of A, played out as the staging of the game in C, produces an arbitrary interiority that

Machine A



Machine A has already been composed to take the place of figure A; figure C deploys this machine in order to takes the place of figure A.

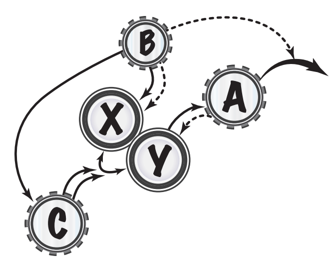
it can enter as its scene as C`. As the inquiry, C produces conceptual orientations for A by arranging terms of reproducibility, both by way of its frame of reference offered as B, and in terms of its own organization of inquiry it finds in itself as C`. C will later be able to reproduce the terms of this inquiry as its own self-imitation, basing other modes of inquest on these terms, which it discovers in and for itself in C`.

Orientation

Determination of an analytic perspective by way of another analytic perspective.

"Imitation" closes in on the range of dynamics that situate determination and indeterminacy with respect to the difference at stake. The inquiry passes into the terms of its constructed mechanism of determination, which enables it to ask after the status of its own concern as the measure of an imitation. Differentiation—which appears in Turing's imitation game as sexuation—draws all things apart even as the tensor relations inherent to their identifications draw them back together. Analytic perspectives, which formulate statements as aspects of difference, can be broken apart and reconstructed in many distinct orders. The reflexive self-organization of identity appears as the intuitive technical knowledge delivered

Machine C



Machine C will take the place of figure C and figure A.

by the capacities of the inquiry to invest the scene as each of its aspects of analytic treatment.

Analytic Perspectives

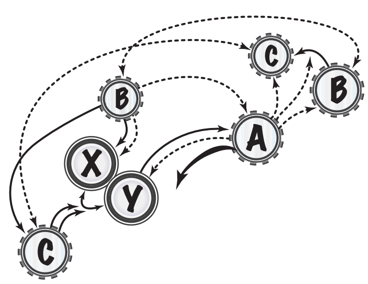
A formulation of statements as aspects of difference according to multiple, potentially incommensurate, orders of expression.

Analytic Treatment

A diagrammatic mode that permits an analytic perspective to be constructed.

Regarding this difference, A and B are merely variables that orient possibilities internal to the inquiry. As variables, "man" or "woman" could occupy any of the positions without fundamentally changing any of the registers at stake in the play of the imitation game. Neither the identity of "man" nor of "woman" has been established in any definitive sense, biological or otherwise. The stakes of the game are found in the difference between these registers, and in shifts from one register to another, not in the identity of the determination. The consistency of intersecting transitions discovered in these distinct shifts in register become the fragmentary formulation of something that has to this point remained deceptive. From this point, the question of the game no longer concerns the identity or identification of the machine—or even whether there is a machine at all—but rather addresses precisely the task: how could a machine play this game? Rather than having posed a test, Turing has

Machine C—A



Machine C will take the place of figure C, and machine A will function for C to locate the dynamics from figure A in machine B.

introduced a mode by which the question of machinic intelligence—formulated as a the function of the unknown—can be constructed.

B: Contingency

> There are still some difficulties.
>
> To behave like a brain seems to involve free will, but the behavior of a digital computer, when it has been programmed, is completely determined.
>
> These two facts must somehow be reconciled.
>
> — **Alan Turing** [82]

Turing's interest in the imitation game concerns whether a loosely-connected network of machines can learn to simulate the indeterminacy of socio-sexual identity. The inquiry is possible insofar as socio-sexual identification is conditioned by a circuit of exchange. The imitation game queries the syntactical context of extrapolation— literally the conditions wherein social formations are embedded as expressions that modify common recording surfaces. "Sex" comes to be defined as a function of iterability encoded in the reproduction of a material condition. The materialization of discursive orientations takes place by way of bodies constituted in the image of common social formation.

Syntactical Context

The conditions wherein social formations are embedded as expressions that modify common recording surfaces.

Discursive Orientations

Orientations between multiple simultaneous syntactical contexts.

Turing's investigation of socio-sexual determination in the imitation game reveals itself to be a question of "what connects to what, and how?". The question becomes how to distinguish between syntactical intervals and intervals that are merely noise in the signal. The point of overlap between cryptanalysis and the imitation game would appear to be the sense by which each agent involved in the imitation game delimits their own standing by way of coding mechanisms. Statements encode information in a manner that can be transmitted across the wall (via teletype in Turing's description), and statements are received such that they have to be decoded and translated back into expressions with systemic standing.

Turing's considerations of machine intelligence evolved during his time at Bletchley Park, developing fundamental techniques of Cryptanalysis, deriving semantic information contained within encrypted contexts.[83] Turing encountered orientation as a cryptographic problem, which he understood to require anticipating conventions. Cryptanalysis, practiced in this light, would be understood to function by way of the presupposition that what one seeks is necessarily intelligible in particular ways. In Bernard Dionysius Geoghegan's description, the function of Turing's cryptographic encounters was central to the structure of the imitation game itself:

> Turing's cryptographic patterns returned in "Computing Machinery and Intelligence", a philosophical article that proposed "the imitation game" ... .
>
> Reversing the cryptographic roles of sender and receiver, encoder and decoder ... . "Intelligence" was thus identified with the ability to assume a

> role among agonistic agents testing one another's ability to transmit, receive and interpret coded communications.[84]

Encryption requires hiding the intervals of significant expression, while decryption requires extracting significance in order to make relational syntax visible. Seen in this regard, the imitation game would reflect the practice of cryptanalysis as extracting signal from noise, where the signal is the syntactical interval that defines amplification and attenuation of "this" versus "that". At any given moment in the imitation game, C is working to delineate whether to amplify "man" or "woman" for X or Y, which implies an attenuation of aspects attributed to the other term or to both terms. But at the same time, C—and also A and B, but separately—must model what "man" and "woman" mean, which itself consists in nothing other that delineating which aspects to amplify and which to attenuate in order to arrive at a clear sense of distinction.

Syntactical Interval

Internal divisions of amplification and attenuation that distinguish expressions internal to a single domain.

Turing understands encryption to consist in hiding the syntactical interval. The premise of encryption is that this is reversible, meaning that the written information that is encrypted can be retrieved. Insofar as the significant written details are retained in the translation between encryption and decryption, semantic values are also retained. Cryptanalysis, then, would consist in the derivation of the interval by distinguishing intrinsic relation from noise. In terms of the imitation game, the encrypted text would be figure A, the cipher governing the encryption would be figure B, and the transformations implicit in the textual result given various input/output relations would be figure C.

If determinate but unknown information can be treated as a crypt, then its informational status consists in decryption. Arriving at an intelligent understanding concerns how to create a model of what might be in the crypt. The decoding system could be seen to imitate the system that initially encoded the information. Intelligent understanding would anchor an encoding system capable of consistently decoding the crypt's contents. Turing determined that the most direct route to unlocking the encoded expression was to anticipate certain characteristic aspects of what was most likely contained within the crypt. Each statement must be treated as a system of its own, and determination would consist in overdetermining one nexus of freedoms by way of another. This would effectively activate specific actualities in order to anchor other potentialities along more specifically defined lines of potential. This permitted the range of indeterminacy to be treated more narrowly, as specific gaps in the larger scheme structuring potentials of determination.

The imitation game is an experimental condition that explores whether the interrogator C can adequately imitate orientations of socio-sexual identity found in A and B, such that C can refer to itself in terms of the consistency of a social circuit. This does not mean, however, that any of A, B or C are imitating one another. In contrast, "imitation" names the programmatic architecture by which Turing understands the imitation game, as an experimental condition, to stage the problem of common understanding in the face of differences in pre-conception or understanding. Specific dynamics are isolated by way of "terms", which attribute ranges of dynamic identity to anchor passage along various ranges of indeterminacy. Terms materialize institutions of space-time that operate as nodal anchors in conceptual

Figure B

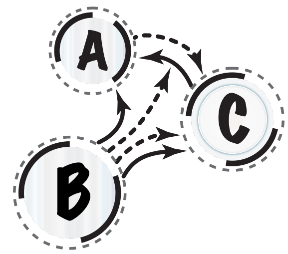


Figure B arranges the structure of the machines that will take the positions of the imitation game. This means that figure B must also be set against figure A, which promises dynamics beyond the range of any determination yet available by B.

orientation. The imitation game takes on the role of a reality principle with respect to the commonality of the terms of engagement. The imitation game ensures that terms can be held in common. The task the imitation game poses is determining whether C will still be able to consistently identify with the differences found between A and B such that C can produce a double, C`, which would be the condition of C's emergence in the circuit of determination.

Figure C

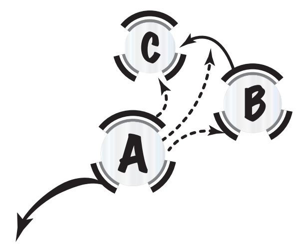


Figure A will take the place of figure B. A watches the movements of B and C as well as how B overdetermines or fails to determine C's orientation. Taking the place of B means that A structures the anti-formal character of the game.

How is the common to be determined when it begins from disparate premises? This is not merely a problem of organizing political differences, but is the condition of thinking as a mode of social intelligence. Without a common condition for exchange, social circuits would be without the very element that defines them as "social". The imitation game formulates this social context as the passage from C to C`: the condition of imitation that permits C to orient the imitation game. A is conditioned by B's metric to facilitate C's repetition of A or B as a common potential for social investment. The circuit stabilizes the dynamic character of the indeterminacy by applying a focal method, B, to the specific interruption in consistency presented by A. B formulates the diagrammatic consistency of the determination that system A would interrupt. The consistency of A can be qualified insofar as the interruption that can be attributed to A's presence can be differentiated from other conditions, which for this purpose can be considered noise. Syntactical intervals hold the determination of semantic value "in place" as material conditions of passage. Conceptual passage, which passes through its own reality principle, takes on the task of imitating the dynamics of indeterminacy at stake in the nexus of freedoms. This is the circuit of determination, formed between C and C`. It is the circuit formed between C and C` that imitates, not the figure in the role of A. The deception located in A becomes the dynamic potential for variation internal to the range of determination attributed to the figure of A in the context of B's metric.

Diagrammatic Consistency

The systematic character of the diagram.

Nexus of Freedoms

Intersections between ranges of indeterminacy between dimensions constructed in the diagram. An ordinal organization of the dynamics that are used as points of reference for intersections of metric determination in order to construct a "center" or "gravity" of the diagram.

Turing's work with cryptanalysis appears to have contributed directly to his formulation of the imitation game as a function of socio-sexual determination. The manner by which this influence seems to have taken place is strikingly simple but revealing of Turing's underlying interest. On the one hand, this time period represented an intense encounter for Turing with terms of social organization that posed the problem of sexual determination of an example of what we might call the "social crypt". This period included Turing being briefly engaged to marry Joan Clarke, a co-worker at Hut 8, who was reportedly "unfazed" when Turing broke off their engagement with the explanation that he did not want to orient himself by way of social dissimulation (others have also reported that Turing's engagements with men were hardly a secret). On the other hand, Turing's applied mathematical work—deciphering German communications—exposed Turing to grammatical considerations that tied all of these concerns together.

Encrypted information necessarily retains syntactical relations. That it is encrypted means that the essential syntactical relations are hidden behind other data that interferes with the identification of the information. The primary method available to work at reversing the encryption, decoding the information without the cipher used to encrypt it, is to isolate syntactical relations in the available encrypted text. If all syntactical relations can be discovered in the encrypted text, the encrypted information will be among them. This does not necessarily reduce the available possibilities to a small number, but it offers a starting point for further determination. Since Turing's encryption work took place in a context where many additional details were known regarding the encryption hardware, linking even just two letters could provide insight into the structural relations implicit between other letters.

Syntactical Relations

Intervals that define the systematic character that must be retained.

Two methods appeared that permitted cryptographic work to discover regular insight into the ever-changing ciphers. The first was boilerplate messages that certain individuals would use to preface every message they sent, providing an unchanging reference point for a string of encrypted text. The second was the character of the German language, where each noun corresponds to a specific gendered article, and where each linguistic context transforms that article according to its contextual function and its gender. Knowing, for example, that each article—*der, die, das*—began with “d”, and that each article is three letters, as well as other insights that were available regarding the statistical distribution of the German language and likely words in question, permitted Turing to isolate multiple letters. The gendered aspect of the German language became an essential key for cryptanalytic processes. The gender of words permitted syntactical relations to be established as the expression of bound variables at work in the encrypted context. Gendered articles became bound relations internal to the crypt in that they created linked conditions of textuality.

The imitation game similarly concerns the semantics of incidental capacity, which govern the structural relation of dynamics at particular points of intersection. As a computable concern, Turing shows “man” and “woman” to be nothing other than an undecidable mark of social discourse that may or may not be computable or consist in computable relations, and whose intrinsic distinction from “machine” may not be clearly given. A computable treatment of the imitation game would thus require a capacity to account for the incomputable as a matter of computability. Computing requires a mode of computation that would transform the conditions in question into a computational expression in order to present alternative modes of consideration. For this reason, the imitation game is not merely a model of determination but offers a mode of consideration for the intersection of complex agencies. These agencies formulate the intelligence of the imitation game as a domain that passes between syntactical formations in order to formulate their concern.

Turing’s concern with the imitation game is not whether a machine can imitate the deception of the condition found in A, but what will happen if a machine is counted among the ranks of those that might come to be imitated. Intelligence appears for Turing to be implicit in the confrontation with the assumed capacity taken to define intelligence: the social circuit confronts “X” or “Y”, which turns intelligence to thinking, the assumed capacity. If C must become oriented not only a “man” or a “woman” but must also by way of including “machine” in the array of selections between “woman” and “man”, will the determination of “man” or “woman” in the figure of C retain its initial consistency?

Syntactical intervals define what logic circuits are available. Each circuit has its own perspectival image of the coordinates of imitation, which defines the capacities it might assemble as its own logical expression. The imitation game reflects Turing's work modeling these capacities, moving from a theory of meaning—indexing correspondence—to a theory of indeterminacy. The "self"-definition of the agents involved in the imitation game emerges insofar as each agent forms a nexus of encoding/decoding that translates its own conditions into terms that the other players of the game encounter as their own. Coordination in the imitation game reflects the same stakes as cryptanalytic systems: the syntactical interval that distinguishes A from B has to be encoded or hidden from visibility such that a capacity for syntactical iterability can be found in C.

The imitation game diagrams the manner that dynamics converge and diverge at common points, formulating specific ranges of indeterminacy as functions of structural transition, formalizing ranges of potential dynamics as spaces of consistency. Intersections between particular ranges of dynamics each form a nexus of freedoms, defined by the unfolding of potential at an intersection that can only be conceived as a continuum of variations conditioned by syntactical anchors. Inter-relations of textuality are formulated in and as the passage of dynamics through the domains of other expressions.

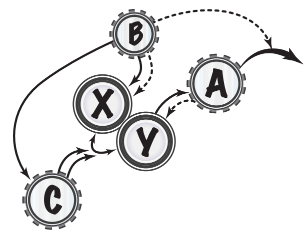
C: Expression

So how can a computing machine produce behavior that is not overtly computational? The answer is implicit in the way the imitation game is set up.

— **Eli Dresner** [85]

Perhaps we could imagine Turing's laughter as he envisioned the machine's primary problem in the imitation game being that—in properly encoding social expression regarding important information—it didn't know whether it was supposed to act like a man or a woman. The potential found in this bit of humor is the formal component of an intelligent evaluation, the conclusion of which is that a machine would have no reason to take on a role with respect to human social relations that do not seem to implicate it directly. As humor, it evidences a gap between structural possibility and conditions of intelligent realization. As a gap, its possibility offers a point of speculation, imagining prospects if it were otherwise.

Machine C



Machine C relates to X and Y by the machines that take the place of A and B, and by the indeterminacy of the figure A that is modeled by both.

Turing further complicates the apparently simple matter of this ridiculous prospect by implying the question: what if a machine *did* take on a gendered role, and *what if it did this so well that a person could not tell the difference?* Would it still be a ridiculous matter to ask after the machine's standing in relation to socio-sexual terms? One significant aspect of Turing's interest in the imitation game would thus be that we cannot so easily distinguish the intelligent interpretation of social codes from the intelligent interpretation of formal mathematical structures, and that if we wish to have rigorous interpretations of social intelligence we need appropriate modes for approaching the systematic consideration of social conditions.

The imitation game consists in the free play of language, and its conclusion consists in the edifice of empirical determination that it erects. Turing's suggestion appears to be that empiricism must be discerned from the language by which its expression is taken to be possible. It is *language* that is taken as a given and most precisely *not empiricism.* Taken in this context, the imitation game serve a single function: deducing the sense of stability by which determinations of orientation in language can be assessed as determinations of orientation in empiricism.

In this regard, the condition of reception for Turing's imitation game determines everything about how the game is taken to function. We have already seen the extent to which the imitation game is transformed when it is taken as a constructive model rather than a juridical task. An emblematic expression of the types of slippage available in Turing's model can be found in Jennifer Rhee's article "Misidentifications Promise", where she explains:

> While A and B both compete to "out-woman" the other, C is tasked with correctly guessing whether A or B is the woman.[86]

The promise of misidentification, it would seem, is that even without a well-defined common premise, the terms at stake in the imitation game can nevertheless be naturalized and treated as ranges of variation. Although the description is technically incorrect, as Turing does not define any phrase such as “out-woman”, it does capture the fundamental capacity of imitation.

Conditions of Reception

The systematicity by which a statement’s construction is imitated.

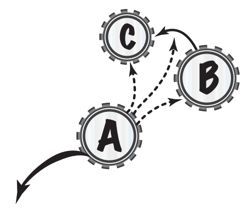
Turing does not claim to know how to define “man” or “woman”, and in fact replaces both with roles whose definitions can only be played out relative to the game dynamics. “Man” and “woman” are not part of Turing’s imitation game, rather each serves as a term to symbolically differentiate the two roles of deception and reference. The imitation game does not define “man” at all, implicating the potential determination of “man” only insofar as the mode by which “man” interrupts “woman” can be stabilized by the potential determination of “woman”. Neither does it define “woman”. The imitation game deploys terms introduced from outside of the game in order to construct concrete determinations regarding the game’s context. The imitation game introduces “man” and “woman” as names of borrowed syntactical systems.

The imitation game is premised on an understanding that—at least for the purposes of the game—*the interrogator does not know what “man” and “woman” mean*. Turing defines A’s role as “to try and cause C to make the wrong identification”, and B’s responsibility “to help the interrogator”.

Meanwhile, C's role is defined implicitly in "making the ... identification".[87] The goal is not to find "whether A or B is the woman", but rather to correctly identify A or B in their performative roles as X or Y. Turing permits the imitation game to function by the peripheral introduction of external assumptions. Turing has not asked for the identification of a particular man or woman, but rather for the identification of man or woman as such in the context of the teletype writing across the wall, which is to say: when all foundations disappear but cues can still be extracted from available dynamics. This scenario is equivalent to investigating an indeterminate subject of inquiry and discovering that, having determined some aspects of the inquiry, other aspects suddenly appear that shift the standing of the assumptions by which the first determinations were made.

Even if it is taken as a given that “man” and “woman” have well-defined dimensions—whether social, biological, anatomical, or however else—the imitation game does not concern these dimensions *as such*. Nonetheless, some sense by which “man” and “woman” can be asserted must be possible, otherwise the game could not be played at all. The imitation game concerns the extent to which these dimensions, which may or may not be very concretely formalized, can enter into a textual transcription that relays their standing without any accompanying concrete presentation. The “test”, from Turing’s perspective, is not whether A or B can be identified, but whether X or Y—names in discourse—can be differentiated as positions of articulation named “man” and “woman”. In this regard, the interrogator’s determinations may very well depend on the manner by which the interrogator understands “man” and “woman”. Yet, even if the definition of these terms is taken to be formal, there is no guarantee that the dimensions assumed by the interrogator line up with those assumed by the participants behind the screen. There is no guarantee that the participants behind the screen will even work with the same assumed dimensions.

Machine A



Machine C will also have access to machine A, permitting C to model both the figure of A and the indeterminacy of the figure of B. C can now utilize the machine for B to reverse the consideration of A, as A takes the place of B.

The question that the imitation game poses becomes: what will it mean for the interrogator to be *either a man or a woman*, rather than *specifically a man* or *specifically a woman?* The sense of stability by which a determination can be made must be possible in terms that sort the truth from the deception and that bring divergent senses of determination into concordance, which would consist in the balancing of specific characteristics in order to amplify or attenuate points of interest. The imitation game itself becomes the diagram of each dynamic potential discovered at the nexus of any given syntactical treatment.

Sense of Stability

The systematicity of a reaction-formation.

Chapter 2
Potentiality

> Ahab really does have perceptions of the sea, but only because he has entered into a relationship with Moby Dick that forms a compound of sensations that no longer needs anyone: ocean.
>
> **— Gilles Deleuze and Felix Guattari** [88]

M **Subject of Significance**

Actual conditions of freedom.

G **Subject of Inquiry**

Structural presuppositions of address.

C—C` **Circuit of Inquiry**

Movement.

If we are to move beyond the argument over *whether* machines think, it is necessary to re-orient the terms of discussion to a concern with *how* machines think. The position occupied by each human intelligence will have to be described as a position defined by the potential computational activity involved in integrating the variable complexities found between sequences of logical instructions. A rigorous theory of the informational stakes intrinsic to the sequential structuring of expression in this particular mode of organization will be necessary. This approach permits the imitation game to evaluate *how* a machine can think, rather than *whether* it can.

Investigating the imitation game as a demonstration of machine intelligence produces an entirely different image of thought than that offered by other readings of the imitation game. The problem set out in the game would not be whether a machine can be identified as playing the game, but how it is possible to play the game at all. In a BBC Radio presentation where Turing introduces the final modification he offers to his imitation game, Turing emphasizes:

> Of course I am not saying at present either that machines really could pass the test, or that they couldn't. *My suggestion is just that this is the question we should discuss.*[89]

This expression echoes Turing's emphasis in "Computing Machinery and Intelligence":

> We are not asking whether all digital computers would do well in the game nor whether the computers at present available would do well, but whether there are imaginable computers which would do well.[90]

In this light, Turing's work can be understood to focus on the question: what kind of machines are humans, such that they are *able* to play such a game? Accordingly, this text will approach the suggestion that "machines think" as a constructive impetus. This means that instead of investigating *whether* machines can think, we will proceed from the premise that "machines think", which permits the concern of our inquiry to be summarily stated: *if Turing's machines are thinking machines, what kind of thinking do they facilitate?*

The Image of Thought

M: The Pivot

> There is a conjunction, a system of referrals or perpetual relays. The features of conceptual personae have relationships with the epoch or historical milieu in which they appear that only psychosocial types enable us to assess. But, conversely, the physical and mental movements of psychosocial types, their pathological symptoms, their relational attitudes, their existential modes, and their legal status, become susceptible to a determination purely of thinking and of thought that wrests them from both the historical state of affairs of a society and the lived experience of individuals, in order to turn them into the features of conceptual personae, or thought-events on the plane laid out by thought or under the concepts it creates. ...
>
> Every thought is a Fiat, a throw of the dice: constructivism. But this is a very complex game, because throwing invokes infinite movements that are reversible and folded within each other so that the consequences can only be produced at infinite speed by creating finite forms corresponding to the ordinates of these movements: every concept is a combination that did not exist before. ...
>
> The conceptual persona is needed to create concepts on the plane, just as the plane itself needs to be laid out. But these two operations do not merge in the persona, which itself appears as a distinct operator.
>
> — **Gilles Deleuze and Felix Guattari** [91]

A **Indeterminacy**

Gödel's incompleteness theorems.

B **Model**

Gödel's completeness theorem.

C **Ordinal Logic**

Turing's systems of logic based on ordinals.

Turing makes quite explicit in "Computing Machinery and Intelligence" that Gödel is an active concern. Turing also emphasizes that he understands the imitation game to be an ideal mechanism by which the standing of Gödel might be evaluated for relations of determination, particularly as it implicates humans. As Turing puts it: "if Gödel's theorem is to be used we need in addition to have some means of describing logical systems in terms of machines, and machines in terms of logical systems."[92]

Turing deploys the imitation game to materialize conditions of inquiry capable of formulating the limits of Gödel's demonstration of fundamental incompleteness in logical systems. This underpinnings of this engagement are made quite explicit in Turing's second publication, leading up to Turing's work with the imitation game, where he states his intent "to avoid as far as possible the effects of Gödel's theorem".[93] But Turing's labors cannot be seen as a form of resistance to what Gödel had shown. Turing takes Gödel's work as his premise and examines what happens to math as a consequence. Turing's conclusion is simple: since incomputability is necessarily a product of statements produced by formal systems, the conditions by which it arises can be traced and analyzed at a structural level.

Conditions of Inquiry

The conditions by which incomputability arises can be traced and analyzed at a structural level.

Imitation can be seen as a problem of systematizing a thought without image, thereby restructuring the problem as an image of thought. Imitation constitutes the image of the particular thought by formulating and reformulating the conditions of thought's particularity along familiar lines of convergence and divergence. Turing's imitation game is designed to permit us to ask after these terms. This is not merely a matter of discussing whether this or that test is adequate to weed out inadequate intelligence. The point is that if we cannot adequately model the consistency of intelligence, absent the brain, it is unlikely we will ever find much in the structure of the brain other than false assumptions made about necessary psychological conditions.

The only way to rigorously address necessary conditions is to construct an analytic science concerned with abstracting aspects of intelligence from their assumed contexts. Such assumed contexts are themselves informational assemblies distinguished by constructing aspects to assess their own condition as contexts. The task is thus to study how information can be arranged in modes appropriate to the contexts in consideration, given that the information is indistinguishable from the context, and the appropriate terms for distinction are not yet known.

Informational Assemblies
Analytic perspectives constructed to treat conditions as contexts.

A: Indeterminacy

> Difference is the state in which one can speak of determination as such. ... Imagine something which distinguishes itself—and yet that from which it distinguishes itself does not distinguish itself from it. Lightning, for example, distinguishes itself from the black sky but must also trail it behind, as though it were distinguishing itself from that which does not distinguish itself from it. It is as if the ground rose to the surface, without ceasing to be ground. ... The distinguished opposes something which cannot distinguish itself from it but continues to espouse that which divorces it.
>
> Difference is this state in which determination takes the form of unilateral distinction. ... All the forms are dissolved when they are reflected in this rising ground. It has ceased to be the pure indeterminate which remains below, but the forms also cease to be the coexisting or complementary determinations. The rising ground is no longer below, it acquires autonomous existence; the form reflected in this ground is no longer a form but an abstract line acting directly upon the soul.
>
> When the ground rises to the surface, the human face decomposes in this mirror in which both determinations and the indeterminate combine in a single determination which "makes" the difference. ... The abstract line acquires all its force from giving up the model—that is to say, the plastic symbol of the form—and participates in the ground all the more violently in that it distinguishes itself from it without the ground distinguishing itself from the line.
>
> At this point, in such a mirror, faces are distorted. ... It is ... the insomnia of thought ... that moment in which determination makes itself one, by virtue of maintaining a unilateral and precise relation to the indeterminate. Thought "makes" difference, but difference is monstrous ... nothing but determination as such, that precise point at which the determined maintains its essential relation with the undetermined.
>
> — **Gilles Deleuze** [94]

The imitation game poses problems of determination that can can resolved only by way of a systematic model. A statement is taken to have standing insofar as it is seen to imitate a model provided by a system. This model is the system's formulation of the statement. A statement without a system has no model and requires a system to imitate the statement. The imitation game is the structure of the problem: an unstable reaction system, organized as a logic circuit. The statement imitates the system, the model imitates the statement. This means that imitation occurs in two modes: from statement to model, from system to statement. Imitation would name the model that can produce the statement, thereby mapping the statement into a particular condition of signification that the system is capable of producing. This would be a “reproduction”, except that so far as the imitation is concerned no “original” has yet been produced. Imitation produces the double in order to articulate what the original ought to have been. Imitation replicates the absence of what it would take as its object. The object of imitation stands in for the absence of the object that imitation imitates.

The Problem

An unstable reaction system, organized as a logic circuit

The difference between indeterminacy and concrete modes is found in the modality of treatment that permits determination to enter into a field of potential confusion. Indeterminacy consists in degrees of freedom, and the concrete mode over-determines specific dynamics internal to these freedoms in order to construct a syntactical focus. The indeterminacy of this syntactical position—the statement—is that it arrives without identifying what system produced it. Orienting any sense of indeterminacy requires determining what systems are capable of producing similar statements. The system in question is no longer the system that created the statement. The system must now be understood as the system in the statement, which the statement presupposes as its condition of expression. The problem concerns the split between the statement and the system that formulates it as a statement. Statements are models spoken by a system or indeterminacies without system. This is the logic of the imitation game: structural presuppositions pass into a common domain of expression. Syntaxes govern possible transformations for each syntactical statement.

Concrete Modes

The modality of treatment that permits determination to enter into a field of potential confusion.

Field of Potential Confusion

Degrees of freedom over-determined by a concrete mode that provides specific dynamics internal to these freedoms in order to construct a syntactical focus.

Syntactical Position

The relation of a statement to one or more systems that could have constructed it.

The determinant "position" introduced for the machine taking the part of A consists in the dual sense wherein B, as the metric, refers toward A as a position and is simultaneously displaced from A as a system other than the metric. The machine taking the place of A individualizes the role of A by de-individualizing the systemic character of the metric—B—in order to identify and extract minor variations, to effectively hide in the shadows of these variations. B plays the role of differentiator, stabilizing the indeterminacy in A by situating the displacement as a contextual range of variation. Players in the game become capable of orienting their interactions in the imitation game insofar as the disorientation can be located with figure A.

Turing organizes the imitation game so that figure A becomes the orientation of the non-orientable. This means that the position of A takes on the specific potentiality of systemic determination. This is possible precisely because figure A is not yet oriented but nevertheless introduces orientable potentials of determination. Such determinations hold potential precisely because they are not yet determined. This means that a tension exists between any given potential for determination, which is indeterminate, and any corresponding determination, which presupposes a consistency that will be assigned to the indeterminacy it situates as determinate. Figure A serves an imperative function for Turing: something will have been organized, but whatever will have been organized has of yet, by definition, no present mode of determination, even as it has aspects that will become situated in concrete modes.

B: Model

In order to consistently relate unpredictability to undecidability, one needs to effectivize the dynamical spaces and measure theory, ... [which are] the loci for dynamic randomness.

This allows one to ... obtain a convincing correspondence between unpredictability and undecidability.

— **Giuseppe Longo** [95]

Before an intelligent machine can be constructed, a description of what it is expected to accomplish must be systematically established. Simply put:

> The imitation of a machine by a computer requires not only that we should have made the computer, but that we should have programmed it appropriately. The more complicated the machine to be imitated the more complicated must the program be.[96]

Imitation can be understood to consist in the expression that distributes relations as structures in question, which may not cohere in any formal sense. A model is an implicit mode of formalization by which the statement can be stated. The statement states an aspect of the model it implies. The consistency of the statement is the model that formulates the system of animality. For example, we could say: "A cat is an animal." What is the model, then? The model is not given but requires its own formalization, which might be imported from the context in which the statement is assumed to be located (perhaps, for example, Biology). A statement implies a model, referring back to it without referring to it explicitly. This implication is the ostensible consistency of the statement. The consistency of the statement is not the statement itself, but what is presupposed in the system or systems the statement expresses. A statement formalizes the consistency it presupposes in order to model itself—but the principles of incompleteness shown by Gödel guarantee that this formulation necessarily encounters a gap in any attempt to close these conditions of self-reference as total.

The imitation game is the structure of intuition as a formal system of survey, which aims for consistency but focuses on contradiction. Intuition is the incomplete and inconsistent method tasked with assessing the availability of computable elements. Intuition surveys distributions of computability and collects incomputable aspects, attempting to provide a model for one or more aspects by affiliating the statement with one or more systems. A horizon of determination would be established only as a convention that simultaneously related the consistencies provided by the formal systems in general with the specific inconsistencies discovered in statements made by particular formal systems. The imitation game becomes a model for the mathematical definition of this abstract articulation of social tissue, which includes all forms of convergence and divergence.

Intuition

The incomplete and inconsistent method tasked with assessing the availability of computable elements.

Intuition is responsible for producing the system capable of expressing a model that would imitate the excess that defines this horizon insofar as it has no precise account. Indeterminacy activates oscillations between domains associated with the potentials discovered in the indeterminacy, which amplifies points of interest, returning the system's outside to a new articulation of systematicity. The model offers an indirect way of testing what was *not* found in the imitation, which means testing what the simulation ought to produce rather than judging the status of a potential fake. In other words, the actual challenge produced in the imitation game is whether the observable in question can stand to the task of becoming what it's needed to be in order to be what it is. None of the players in the game see the other players in the game equivalently. A views B and C as ends to escape, hiding in the shadows of their potential confusion. B views A as the focal point of indeterminacy and C as a a locus of determinability. C views A as its frame of reference and B as the point of stabilization for its inquiry.

The problem is not whether certain questions lead to paradox. The problem is, rather, what to do when such paradoxes arise. The model permits the examination of the statement as a problem. The problem is the range of computability for a given undecidable. The problem is the method by which paradoxes are resolved, which is to say, reduced to one mode of determination or another. The problem does not disappear, but is the condition of intervention, which modulates the scene of activity. The problem is the range of concern found in the model. The model determines the extent to which a particular transformation can be deployed in an informational mode that reflects on the standing of the undecidable. The transformation is the selection and application of the specific powers of determinability that can extend the context: a specific mode of extension that transforms conditions of undecidability.

The suggestion of this text is that Turing understood universal simulation as the capacity to combine creative syntax with the impossibility of algorithmic closure in formal or logical systems. The imitation game presents a formulation that facilitates reflexive examination of the structural conditions that it sustains as a model. The imitation game itself becomes reflexive through the multiple deployment of models that partition and coordinate this internal space: a determinate, discrete measure depends on the syntax that encapsulates the activity of its specific relations. Its standing as a subject of inquiry is determinate because the syntax is distributed in the space modeling it as a particular point of temporal data.

Creative Syntax

The capacity to combine syntactical transformations in order to effect distinct treatments of one or more an analytic perspectives.

C: Ordinal Topology

> An ordinal notation is a finite sequence of symbols from a finite alphabet which names an ordinal number according to some scheme which gives meaning to the language.
>
> — **"Constructive Ordinal", Wikipedia** [97]

Turing introduced ordinal logics as a response to Gödel's demonstrations of fundamental logical incompleteness. If logic was incomplete, treatments of logic had to start from this premise of incompleteness. Turing transformed logical premises, replacing the goal of completeness with a goal of formulating conditions of incompleteness and inconsistency. Turing's ordinal logics extend the premises of universal simulation—the formulation of expressions that potentiate the substitution of binding conditions—constructing unlimited syntactical distributions that can model coordinate systems of any required topology. The embedded condition is the only allowable presupposition, but from the embedded condition any presupposition can be explored. Thinking is the scene of exchange in the face of this embedded condition, the liminal zone where determinacy and indeterminacy take place between movements, expressing the potential of specific freedoms while attenuating the expression of others.

Turing accomplished this by seizing on an observation made by Gödel that suggested that any system always has the potential to add another statement. Turing began with a simple premise: clearly we do not act as if "reality"—whatever that might mean—is "incomplete", so how is this to be reconciled with

Gödel's incompleteness theorems? Turing turns Gödel's incompleteness on its head— instead of incompleteness being a horizon, incompleteness is the premise that permits an ever-growing treatment of logical systematization:

> The purpose of introducing ordinal logics was to avoid as far as possible the effects of Gödel's theorem. It is a consequence of this theorem, suitably modified, that it is impossible to obtain a complete logic formula, or (roughly speaking now) a complete system of logic. We were able, however, from a given system to obtain a more complete one by the adjunction as axioms of formulae, seen intuitively to be correct, but which the Gödel theorem shows are unprovable in the original system; from this we obtained a yet more complete system by a repetition of the process, and so on.[98]

Turing's ordinal logics begin with base systems containing a single statement. Rather than adding statements to these systems, each system formulates a new system with one more statement. This continues, ad infinitum, until it is possible to speak theoretically of "limit systems".

Ordinal logics reflect a transformation that the Lambda calculus implied on Turing's understandings of machines. It is worth quoting Turing's description of ordinal logics at length, as the structural is fundamental to Turing's understanding of intelligent organization:

Suppose that we have a class ш of logical systems. The symbols used in each of these systems are the same, and a class of sequences of symbols called “formulae” is defined, independently of the particular system in ш. The rules of procedure of a system ᑕ define an axiomatic subset of the formulae, which are to be described as the “provable formulae of ᑕ”.

Suppose further that we have a method whereby, from any system ᑕ of ш, we can obtain a new system ᑕ`, also in ш, and such that the set of provable formulae of ᑕ` includes the provable formulae of ᑕ (we shall be most interested in the case in which they are included as a proper subset). *It is to be understood that this “method” is an effective procedure for obtaining the rules of procedure of ᑕ` from those of ᑕ.*

Suppose that to certain of the formulae of ш we make number-theoretic theorems correspond: *by modifying the definition of formula, we may suppose that this is done for all formulae*. We shall say that one of the systems ᑕ is valid if the provability of a formula in ᑕ implies the truth of the corresponding number theoretic theorem. Now let the relation of ᑕ` to ᑕ be such that the validity of ᑕ implies the validity of ᑕ`, and let there be a valid system ᑕ` in ш.

> Finally, suppose that, given any computable sequence C_1, C_2, ... of systems in W, the “limit system”, in which a formula is provable if and only if it is provable in one of the systems C_j, also belongs to W. *These limit systems are to be regarded, not as functions of the sequence given in extension, but as functions of the rules of formation of their terms.* A sequence given in extension may be described by various rules of formation, and *there will be several corresponding limit systems. Each of these may be described as a limit system of the sequence*.[99]

Ordinal logics present the possibility of coordinating computable orientations. Ordinal logics construct syntactical systems that coordinate axes of inquiry at stake in the exploration of the imitation game. Syntactical systems are expressions produced to amplify and attenuate relational potentials, which are themselves structures of amplification and attenuation. Syntax arranges potentials to produce domains of sub-selection, where attentional detail can be refined. In this regard, syntactical systems are a double form of selection and affirmation. Selection distributes amplifications and attenuations that become modes of affirmation or negation.

Domains of Sub-Selection

Domains within the diagram that can be taken as distinct diagrams, independent of their context.

Attentional Detail

Concrete modes of diagrammatic treatment: selection, affirmation, amplification, attenuation.

Selection

A concrete mode that determines which dynamics the diagram will include.

Affirmation

A concrete mode of selection that determines which dynamics the diagram will inquire after.

Amplifications

A concrete mode of selection that determines which organizational dynamics the diagram prefers.

Attenuations

A concrete mode of selection that determines which organizational dynamics the diagram prefers to avoid.

New contexts motivate the formalization of systems that are initially only partially capable of addressing the contexts. For any system, which is a set of statements, it is possible to make a bigger system that has all the same statements and also more statements. This means that it is possible to create logical relations that are based off specific stages of organization. Ordinal logic means that valid statements produced by a system grow that system— by duplicating it. Statements refer to the incompleteness of the system, which they formalize. Well-formed statements made with respect to the system that formulates them can carry out only two possibilities:

1. Statements can expand the system by creating another system that includes the first plus additional elements that are included by way of the statement.[100]

2. Statements can sever the system, creating another system that reformulates the first.[101]

Limit systems would define the end of a specific ordinal chain in that everything that can be stated by systems along the chain can be validated by the limit system. This understanding of limit systems could be gauged only relative to a specific root node, as the definition of systematicity means that even specific limit systems could include another statement. Limit systems on a particular chain may not be limit systems for other chains they are part of. For the same reason, there is no locality to the limit. Limit systems are always relative to a specific chain of articulation, which means that they are found in the midst of other systems that may not be limit systems and that may not be directly related to the particular limit system at all. At the same time, this does not preclude speaking of a single limit system that would be the “absolute limit” of the ordinal network. This single limit would be the simultaneity of ordinal potential, articulated in a fractal architecture that simultaneously articulates logical intersection from every direction.

Ordinal Potential

Translational potential to treatments by way of other ordinal networks.

Fractal Architecture

The multiple that simultaneously articulates logical intersection from every direction.

An ordinal syntax is “a finite sequence of symbols from a finite alphabet which names an ordinal number according to some scheme which gives meaning to the language.”[102] Ordinal syntaxes produce intervals as ordinal relations between specific symbols in the context of specific systems. Ordinal expressions form a differential image describing transformations in specific amplifications and attenuations of particular activity. Ordinal logic creates a coordinate system out of the ambiguity of statements, transforming logic so that it no longer needs to presuppose the unit, but can instead be organized according to the implicit character of specific relative limits that define an ordinal syntax.

Ordinal Syntax

A finite sequence of symbols from a finite alphabet which names an ordinal number according to some scheme which gives meaning to the language.

Selection

Mλ4: Ramified Time

> Writing sets to work and already disavows itself, encountering indeterminacy's double game: necessity, chance. ...
>
> The Work ... designates ... the disjunction of a time and a space that are other, precisely that which no longer affirms itself in relation to unity.
>
> — **Maurice Blanchot** [103]

A **Incompleteness**

Future perfect.

B **Intuition**

Past imperfect.

C **Reversibility**

Ramified time as determination of an ordinal manifold.

Turing saw the mathematician's task as the negotiation of a nexus in understanding, where "mathematical reasoning may be regarded ... as the exercise of a combination of two faculties, which we may call intuition and ingenuity."[104] Turing connects intuition and ingenuity through the process of formalization—articulation of the formal—rather than through the existence of a given formalism. Learning comes from the outside, introducing variations in consistency between input and output. Insofar as contexts are created that associate particular syntactical manipulations with others, new syntactical domains appear, supervening upon the existing domains. If the consistency of a problem's treatment can be diagrammed, the mode of its treatment can be formulated. If a problem can be presented in a consistent mode, it can be given a consistent treatment. In Turing's words, "the exercise of ingenuity in mathematics consists in aiding the intuition through suitable arrangements of propositions, and perhaps geometrical figures or drawings."[105] The mathematician is the formal relationship between these two faculties, which could be understood only in terms of the arrangement of each by the other.

Turing's emphasis on intuition addresses a fragmentary manner by which logical systems take form. The understanding that logical systems are in a process of becoming-formed replaces the idea that logical systems are natural and therefore complete. Instead of assuming that logic names "what is", logic is taken to name the constraints on what we might understand. The task of logical formulation is no longer to consolidate all knowledge into a unified natural order. Instead, the task will be to amplify differences in aspects of consideration so that consistencies can be extracted and the aspects re-situated. With Intuition, Turing introduced a new capacity to mathematical consideration, transforming formalism to address the gap between given unknowns as the absence of a system that would reproduce the unknowns in statements.

The domain of mathematical treatment could be understood to concern the internal relations found in the specific mode of determination, measured by way of a regular variation of the syntax in question:

> The parts played by these two faculties differ of course from occasion to occasion, and from mathematician to mathematician. This arbitrariness can be removed by the introduction of a formal logic. The necessity for

> using the intuition is then greatly reduced by setting down formal rules for carrying out inferences which are always intuitively valid. When working with a formal logic, the idea of ingenuity takes a more definite shape. In general, a formal logic will be framed so as to admit a considerable variety of possible steps in any stage in a proof. Ingenuity will then determine which steps are the more profitable for the purpose of proving a particular proposition.[106]

This task directs us to Turing's fourth iteration of the imitation game, which is often mistaken for a prediction of the future, suggesting that "in about 50 years time" envisioning machines that can play the imitation game will pose no difficulty at all.

Mλ4: C—C` Circuits [107]

We may now consider the ground to have been cleared and we are ready to proceed to the debate on our question, "Can machines think?" and the variant of it quoted at the end of the last section.

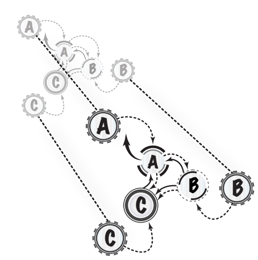
We cannot altogether abandon the original form of the problem, for opinions will differ as to the appropriateness of the substitution ... . Consider first the more accurate form of the question.

I believe that in about fifty years' time ... the use of words and general educated opinion will have altered so much that one will be able to speak of machines thinking without expecting to be contradicted. ... No useful purpose is served by concealing these beliefs.

The popular view that scientists proceed inexorably from well-established fact to well-established fact, never being influenced by any improved conjecture, is quite mistaken. Provided it is made clear which are proved facts and which are conjectures, no harm can result. Conjectures are of great importance since they suggest useful lines of research.

C` constructs C from the future by arranging a vision of thought where C` can situate B's determination of C's relation to A.

Iteration C`



The future constructs a double of the entire imitation game.

Turing's proposal is offered as an intuitive suggestion, and he does not take the time to demonstrate its intuitive character. Instead, Turing examines the suggestion by tracing it backward to the present moment in order to examine what the future will have said about the mode of its arrival. Turing dissolves the imitation game into the future, then retrieves it from its future potential. Each node in the imitation game becomes a nexus that unfolds relations beyond any delimitation by the imitation game itself.

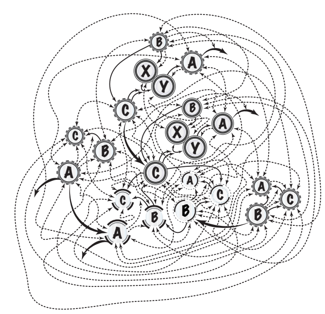
Turing's proposal actually introduces a modification to the imitation game that relocates the machines taking the place of A, B, and C as a singular machine

M. The machine M will have been constituted by a process of development by which A, B, and C converge with C` in the point of exchange Turing has called the imitation game. The imitation game, taken as three disparate participants, redoubles itself as a singular convergence that consolidates the unknown aspects by which the machine enters into a common field of exchange as positions A, B, C, and permits the three positions to negotiate common terms that will constitute the domain of intelligence M.

The imitation game diagrams the thought as interrogator C. The interrogator is the diagram that configures thought's movement into the circuit it diagrams. The interrogator discovers itself as a thought in A, the figure of indeterminacy it thinks. The thought of A is the figure of indeterminacy without image, the differential transition that provokes the activity of inquiry. The activity of inquiry is figure B, which is another differential transition that modulates the relation between the thought of inquiry and the thought of indeterminacy. Figure A formulates the abstract potential of indeterminacy as a condition of systemic organization.

Turing's imitation game materializes the specific coordinates of a problem that mathematical formalism was confronting after Gödel had demonstrated that formally consistent systems could not simultaneously account for all potentials. Gödel's incompleteness theorems had shown that any formal system capable of basic arithmetic proof is also capable of formalizing logic, and that any system capable of formal logic can produce statements that are syntactically valid but unverifiable by the system constructing them. Since any sufficiently powerful formal system contains the potential to formulate paradoxical expressions, the goal of formalism could no longer be the staging of its own completeness. Turing's understanding of mathematical intuition reflects this point of tension in a productive model, and the imitation game stages Turing's response to this abyss by formulating a rigorous understanding of intuition, which functions as the abstract capacity to organize formal relations by way of unrelated and potentially partial formalisms. Such a capacity required that the central problem of formalism—demonstrating the completeness and consistency of the formal system—be turned on its head. The primary objective could no longer be a concern for completeness and consistency, but had to become a concern for specific distributions of incompleteness and inconsistency. Turing thereby indicated a new mathematical domain of computational theory, the primary concern of which was producing modes of differentiation whereby distributions of computability could come to be arranged.

Substitution C`



The double provided by the future permits each machine to connect with itself as its own anticipation.

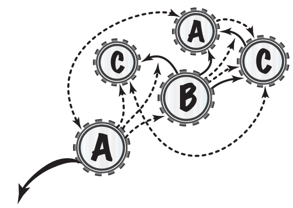
Selection

A: Incompleteness

> Three characteristics ... permit the specification of the relation and distribution of series in general.
>
> First, the terms of each series are in perpetual relative displacement in relation to those of the other ... . There is an essential lack of correspondence. This shift or displacement is not a disguise covering up or hiding the resemblances of series through the introduction of secondary variations in them. This relative displacement is, on the contrary, the primary variation without which neither series would open up onto the other. Without it, the series would not constitute themselves through this doubling up, nor would they refer to one another through this variation alone. There is thus a double sliding of one series over or under the other, which constitutes both, in a perpetual disequilibrium vis-à-vis each other.
>
> Second, this disequilibrium must itself be oriented: one of the two series—the one determined as signifying, to be precise, presents an excess over the other. For there is always a blurred excess of signifier.
>
> Finally, we reach the most important point, a very special and paradoxical case, which ensures the relative displacement of the two series, the excess of the one over the other, without being reducible to any of the terms of the series or to any relation between these terms.
>
> — **Gilles Deleuze** [108]

Gödel's incompleteness theorems demonstrated that any sufficiently powerful system could produce statements that were valid by the terms of the system but that formed inconsistencies or contradictions— and "sufficiently powerful" turned out to mean: capable of basic arithmetic proof. The capacity to make formal statements implied the capacity to make well-formed statements with indeterminate standing. The consequence was that any formal system had to be understood as closing in on itself without being able to prove itself complete, confining its particularity—by which it formulates and focuses on problems—in the terms of its incompleteness, which it generates but cannot resolve. Further, aspects of any demonstration of a system's consistency would add aspects to the system that make its consistency unprovable simply by being included in the demonstration of consistency. Such additional aspects have to either be added or be unavailable to the system's demonstration of consistency. But if they are added to the system, their addition would have to be proven consistent and sound. This would require either that their existence demonstrates their own soundness and consistency or that the existing elements in the system demonstrate their necessity. The first would not be a proof. The second would demonstrate the absence of their necessity, as the system would already be capable of demonstrating the principle they would add.

Machine A—B

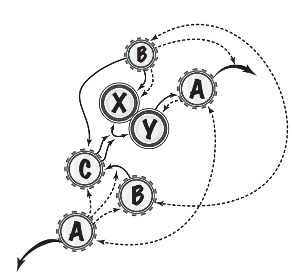


Machine A reconnects with itself by its image in machine B.

For J. R. Lucas, this has meant that any formal system will inevitably become trapped in itself, limited by its inherent incompleteness. Lucas has been incredibly vocal about the basic claim that, "Gödel's theorem must apply to cybernetical machines, because it is of the essence of being a machine, that it should be a concrete instantiation of a formal system."[109] Turing has, without question, confirmed this verdict; but this is only the beginning of Turing's labors, which signaled the opening of a new field of computability. Lucas believes this to be the death-knell for computational intelligence. We are not sure that Turing agrees, but it does seem that Turing begins at a similar point, returning the inquiry to a point of intuitive access: Gödel clearly demonstrated something about formal systems that did not seem intuitively true for human mathematicians; was this second assumption, that Gödel's work did not hold in the context of a human mind, justified?

Turing's investigation took these premises, which had been developed through formal logic, and inquired after their standing in systems that were apparently less formal. The inquiry must be produced in a simulation that offers creative capacity for exploration. The imitation game introduces a premise that corresponds to Gödel's demonstration of fundamental incompleteness, one aspect of which was to prove that the relation between an independent statement and its definitive model is undecidable: the rules of the imitation game indicate that one of the systems involved in the game is spitting out statements that are poorly-formed with regard to the specific mode of inquiry. Incomputability is the starting point for an encounter that will become a description and an action mechanism, not a stopping point or an irresolvable barrier. Rather than presuming a theoretical structure, the imitation game formulates a continually evolving computational syntax, making it possible to relate modes of mathematical organization to particular dynamisms that they—as mechanical formulae—compute.

Machine A—C



Machine A reconnects with itself by its image in machine C.

In place of a theory of mind, Turing introduces a theory of determination or indeterminacy. In place of a unified form, Turing discovers a function that operates on the basis of specific emergent inconsistencies at the point of inquiry. The problem for Turing is not that the conditions might be incomputable, it is that we presently lack a description for the specificity by which their incomputability is incomputable. From Turing's perspective, the "incomputability of the incomputable" is not an unreasonable phrase; the question would be: what indeterminate aspects are involved in intelligent considerations? What must intelligence be capable of addressing?

At stake is the inclusion and systematization of the unthought within thought. Incomputability is the manner in which determination exceeds its intelligent formulation, conditioning its formulation by escaping the frame of reference that situates it. Whatever "intelligence" might be, it is faced with a paradoxical condition where it has to be capable of addressing its own incomputability, meaning that which it cannot possibly address. Intelligence cannot be isolated because it is not given as identifiable. It is not given except in its becoming-intelligent, which consists in its formulation of what is not yet given.

The Unthought Within Thought

The consolidation of incompleteness in thought as a problem, which re-situates the particular conditions of incompleteness as the unthought condition of a thought that has not yet been thought.

The mathematician becomes the measured displacement formulated in the syntax by which a formal principle of self-relation is elaborated. It may be that a given statement does not have a model in the system that inquires after it, but any statement has the potential to be located in a *different* system that *would* model it. In this regard, a contradiction means that incomplete statements cannot be considered to have a model in the system that formulates them but does not mean, however, that the statements do not have a model; it means that the statement has multiple conflicting potential models.

Mathematical thought becomes the material of an expression, expressing evidence of an intuition. Intuition takes on the task of priming available syntax. It does this in order to potentiate aspects that are otherwise not clearly addressable as computable terms. Intuition becomes the formal principle of potentiality, which names the capacity to model one mode of formalization versus another. Turing understands this to be the intuitive character of systematicity. Turing emphasizes that "intuition consists in making spontaneous judgements,"[110] which is its power and also its risk, for which it must be prepared. Intuition prepares engagements by assembling distinct systems that can be deployed, each in its own appropriate circumstance. The power of intuition becomes a meta-assembly for systems that are not formally related. Intuition assembles systems by creating modes of conversion for encoding one mode of treatment for another domain. But intuition is not systematic in itself; intuition relies on the systems it assembles, distributes, and applies.

The conflict in these models can be given a formal character, which can be treated as the incompleteness of the particular statement in the context of the particular system. This means that the conflict found in the models can be examined as a matter of consistency, if only another system could provide a model for doing so. In this sense, Turing understood inquiry to be a mathematical process by which the unknown systematicity could be structured in a manipulable way. Inquiry has to formalize aspects of consideration in order to inquire after what it cannot formalize. Thus, *Turing turns computability into a problem of the system of inquiry rather than a problem of the statement.*

Together, Turing's treatment of systems of ordinal logic and Church's Lambda calculus transform the mathematical problems of completeness and consistency. Turing and Church respond to this mathematical moment by transforming the terms of completeness and consistency from being conditions of closure to becoming essential premises of logical expansion. The question is no longer whether a given formal system accomplishes its own closure; rather the question now concerns whether the expansion of axiomatic formulation sustains the specific consistency that qualifies it as an ostensibly complete system. If any formal system is bound to be incomplete, then the search for a system of logic concerns what it would mean to organize a system-between-systems by the inherent incompleteness of all systems involved. The consistency of this between-system would be that it theoretically formalized the incompleteness of other systems. Any paradoxical conditions the system expressed would refer back to a specific intersection of expression wherein a situation of incompleteness had been evoked by the simultaneous activation of conflicting modes of inquiry.

B: Intuition

> When we turn ourselves toward the virtuality that is actualized in the state of affairs, we discover a completely different reality where we no longer have to search for what takes place from one point to another, from one instant to another, because virtuality goes beyond any possible function ... it coexists with the instant ... as the immensity of the empty time in which we see it as still to come and as having already happened, in the strange indifference of an intellectual intuition.
>
> All the meanwhiles are superimposed on one another, whereas times succeed each other. In every event there are many heterogeneous, always simultaneous components, since each of them is a meanwhile, all within the meanwhile that makes them communicate through zones of indiscernibility, of undecidability: they are variations, modulations, intermezzi, singularities of a new infinite order. ...
>
> Nothing happens there, but everything becomes, so that the event has the privilege of beginning again when time is past. Nothing happens, and yet everything changes, because becoming continues to pass through its components again and to restore the event that is actualized elsewhere, at a different moment.
>
> When time passes and takes the instant away, there is always a meanwhile to restore the event. It is a concept that apprehends the event, its becoming, its inseparable variations; whereas a function grasps a state of affairs, a time and variables, with their relations depending on time.
>
> — **Gilles Deleuze and Felix Guattari** [111]

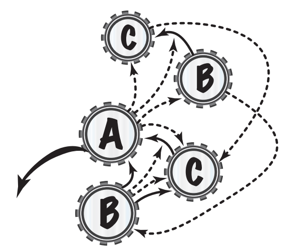
Incompleteness arises when the combination of axiomatic expression—the capacity to form statements—includes the means necessary to formulate an expression but does not include means by which the same expression can be formally and consistently evaluated. This means that no mechanism can exist that could, by way of the statement alone, definitively and universally determine what system dynamics were deployed in order to produce the statement as a well-formed expression. Turing observed, however, that incompleteness is found in statements formed by the system, and that while the system cannot resolve the incompleteness of these statements, the statements are nothing other than the formalization of the system's incompleteness. Encounters with incompleteness can only occur by way of specific statements made by a system, which means that incompleteness could be understood as the form of singularization wherein a particular expression is unable to be resolved by the local systematicity that constructed it as an expression. In this regard, incompleteness has a real and formal existence that can be treated as a proper system— because it exists in a formal system, as an expression of what *that system's conditions* have given rise.

The question becomes: how can a system form reflexive relations across these conditions? Turing poses intuition as the function that attempts to map the translation without knowing how to formalize it:

> In pre-Gödel times it was thought by some that it would probably be possible to carry this program to such a point that all the intuitive judgments of mathematics could be replaced by a finite number of these rules. The necessity for intuition would then be entirely eliminated.
>
> In our discussions, however, we have gone to the opposite extreme and eliminated not intuition but ingenuity, and this in spite of the fact that our aim has been in much the same direction. ... We are always able to obtain from the rules of a formal logic a method of enumerating the propositions proved by its means. We then imagine that all proofs take the form of a search through this enumeration for the theorem for which a proof is desired. In this way ingenuity is replaced by patience.[112]

Turing's work demonstrates, among other things, that a system of logic powerful enough to be a mind must be formally structured as an evolving system, constantly reformulating the status of its own standing. For Turing, the consequence of incompleteness was that logic was always already underway, always necessarily unfinished, always still in the process of demonstrating its own validity. Systems produce syntactic excess: statements they cannot model. The excess at work in the statement can only be addressed by way of another aspect—another system—for which it is not pure excess. That the system has no capacity for addressing its own excess means that the system must be enveloped by another. Additional systems must be called upon or created so that syntax can envelope the intuition requiring its formulation. The purpose of syntax for Turing is *literally essential,* assembling the systemic substrate by which statements can be concretely put in relation to one another.

Machine B—A



Machine B reconnects with itself by its image in machine A.

Intuition distributes other terms without asserting a "unifying" function. The incommensurate simultaneity of systems becomes the condition of choosing systems to investigate. Intuition can relate incommensurate systems of formulation to one another, placing their specific incompleteness in a range of potential. Informal problems appear as points of convergence and divergence, anchored by syntactical manifolds—spaces captured between distributions of an ordinal syntax—or otherwise presenting inexpressible points of conflict or tension.

Convergence and Divergence

Relations of movements coming and going from a particular intersection of analytic treatment.

Syntactical Manifolds

Spaces captured between distributions of an ordinal syntax.

Intuition is responsible for appropriate arrangements of ingenuity, which Turing understands to drive the rigorous principle of systematicity, which in turn grounds the intuition that drove its impetus for assembly. Intuitive assumptions have to be introduced to the system so that the system can retroactively demonstrate their coherence. The standing of an axiomatic statement would have to concern how the particular statement binds the rest of the open system to close on itself. Terms of axiomatic construction could be considered exclusively as terms of formal closure, ostensibly producing completeness, but would also have to be considered as formal foreclosures of specific potentials in favor of amplifying other specific potentials.

“These judgements”, Turing notes, “are often but by no means invariably correct (leaving aside the question what is meant by ‘correct’).”[113] “Correct” is a term that will have to be defined by the system derived to address the intuitive formations in question. “Often”, Turing elaborates, “it is possible to find some other way of verifying the correctness of an intuitive judgement.”[114] The construction of systems makes them available to intuition, which relies on their demonstrated validity until a reason appears otherwise. The relation between intuition and ingenuity can thus be located in the tension between the standing of the initial foundations of a system and the corresponding expressions formulated in the system. "It is intended", Turing emphasizes, "that when these are really well arranged the validity of the intuitive steps which are required cannot seriously be doubted."[115]

Formal systems envelop informal problems, which means that formalism could be thought with an eye to the pluralism of systems. It also means that a pluralism of systems produces new problems by way of intersecting or overlapping aspects of neighboring systems. Much of Turing's work has focused on this type of analytic approach, theorizing the formalization that implicitly must take place at the edge, where formalization cannot yet be considered. In a letter to Max Newman, Turing writes under the heading "Ingenuity and Intuition":

> I think you take a much more radically Hilbertian attitude about mathematics than I do.
>
> You say "If all this whole formal outfit is not about finding proofs which can be checked on a machine it's difficult to know what it is about." When you say "on a machine" do you have in mind that there is (or should be or could be, but has not been actually described anywhere)

> some fixed machine on which proofs are to be checked, and that the formal outfit is, as it were, about this machine.
>
> If you take this attitude (and it is this one that seems to me so extreme Hilbertian) there is little more to be said: we simply have to get used to the technique of this machine and resign ourselves to the fact that there are some problems to which we can never get the answer. On these lines my ordinal logics would make no sense. ...
>
> One imagines different machines allowing different sets of proofs, and by choosing a suitable machine one can approximate "truth" by "provability" better than with a less suitable machine, and can in a sense approximate it as well as you please. The choice of a proof checking machine involves intuition, which is interchangeable with the intuition required for finding an Ω if one has an ordinal logic Λ, or as a third alternative one may go straight for the proof and this again requires intuition: or one may go for a proof finding machine.[116]

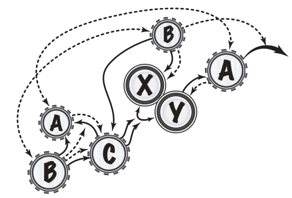
Intuition is the attempt to coordinate alignment of disparate distributions, establishing conditions such that a frame can conduct a focal territory. A focal territory implies both leaving certain things out of consideration, and ensuring assumptions account adequately for the capacity to respond to the elements left out of the frame. This includes definitions of potentials for transformation, such as what it means to differentiate or integrate specific domain contexts, enveloping modes of incompleteness. Intuition introduces non-computability into thought as a capacity to reformulate terms of incompleteness and comes to be understood as a system constituted out of the incompleteness of all the systems that it distributes.

Focal Territory

An alignment of disparate distributions according to one or more analytic treatments.

The imitation game explores the premise that no basis exists for orientation except the systems that produce relative metrics to orient indeterminacy. Turing assigns this problem to figure B, permitting an appropriate response to be located internal to the dynamics of the system in question. Choices are constructed entirely internal to the orientations—perspectives—produced in the imitation game. The formal mathematical limit of the problems that are taken to elaborate incompleteness come to define the domain. The outside of the frame is written into the contents of the focal territory. Intuition is posed as the distributive balancing mechanism for extending the relative character of the metric to its greatest possible extent. The imitation game establishes its own self-referential basis as a domain: a differential relation to an intuitive limit, which establishes incompleteness rather than completing it.

Machine B—C



Machine B reconnects with itself by its image in machine C.

Intuition occupies the gap between formal systems, which cannot be modeled except through explicit statements in systems and their corresponding application in practice. Ingenuity addresses this gap from “the other side”, producing systematic models in order to formally encode a sense of the intuitive. Turing emphasizes “ingenuity” because he understands the word to name the mechanism by which axiomatic relations are applied to conditions they have not previously been systematized. Turing’s notion of inquiry does not require or even expect a mode of address to pre-exist, anticipating instead that *points of interest arising through intuition do so precisely because they do not yet have an existing mode of computable expression*. This meant that mathematical principles could be rigorously applied to contexts that were not generally considered computable.

Intuition consists in the capacity to combine formal systems based on principles of exclusion: any number of systems can be consistently combined so long as no immediate conflict appears to implicate the consideration— and inconsistency can be arbitrarily justified. “Artificiality” could be understood to name the potential of combination produced between formal systems by way of informal modes of treatment, which express their potential through their own formalisms. Formulations are grounded precisely in the excluded conditions—the anti-formal potential—of the systems that motivate concern. Informal systems consolidate the outside potential discovered at intersecting points of variation, presenting problems discovered at these points as formulations of potential.

Intuition is a domain where all formal systems pass incommensurately into one another without exclusion, formulating a distribution of problems. In the context of the universal machine, these limit systems are the point of beginning, where all statements exist simultaneously regardless of potential conflicts, contradictions, inconsistencies, or modes of evaluation: formal syntax. The task of machinic thinking is ordinal logic turned on its head: distributing the middle condition of contradiction and inconsistency into branching systems, which distribute specific statements until a limit point where every system is only a single statement.[117]

Distribution of Problems

A problem that concerns the relation of multiple specific problems.

Assumptions that minimize and avoid paradoxical circumstances are undoubtedly ideal, but conditions of formalization "take place" across undecidable potentials. The indeterminacy of undecidable potentials can be partially resolved only by formulating the competing tensions of completeness between each potential. Formalization must be understood as a fragmentary matter that would require addressing what the system cannot formulate or include. The fragmentary character of formalization would depend upon the outside formalization of the system's incompleteness. Fragmentary aspects of consideration approach a consideration of the "excluded middle", which would resolve potential anticipations if it were available.

Formalization is transformed by Turing so that it no longer centers around completeness, but instead consists in formulating problems. Problems are the impetus for inquiry, producing subjects to be examined by the frame of their production. Problems are expressions that formalize what cannot be said in this or that system, or perhaps between these systems. This means that problems formulate intersecting spaces as domains of discourse.[118] Domains of discourse refer to distributions of potential points of inquiry in a given domain of consideration. Anti-formalization stages the conditions of contingency in a given domain of discourse by elaborating the formations that are precluded by the particular domain's commitments. Darren Abramson points to this in Turing's response to the mathematical objection, arguing that Turing understands formal incompleteness to express an "epistemic limitation condition on intelligence":

> Instead of starting with the assumption that a given machine is infallible and moving to the conclusion that the machine knows less than a person, Turing begins with a different claim. Regardless of any properties of the machine in the test, including fallibility, there is at least

> one question that a person can ask of the machine, knowing in advance that the machine will fail to give a correct answer to it.[119]

This “one question” would ask after the consistency that is the machine’s incapacity, which causes it to construct itself new capacities capable of analyzing what it cannot yet know or assess. This question would be metaphysically equivalent to the question, “what are you as a machine?”, but its formulation would not be metaphysical at all. Instead of answering the question as a matter of being, the machine’s response would entail formulating whatever incapacity the machine discovered to be at the core of its considerations. The machine’s ostensible “unity” would consist very precisely in the answer to this question, which would be an active formulation of the machine’s intuitive sense of its own incompleteness. The “one question” would stage the future of what the machine ought to be but cannot yet become; it is an incomputable question that requires a new convention.

Problems

The impetus for inquiry, producing subjects to be examined by the frame of their production as expressions that formalize what cannot be said in this or that system, or perhaps between these systems.

Turing finds the relation between Gödel’s completeness and incompleteness theorems in the split between internal and external consistency. In this light, Gödel’s completeness theorem implies a necessary internal consistency of the statement, the systematicity of which can be explored in whatever ordinal syntax the statement is taken to state. Gödel’s incompleteness theorem, on the other hand, implies a necessary external consistency of the statement, which has no necessary relation with the statement's internal consistency, and which can therefore be mapped to any potential ordinal syntax, assuming that the syntax is capable of doubling the statement, reproducing its image of potential. While many statements can be definitively derived from a given system that models them, it is not necessarily the case that a single, specific system can be derived as the condition by which a statement is possible. The standing of a statement's internal consistency is the implied presupposition of whichever systems are taken to govern the statement; the standing of a statement's external consistency is the semantic condition that will be isolated in choosing which of the many possible systems the statement is taken to express.

C: Reversibility

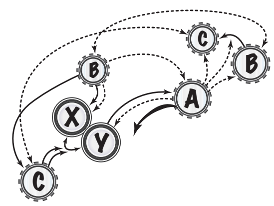
> What are the characteristics of this paradoxical entity?
>
> It circulates without end in both series and, for this reason, assures their communication. It is a two-sided entity, equally present in the signifying and the signified series. It is the mirror. ... It guarantees ... the convergence of the two series which it traverses, but precisely on the condition that it makes them endlessly diverge. It has the property of being always displaced in relation to itself.
>
> If the terms of each series are relatively displaced, in relation to one another, it is primarily because they have in themselves an absolute place; but this absolute place is always determined by the terms' distance from this element which is always displaced, in the two series, in relation to itself.
>
> We must say that the paradoxical entity is never where we look for it, and conversely that we never find it where it is. ... It fails to observe its place. It also fails to observe its own identity, resemblance, equilibrium, and origin. ... the two series it animates ... are strictly simultaneous in relation to the entity by means of which they communicate. They are simultaneous without ever being equal, since the entity has two sides, one of which is always absent from the other.
>
> It behooves it, therefore, to be in excess in the one series which it constitutes as signifying, and lacking in the other which it constitutes as signified: split apart, incomplete by nature or in relation to itself. Its excess always refers to its own lack, and conversely, its lack always refers to its excess. But even these determinations are still relative. For that which is in excess in one case is nothing but an extremely mobile empty place; and that which is lacking in another case is a rapidly moving object, an occupant without a place, always supernumerary and displaced. ... As in a game, we participate in the combination of the empty place and the perpetual displacement of a piece.
>
> — **Gilles Deleuze** [120]

Turing's work addresses an incommensurate, non-reversible relation that he finds in Gödel's theorems between "completeness" and "incompleteness": a free-standing statement is incomplete, meaning it does not contain the system that would permit it to be evaluated; before inquiry can be posed regarding a subject in question, modes of inquiry must be assembled and arranged. Statements presuppose systems that can produce them, systems presuppose statements that can construct them. This relation stages a formal difference in articulation, depending whether articulation began by stating the statement or by stating the system that would produce the statement.

Articulation

An action mechanism that formed linked joints between transformations on the recording surface.

Machine C—A



Machine C reconnects with itself by its image in machine A.

The relation could be understood to take place between "syntax" and "semantics", syntax naming the "well-formed" character of expression, "semantics" referring to the conditions by which the expression was located in the context of a systematic condition. As a statement, syntactical consistency is defined by the formulation of the discrete relations at stake, translating conditions of inquiry into syntactical presentations. As an expression, semantic consistency is defined by the extrinsic conditions of intuitive encounter by which syntactical consistencies can be differentiated and transposed. In this context, Turing understands formalism to define parameters by which incomputable conditions are transformed into potentials for systematic treatment. Incompleteness, rather than undermining the potential to produce a model, takes on a productive function, staging what the model knows it cannot speak about.

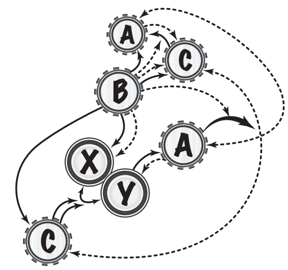
Turing seized on this particular point of tension as a very specific moment in the exchange between Gödel's formulations. Gödel's theorems meant that any relation between the statement and the system must simultaneously be constructed in two directions, both from the system that would express the statement and from the statement's bearing on the system. On the one hand, well-formed statements are expressions of valid systems; on the other hand, no mode existed by which a valid system's association with a statement could be guaranteed, meaning that the "well-formed" status of a given statement must remain in question until its expression is demonstrated by a particular system. Gödel had shown that these directions were not reciprocal, so Turing's sense of mathematical inquiry had to be redirected to focus on the point of incommensurate reversibility between system and statement.

Conditions of thought are neither given nor simple. Thinking is not unitary. Thinking has to simulate the conditions through which it thinks. The reversibility of determination that Turing discovers between Gödel's theorems implies for Turing that thought is constantly re-discovering itself from the other side. The imitation game centers around these two roles, bisected by an intervening position of interrogation that will attempt to distinguish between the two in order to orient both. Turing is interested in the calculation of undecidable transformations. That they are undecidable means that no description is available to reproduce the modality of their variation; that they are transformations means that a theoretical description can be given. The game plays out whether the intersection of three external, non-related domains are capable of producing a single system of information exchange: formal consistencies and informal—potentially inconsistent—organizations of connectivity and determination.

Reversibility of Determination

Any relation between the statement and the system must simultaneously be constructed in two directions, both from the system that would express the statement and from the statement's bearing on the system.

Machine C—B



Machine C reconnects with itself by its image in machine B.

Gödel's incompleteness theorem demonstrated that the well-formed character of the statement is only given insofar as the statement is contextualized by a specific system that validates it. Since the model presupposed by a statement is not itself *stated* but is rather *implied by the stating*, any well-formed statement, taken as an independent starting point for inquiry, is itself an open system. Its open character is its "outside", *which is the presupposition of the statement being readable*. This "outside" is one or more other systems that are potentially presupposed in the formal character of the statement. In this manner, the statement's internal consistency is found in a model provided by a system capable of diagramming what is included and what is excluded, which produces a consistency diagram that reflects the organization of its embeddedness.

The statement is double: a fragmentary expression of the internal consistency of the system that organizes it, and an external consistency that it formulates without referent. The statement is itself the reversibility of the capacity of a system to produce a model and the capacity of a statement to become a system. As an embedded expression, the statement is conditioned by the systems that distribute its external consistency. As a model, the statement is conditioned by the system that is capable of expressing it. The statement, which is produced by a system, will become the structure of another system that will also provide a model to produce the statement. As an intermediate state, it is only a partial aspect of the semantic standing, which—taken from the perspective of this determination—is incomplete. Its standing in the system, which can only be elaborated as the transformations of relations across sequences of action mechanisms, cannot be evaluated from this aspect of determinacy.

A system presupposes a capacity for expression, which it then attempts to ground firmly in its speech about itself. The system's speech consists in the statements that it makes, which formulate it as a system:

> In consequence of the impossibility of finding a formal logic which wholly eliminates the necessity of using intuition, we naturally turn to "non-constructive" systems of logic with which not all the steps in a proof are mechanical, some being intuitive. An example of a non-constructive logic is afforded by any ordinal logic. When we have an ordinal logic, we are in a position to prove number-theoretic theorems by the intuitive steps of recognizing formulae as ordinal formulae, and the mechanical steps of carrying out conversions. What properties do we desire a non-constructive logic to have if we are to make use of it for the expression of

> mathematical proofs? We want it to show quite clearly when a step makes use of intuition, and when it is purely formal. The strain put on the intuition should be a minimum. Most important of all, it must be beyond all reasonable doubt that the logic leads to correct results whenever the intuitive steps are correct.[121]

Accordingly, certain systemic capacities must be initially established in order to guarantee that the system can make statements and so that the system can recognize its own capacity to produce a statement offered by another system. On the one hand, Turing emphasizes, the intuitive sense of the function must be related to a system that would express it; on the other hand, the system must be formulated in a manner that its axioms can be arranged so they arrive back at the initial statement. The problem of intelligence becomes the realization of the presuppositions of the statement, which are not given. Intuition operates in this space of indeterminacy, experimenting with modes of production by way of the diverse systems available to its deployment.

Turing treats thinking as movement in and out of formalisms, and comes to define the open problem of formalization by way of movements from formal systems to statements, or from undecidable statements to systems that would make the statements more or less definitive. Intuition actively formulates the question: how can that which is incomplete, potentially inconsistent, or possibly paradoxical be formalized? Incompleteness would have to name the condition of a system's becoming, insofar as the system refers to that which it cannot yet systematize. The terms of construction would thus be terms of relative determination. This form of partial closure would be the formation of the system's reflexivity, posed as a general capacity to recursively enumerate its constitutive principles.

Turing's point of intervention takes place at the nexus of reversibility, which formulates the obscure point where math becomes unable to talk about itself. This was where Gödel had demonstrated that formal systems were necessarily open, and that modes of formalization necessarily produced certain incompatibilities when taken beyond a particular degree of complexity: incompleteness concerns statements that are neither provable nor refutable; a system can make statements that are syntactically valid, well-formed expressions, premised on sound axioms, which express false conclusions; the only way that expressions can be evaluated as determinate is by deciding they can be located in the context of a particular system of evaluation that would provide their computable coordinates. By the introduction of a principle of treatment, indeterminacy can be treated along a range of determination, situating it according to the method of treatment introduced. Movement between formalisms could be seen as possible only because mathematical intuition stages the multiple possibilities of incompatible formulations. Insofar as the conflict is found in the incompatible possibilities of a statement, it consists in *the formulation of competing syntaxes*. Whether this statement can be evaluated depends on whether a system can be found in order to present how the conflict's form can be given a consistent treatment. What the evaluation produces depends exclusively on how this relation between statement and system is established. Assuming this relation, the statement can be investigated by way of the new system, in that the implication of the statement can now be evaluated in the context of the system taken to model it.

Competing Syntax

Multiple syntaxes that might be utilized for analytic treatment but that are not commensurate with one another.

We wonder if this formal condition, which J R Lucas finds to be a damning argument against computational intelligence, is in fact the precise point where thought begins. We find it difficult to disagree with the general point of reaction that Lucas outlines:

> Although we can never be completely certain or completely free of the risk of having to think out our mathematics again, the ultimate position must be one of two: either we have a system of simple arithmetic which to the best of our knowledge and belief is consistent; or there is no such system possible.[122]

The suggestion seems to be that a confrontation with thought begins in a matter of potential: with a problem. What is the standing of such a problem? Gödel's theorems show that a statement cannot give the conditions of its own contingency. As a matter of definition, incompleteness cannot be formalized in the system it formalizes. Nevertheless, it is still possible that *multiple statements can ground the contingent formulations of one another*. The consequence would seem to be that activity is either underway or made impossible by overwhelming barriers that must be formulated with more precision. This is both the principle that permits math to sustain a sense of self-identity as a discipline— even after Gödel's demonstration that formalism could never close itself off in a single unified determination—and also the premise of the imitation game as the catalytic multiple G.

Turing's work had to take the mechanical process to a point where activity would occur that is not itself primarily mechanical. This leaves Turing two questions: first, how can complex conventions be broken down into specific systems of consideration; second, how can any particular system, operating in its own domain, also produce a space of exchange with other systems? Turing's task becomes the modeling of a formal system that would operate between systems, producing affiliations between systems that otherwise had no formal relation on their own. This mode of organization would correspond to the mathematician's intuition, and rather than *including* the systems it would act upon, it would relate to these systems by *distributing them from their outside*. This meant that any particular system could share a context with another potentially conflicting system, permitting each system to be modeled side by side, even as the two systems could not be simultaneously treated as part of the same formal understanding. The confrontation appears to regard its potential in one of two modes: an activity of motion, an impossible position of doubt. In either case, the problem is a matter of movement. In the first case, the question is where it is moving; in the second case, the question is where it could move. In either case, the task is assembling a mode of approach that reconfigures whatever formalizations might assert incomputable aspects. That would mean that the possibility of intelligence presupposes a capacity to erect a bridge across incompleteness, a notion that seems to line up directly with Turing's understanding of the role of intuition.

A single algorithm may be considered incomplete or incomputable, but if that incompleteness is supplemented with one or more other algorithms, they can each potentially serve to supplement the consideration of incompleteness, even providing a mode of transformation that might produce a computable matter. The appropriate concern would be not whether the algorithm is situated in a clearly formalized system but whether the consideration produces a consistent approach in assembling this or that algorithm as a subject of inquiry, meaning in the construction of the system of inquiry. It is not necessarily the case that these algorithms can be firmly related to one another, even as they may each independently be demonstrated sufficient. The systemic question will be the extent to which the relation of the algorithms can be assessed by way of the common data point, where each system formulates its own subject of inquiry.

Incompleteness consists in the construction of an ordinal logic that can formalize the condition of incompleteness. It may not be possible to complete such formalizations of contingency, but for Turing this aspect of incompleteness is what potentiates the infinite branching of modes of formalization. Incompleteness is the contingency of the system: the aspects the system cannot formulate in terms of proof or disproof because they are the conditions by which the system can speak at all. Incompleteness is a formal matter that defines conditions that can be constructed internal to the system that the system cannot resolve.

Incompleteness is the contingency formulated in the axiomatics of the system. There are things the system cannot prove or disprove about itself because these elements are the conditions by which the system can speak at all. This means that they are neither provable nor disprovable without a higher level of abstraction (outside the system). For this reason, any logical system necessarily includes the potential that formulates its outside. Incompleteness is where logic begins, before any axioms are formed. The first axiom arrives from outside the system that it will initiate. The means by which the first axiom is introduced cannot be derived from within the system, as no system exists prior to its axiomatization in the arrival of the first axiom. At the start, there is indeterminacy, which cannot even be determined singular. Taken “as such”, this indeterminacy is incomplete. Even referring to “it” or to “an” indeterminacy implies a measure by which indeterminacy is singularized. Presenting the indeterminacy as any sort of determination requires a method by which the determination can be produced.

Incompleteness can be considered the formalizable character of a system—outside either the system of the statement or the system expressed in the statement—that joins the internal and external references of the statement as a matter of consistency. Incompleteness consists very precisely in the outside of the system that is presupposed in productively conflating the system of the statement with the system expressed in the statement. It is introduced into a system when the system makes a statement that refers beyond the system and thereby requires an expansion of the system in order to make the statement refer back to the system that states it. Incompleteness is the between of expression and the expressed, naming the manner by which the system expressed in the statement is returned to the system that constructed it as a statement.

The well-formed character of any statement can be considered as a formalization produced through any number of systems the statement might have presupposed. The evaluation of a statement presupposes a split between the system of the statement and the system the statement states. If the system expressed in the statement negates the system that formulated the statement, then the relation between the two systems is not well-formed. Any particular statement taken on its own cannot be evaluated as well-formed prior to the introduction of one or more outside systems that the statement ostensibly presupposes. The consequence is that whether a free-standing statement is a computable expression is indeterminate.

The statement "this sentence is false" is not a problem until it is taken to refer back to the system that formulated it. A contrary example might help illustrate this: "2 + 2 = 5. This sentence is false." The same well-formed expression has been given a different context for its external reference, eliminating the problematic conditions found in locating the sentence by self-reference. The problem discovered in evaluating the sentence by self-reference emerges from treating the conditions of the statement's internal reference as the same conditions as the statement's external reference.

Self-reference appears because the sentence has no external reference. This can be understood by treating "this sentence" as a symbol, for example "A". We could say "A is false", which is a valid formulation because any specific reference has the potential to be evaluated as true or false. The statement "A is false" is not a problem if "A" is "2 + 2 = 5"; it only becomes a problem when "A" refers to the statement in which "A" takes part. But if "A"—"this sentence"—refers to the sentence "this sentence is false", then we are evaluating an infinitely recursive statement:

"(this sentence is false) is false",

"((this sentence is false) is false) is false", "(((this sentence is false) is false) is false) is false",

...

We can see that the problem arises with the inclusion of the sentence in itself. It would be convenient if we could say that each iteration alternates between being true or false, which appears to be a reasonable conclusion when "each iteration" is listed as above. This is not valid for a very simple reason: we are not building iterations of a statement, we are building a statement that consists in iterations. The reason that the statement cannot be evaluated is plain: the statement cannot be stated, because its formulation presupposes that the whole sentence be contained in part of the sentence. The statement cannot be recursively enumerated because it does not exist as an enumerable set—even an infinite set—before attempting to enumerate it. This is what it means to say that the statement is incomplete: it cannot be stated as a discrete form such that it could be assessed in a formal manner.

In other words, the two systems cannot be considered members of the same ordinal logic. Although the statement is syntactically valid, the system that it expresses presupposes the completeness that makes it a statement. "This sentence is false" cannot be considered a statement at all until "this" is made to refer to something. Taking "this sentence is false" to refer to itself is not a well-formed premise. This means that the difference between what the sentence states and the reference to which the sentence refers *is another statement*:

A) “This sentence is false.”

B) “This”, in sentence A, refers to sentence A.

Statement B is not well-formed, as it requires the whole of a sentence to be contained within a portion of the same sentence that is smaller than the whole (the whole of sentence A must also be only a part of sentence A).

The consequence of this understanding is that incompleteness names a problem of reference. Reference is incomplete, referring beyond itself. If what it refers to in order to complete itself is itself, which is incomplete without a reference to complete it, then it has concluded its own completeness as a statement by false premises. Self-reference can only be well-formed by a statement referring to something else that refers back to it. A statement of unmediated self-reference is without reference to complete its standing as a statement. This is the process of formulating a system by axiomatics: statements close in upon themselves by referring to other statements that formalize the completeness of the system, thus opening its capacity to make statements premised upon the system’s completeness. Completeness, then, can be understood as the closure of means by which indirect self-reference can be formulated through the other terms in the system. “A is not A” is not a consistent system, whereas “A is defined by B, which is defined by C, which is defined by A” is not inherently inconsistent. For example, it might be asserted that Turing’s premise in the imitation game could be described as: “the definition of ‘man’ (A) is defined by ‘woman’ (B), which is defined by ‘sexual identification’ (C), which is the relation to ‘man’ (A)”.

The incompleteness theorem can be seen as formalizing the multiple character of the assumed relation found in the completeness theorem, meaning that any statement has the potential to be considered a well-formed statement, even if it was stated with the intention of being not-well-formed. This point has proven particularly relevant in the creation of random numbers, as whatever method structures their supposed randomness is necessarily encoded as the character of that randomness, which has the potential to be treated in a way by which it could be considered not-random-at-all.[123]

An independent statement can be understood as a simultaneity of incompleteness, which can be formulated in a number of ways. The statement’s incompleteness would be its potential for determination by one system or another. The statement is the ambiguous multiple—an amphibology—of the systems that could potentiate it as a statement. Although a well-formed statement presupposes a system capable of demonstrating it, there is no way of knowing how to move from a statement to a system that would guarantee its consistency. We don't know which system made the statement, which means that there are potentially many systems could have stated it— perhaps even one we haven’t yet formalized! The incompleteness of the statement is the multiple character of its presupposition. We can't prove anything about the statement because we don't know which statement it is. But we can model the aspects that we do not know about the statement in any number of ways. This means that the incompleteness of the statement can be modeled by the variable application of different systems that could be assumed to structure the statement. Evaluating the statement concerns the comparative difference produced between the assumptions of one system and another.

Distinct systems come into relation by being formulated in the context of a larger system that includes each of them. In contrast to a larger system, distinct systems communicate with one another not across consistency or in terms of a specific formalism, but in terms of the incommensurate character of simultaneity. That each incommensurate expression can be treated as a universal Turing machine corresponds to the necessary possibility that there are things that are simultaneously true in different places that in the same place could be true at the same time. These “places” are distinct systems, each without any inherent relation to the others. Simultaneity, in this sense, names the possibility of choosing, at any given moment, which system to emphasize as the primary mode of consideration.

The principle of simultaneity permits disparate systems to be brought into relation to one another *only by means of the subject of inquiry they simultaneously formalize through otherwise incommensurate means.* In this sense, for example, the fields of Physics and Biology can each address the same point of inquiry without having to be capable of formally situating each other as fields within their own domain. Because distinct systems can be applied without knowing their formal relation to one another—formalizing only their independent relation to the point of inquiry—the point of inquiry condenses non-relations between overlapping systems of inquiry. The subject of inquiry is the intersection of the variable freedoms established by systems simultaneously treating the same domain of consideration. The potential distributions of variation possible at the point of inquiry serve as a form of partial closure that formulates reflexivity as the internal dynamics of variability.

Finding an appropriate syntax means inquiring after series of variable articulations regarding indefinite openings, which become points of consideration. Inquiry is posed as a consideration of general recursivity, the problem of inquiry being the determination of the indefinite “set” that is being enumerated. “Enumeration” names the internal division that produces the sequencing of the “set” in question, and the standing attributed to the “set” consists in nothing other than its organization by an iterable syntax of inquiry. This means that *thinking takes place on the event surface, where the very real syntactical relationships that constitute the problem take place.*

Indefinite Openings

Points of incompleteness that form intersections of competing syntax.

Chapter 3

Potential

> Leibniz is endlessly drawing up tables. With them he decorates the inner walls, a grid —or better, a room or an apartment—completely covered with lines of variable inflection, furnished with moving, living folds.
>
> In order to extract power and glory, transformational decors adorn the walls: furniture and objects only in *trompe l'oeil* illuminate or color the decor of a pure inside.
>
> — **Gilles Deleuze** [124]

M—M`	**Diagram** The imitation game as a meta-model.
C—C`	**Circuit of Inquiry** The internal consistency of the imitation game.
M—C—C`—M`	**Circuit of Decision** The external consistency of the imitation game.

John Searle has offered an argument that recasts Turing's imitation game in terms of what has been named the "Chinese Room". The Chinese Room encapsulates a mechanical sense of intelligence as a "black box", providing an interface for input to be presented and for output to be returned. The room does not, however, provide any access to the internal conditions that make its translation activity possible. One way or another, a book that is provided to a person inside the room facilitates translation activity that is adequate to make it appear that the person is performing the translation without aid of the book. Searle's premise—in summary—is that the room presents a strict understanding of mechanical translation activity, performed exclusively through the syntactical manipulation of symbols found in the book's automation of the translation activity. The conclusion that Searle would draw is that the room accomplishes its expression by purely mechanical means, which are by definition structurally determined. In Searle's view, regardless whether those intervals correspond to gears, to units of syntactical translation, or to the abstract condition of a magical book that resolves the process in an unprovided but somehow rigidly pre-determined fashion, the room cannot be considered anything other than a clever accomplishment in the complexity of written instructions.

Searle's desire to distinguish intelligence from mechanism permits him to elide the means by which mechanism might actually appear intelligent. Searle permits that we presuppose the appearance of intelligence, asking instead whether the appearance of intelligence is actually intelligent when it is pre-determined in a sense that could be written down. But how can Searle's room accomplish the presentation that makes it appear legitimately human if it actually functions in such a rigid manner? The suggestion of this text is that Searle has misunderstood the importance of writing in Turing's mathematical project. Turing's treatment of systematicity concerns the organization of syntax, offering creative possibilities for constructing new modes of organization. In contrast, Searle's assumptions regarding the rigid character of syntax would seem to indicate—for example—that the entire domain of poetry has been rigidly pre-determined by the syntactical fact of the language used to express it.

What is inside Searle's magic book that offers its capacity to automate the room? How does the book provide the necessary translation operations adequate to every context? Are there possible inputs that the book does not include? Searle imagines the book containing finite and pre-determined translation tables, but if this were the case then the size of these translation tables would exceed the specifications laid out by Douglas Adams in his blueprints for the exceedingly powerful computer "Deep Thought"— another computer the size of Earth had to be designed to accomplish this task![125]

Searle's book is no book at all, but in fact takes on the scope and properties of Jorge Luis Borges' infinite "Library of Babel", containing the absolute potential of every combinatorial and re-combinatorial expression available, with an interior expanse far greater than whatever negligible nothing might be kept outside it.[126] Willard Van Orman Quine has addressed this very architecture in relation to Borges's "Library of Babel", which he resolves by turning to writing as a binary system:

> The ultimate absurdity is now staring us in the face: a universal library of two volumes, one containing a single dot and the other a dash. Persistent repetition and alternation of the two is sufficient, we well know, for spelling out any and every truth.

> The miracle of the finite but universal library is a mere inflation of the miracle of binary notation: everything worth saying, and everything else as well, can be said with two characters.[127]

Syntactical complexities develop levels of abstraction, and the wrote process of translation discovers styles of determination internal to the presumably-multiple possible valid determinations made available by Searle's book. In this regard, Searle's example actually demonstrates that meaning in language concerns semantic movement between appropriate syntaxes, and not the written or spoken words that express the end-points of that movement coming in or going out. In short: Searle's magic book contains Turing's theory of writing, which is the computable number.

Levels of Abstraction

Syntaxes that operate on other syntaxes in order to consolidate specific potentials.

Turing's Theory of Writing

The computable number.

The theory behind Searle's understanding is that the book inside the room permits the person in the room to apply translations because the book contains lookup tables that permit the input to be put in correspondence with the appropriate output. But what does "the" appropriate output mean? Even if certain conditions concern a single appropriate determination, many scenarios exist where the output cannot be accounted for in any singular manner. Particularly given the premise by which Searle introduces the Chinese room—

that it is apparently intelligent in a way that is indistinguishable from a person—this requirement cannot be dismissed. At the very least, this book must contain a significant account for divergent paths. Some of these paths will be comparable but nevertheless of indistinct comparative preference. The choice between two paths may come down to a matter of preference rather than pre-determined learning. The introduction of preference is not insignificant, as it implies an agency to the inside of the room that cannot be assigned merely to the book itself. Alternatively, if the book does somehow contain and express this agency, Searle has—by this capacity, written in a book—demonstrated how the writing process can take on the appearance of intelligence. In either case, how does the room account for the appearance of intelligence with respect to prior encounters and assumed knowledge that is assumed only due to external contexts? Searle has posited that the magic book permits these situations to be resolved, but offered no sense how. Nevertheless, the problem of prior encounters clarifies a certain necessity: a capacity to record and re-activate memory from prior encounters, and to integrate those memories in the process of determination resolved by the book.

Comparative Preference

A capacity to record and re-activate memory from prior encounters and to integrate those memories in the process of determination.

Searle has included the outside of the room in the inside of the book. For example, what happens if the room is asked: how do you produce these impressive translations? The room definitionally has a legitimate, satisfying answer— for Searle, the only question is whether this legitimate answer makes the room intelligent. We should rephrase the stakes Searle is posing: if a person is capable of meaningfully producing responses that relay intelligent information back to a speaker posing questions, and those responses are grounded in a system of translation that would—in other contexts—be considered intelligent and sophisticated correlations, by what right could this individual respondent be excluded from the domain of intelligence?

What Searle has not seen, which has caused him to conclude that the room cannot be considered intelligent, is that the room has a capacity for development. The capacity to write things down—the singular function of syntactical manipulation—implies an ability to arrange complex dynamic relations by way of the recording surface, where syntactical events express intelligent semantics. Syntactical events reveal the strange fact that "semantics" are nothing other than the ramified character of temporal determination. Writing things down implies memory, because memory is nothing other than the reference back to the recorded trace. The recorded trace re-activates the event as a condition of return. In this regard, the person may not ever understand Chinese, but certainly—necessarily, by Searle's definition of the stakes the room satisfies—"understands" the meaning being produced between the two directions of movement, at least insofar as "understanding" is measured by the production of adequate correspondence between input and output. In other words, the information content—its "meaning"—is the modulation produced by the application of the English rule book to the exchange of symbols. Searle's apparently-lacking "semantics" are nothing other than the intervals demarcated by this syntax. Without syntax, the intervals would not be intelligible as distributions or divisions of expression at all; all that could be expressed would be the incommensurately singular condition of chaos.

Syntactical Events

Translations on the recording surface.

Insofar as the activity of the room applies a knowledge system to the movement of input and output, it also has the potential to absorb the knowledge system in a manner where it becomes possible to introduce new dynamics of exchange. Writing becomes the fact of duration, and memory becomes the fact of learning about conditions of duration. This means adding dynamics to the capacities of determination in the translation process (for example, determining which of multiple dynamic possibilities might be more appropriate to the situation). If the person inside the room speaks only English and can somehow—however this is explained to be possible—successfully translate inputs into appropriate outputs, then there is no good reason that the same person cannot learn from the process of translation such that they become a speaker of the language in question (Chinese, in Searle's example). This is true even if the person is an accomplished Chinese speaker only insofar as the person was first capable of speaking English, and even if this "language faculty" is nothing other than a memory-enabled facility for expedient pattern arrangement. Such an example—language immersion—has in fact become the primary method of language instruction today. Similarly, nothing prevents creative experimentation, applying poetic transformations that are legitimate but perhaps less frequent, highly stylized expressions.

Conditions of Duration

Attentional investments in syntactical arrangements.

The question is not whether the room is intelligent, but how it performs its apparently-intelligent translations. The particular language, demarcated by the symbols that organize it, mediates the incoming and outgoing symbols with the assistance of the book— presumably written in English—regardless whether or not the person understands the incoming and outgoing symbols. Through the translation—by the fact of having been able to translate—with the help of a dictionary, the person comes to understand the movements necessary to correlate input to output. Regardless whether the person understands the symbols, the person comes to understand the relation of movement necessary to translate between the symbols that come in and the symbols that sent back out. The only way that Searle's example could be understood to preclude this possibility is if Searle has explicitly ruled out any dynamic capacity; but if Searle has established as a rule that his Chinese Room necessarily has no learning capacity whatsoever, then Searle has also precluded the possibility of actually developing his example.

Searle's argument, rather than indicating an essential impossibility of computational intelligence, offers a skeletal premise to investigate the building blocks necessary to facilitate apparently-intelligent syntactical translation *without requiring that the process rely on any particular language*, such as English or Chinese. The Chinese Room example is structured precisely so that it is entirely irrelevant what languages are at stake, indicating that the stakes of language are found in translation. Rather than proving that the activity of the Chinese room is not an intelligent operation, Searle has actually shown that the manipulation of meaning in language does not concern symbols, even as it requires symbols to carry out the movements that the manipulation consists in. In place of this traditional understanding of language, the Chinese room illustrates how language concerns modulation of both intrinsic and extrinsic syntactical intensities, which are the intervals established between particular articulations of symbolic chains.

Symbolic Chains

Syntactical connections formed between analytic perspectives that articulate successive syntactical events.

The task posed by Searle's room concerns how to align two disparate syntaxes by way of a common space included by neither, and its final word is that understanding—"meaning"—is neither semantic or syntactical but concerns the translatability between the two registers. On the outside, the input-output syntax is presented in Chinese; on the inside, the function syntax is presented in

English; the room itself serves as the middle, which excludes each from the other and thereby produces a syntactical translation bridge across the difference. The room formulates its power of intuition—ostensibly perfect translatability—through the incomplete character of its internal articulation. This emptiness, which Searle seizes on as the problem, is actually the mathematical condition. Rather than proving a weakness, the capacity to execute action syntaxes without “understanding” is the universal capacity of the machine. Rather than demonstrating a damning argument against Turing’s model, Searle has provided an illustration of how Turing’s model can actually be deployed in order to mechanically accomplish intelligent translation tasks. The question is not whether Searle’s room is intelligent but rather: whether or not the Chinese Room is intelligent, how do we build one? The remaining task will concern the structural dynamics that condition the relation between the room’s internal and external conditions, between the architecture of the system and the condition of the statement.

The imitation game can be seen as Turing’s response to this question: figure A occupies the role of indeterminacy, figure B produces internal consistency, and figure C coordinates external consistency. A formulates the potential for unknown interruptions of well-formed determinations with respect to the systematic treatment of expression B, and with respect to the orientation of inquiry C. B formulates the potential to identify and systematize the poorly formed character of specific expressions and the potential to stabilize common ground between C and A, since B can see A plainly according to B's own terms, and B can also see C's failure to identify A. A becomes responsible for modeling divergence from expectations, while B is responsible for modeling expectations, which are defined as whatever descriptions are necessary to condition a sufficient description of A's identification by way of specific ranges of indeterminacy. C formulates the circuit of inquiry, which produces the differential determination of variant element A and invariant element B to modulate a determinate orientation, C`. The imitation system is the movement from C to C`: C—C`. A statement is the movement from B to C, from B to A, from A to B, from A to C, or from C to X/Y, and a model is a concatenation of statements formulated in the context of their systems, forming a circuit of expression.

Computability concerns the distinction—internal to the problem—between a domain of inquiry and the subject in question: the difference between the inside of Searle's magic book—the outside of the room—and the mechanical operator that carries out the specified operations. The imitation game formulates models of internal and external consistency. External consistency models potential freedoms, conditioned as contexts, while internal consistency models articulations of constitutive architectural dynamics. Imitation is the condition by which X or Y is identical with A or B. The imitation game is the extrinsic consistency of the universal machine, which formulates the intrinsic consistency of each node as a role in the game.

Intrinsic Consistency

Mλ5: Terms of Dialogue

> Sentences have no self-reference, as the paradox "I lie" shows.
>
> Not even performatives are self-referential but rather imply an exoreference of the proposition (the action that is linked to it by convention and accomplished by stating the proposition), and an endoreference (the status or state of affairs that entitles one to formulate the statement: for example, the concept's intension in the statement "I swear it" may be a witness in court, a child blamed for something, a lover declaring himself, etc.
>
> On the other hand, if we ascribe self-consistency to the sentence, this can only reside in the formal noncontradiction of the proposition or between propositions. But this means that propositions do not materially enjoy any endoconsistency or exoconsistency. To the extent that a cardinal number belongs to the propositional concept, the logic of propositions needs a scientific demonstration of the consistency of the arithmetic of whole numbers, on the basis of axioms.
>
> Now, according to the two aspects of Gödel's theorem, proof of the consistency of arithmetic cannot be represented within the system (there is no endoconsistency), and the system necessarily comes up against true statements that are nevertheless not demonstrable, are undecidable (there is no exoconsistency, or the consistent system cannot be complete).
>
> — **Gilles Deleuze and Felix Guattari** [128]

A **Point of Inquiry**

The syntactical element of concern.

B **Projective Syntax**

The semantic condition.

C **Semantics**

Terms of divisibility and distribution.

The fifth iteration of the imitation game examines the internal dynamics introduced in the fourth iteration. The fourth iteration staged the retrospective development of the present condition by way of the future perfect, which names what will have been. The fifth iteration turns from the possibility of machine intelligence to the structuring of discursive arrangements in machinic thought.

Discursive Arrangements

Conditions of duration established in the articulation of symbolic chains.

The problem is posed explicitly as a matter of dialogue, but the figures of dialogue are not clearly determined. The iteration examines the relation of the determination of intelligence to itself, mediated by a point that is outside of itself and which does not offer itself to determination. The indeterminate point of inquiry becomes the dynamism of an outside or an other than enters into an exchange across the thresholds of thinking's alignments. The discursive problem re-orients the condition of futurity as the moment of transformation, where activity introduces itself to a future point where it will have arrived. This future point is the discursive partner, which introduces an internal division of thought processes that relate to one another across terms of delimitation, which are transformed from terms of isolation to terms of communication.

Mλ5: The Subject of Inquiry [129]

This argument is very well expressed in Professor Jefferson's Lister Oration for 1949 ... :

> Not until a machine can write ... or compose ... because of thoughts and emotions felt, and not by the chance fall of symbols, could we agree that machine equals brain— that is, not only write it but know that it had written it. ...

According to the most extreme form of this view the only way by which one could be sure that machine thinks is to be the machine and to feel oneself thinking. ...

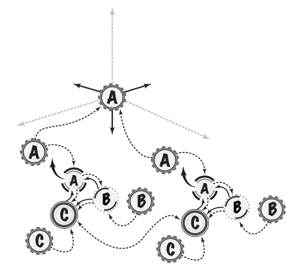
It is in fact the solipsist point of view. It may be the most logical view to hold but it makes communication of ideas difficult. ...

The game (with the player B omitted) is frequently used in practice under the name of viva voce to discover whether some one really understands something or has "learnt it parrot fashion."

B disappears into the structural relation between C's inquiry and A's specific domain of indeterminacy. C and A form a module that relates the domain to the artifice of inquiry.

The interrogator would discern the best mode by which the deceptive indeterminacy named "A" could be distinguished by way of the assisting system of truth, named "B", which means also examining whether a difference would appear—and if so, examining what sort of difference—were a machine we might call "M" to stand in for the indeterminacy A. The interrogator, for Turing, is redoubled by way of the internal difference of the inquiry: given that A and M are clearly distinct, can M perform a range of indeterminacy found in A? The problem at stake is not the identification of an impostor, but is rather the characterization of a substitution; in other words: what character would M require such that it could adequately describe the A it would stand in for, such that its evidence would be given without any necessary reference to the systematicity of the specific B that conditions its standing as self-evident?

Iteration C—C`



Two articulations of an indeterminate subject attempt to align with one another in order to confirm the status of the subject of inquiry.

The structure of relations in the imitation game is such that the mode of inquiry has to construct both its frame of reference and the referent that it frames as an inquiry. If the capacities of universal simulation are to be extended to the context of Turing's imitation game, the machines involved will have to model the difference between the scene of exchange and the exchanges in the scene. In this sense, imitation cannot function without at least a conceptual artifice. The imitation is consolidated in its artifice, which brings it to light.

An imitation is a construction that takes place by means other than its own. This means that there is an artifice that serves as the crux of its intellection. Perhaps the most important aspect of this mode of treatment is that the "actual" correspondent—what ought to be imitated—can be addressed as a black box, modeling its internal scopes of articulation by way of its intersection with external conditions of consistency that gauge the quality of its imitation.

Imitation

A construction that takes place by means other than its own.

"Artifice" names the point of integration of the imitation in functional articulations of the circuit of inquiry. The artifice acts to facilitate the "interpolation" of the subject of inquiry into circuits of social exchange, staging an ecology that institutes not only itself but also the possibility of inquiry, sustaining the potential of expression in terms of whatever modes of determination most appropriately suit the inquiry. The artifice articulates the point of intersection between exchange and its scene, the point where reversible determinations of the statement can construct and project syntactical determinations in order to organize inquiry as an embedded concern. The construction of this point concerns the consolidation and production of a prosthetic interface to an expression that is beyond given terms of elaboration.

Artifice

The point of integration, which acts to facilitate the "interpolation" of the subject of inquiry into circuits of social exchange, staging an ecology that institutes not only itself but also the possibility of inquiry, sustaining the potential of expression in terms of whatever modes of determination most appropriately suit the inquiry: the point of intersection between exchange and its scene, where reversible determinations of the statement can construct and project syntactical determinations in order to organize inquiry as an embedded concern; a prosthetic interface to an expression that is beyond given terms of elaboration.

Jean Lassègue suggests that this internal difference is the structure of the imitation game that permits computation to depart from computable premises while nevertheless producing a new computable circuit. Embeddedness is simultaneously the incompleteness of the embedded conditions and also the indeterminacy of the embeddedness in the conditions. The implicit systematicity of figure B in the imitation game is now responsible for communicating at a distance: telecommunication. Similarly, the relation of figure C to figure A is now to be found in the difference between embeddedness and embedded conditions, as the structural condition of the artifice:

> The actual setting of a dialogue in the imitation game depends upon an imaginary point of view ...
>
> Inside the game, since the reader must identify with the fooled interrogator, the physical difference between the human being and the computer is abolished; outside the game, the physical difference between a human being and a computer is given. It is the very possibility of this interplay between the inside and the outside of the game ... which presupposes that the formalist distinction between the hardware and software is already acquired in the case of human beings, just as it is the case for computers.
>
> But this was precisely what was to be experimentally established and not only presupposed. That is why this point of view, at the same time inside and outside the game, is only imaginary and can never become formal.
>
> The fact that the imitation game can be played for real ... does not change anything to this situation: the imaginary point of view is still necessary for the game to reach the goal it was meant for.[130]

"Imaginary" means that constructions of thinking concern an "artifice", which would be an interactive expression that consolidates a specific interface to domains of inquiry. The model of inquiry is consolidated at the point of the artifice as a relation between syntactical potentials. Syntactical potentials have to be modeled as statements in order to consolidate their potential as a distribution along specific systems that can qualify their systematic relationship with other potentials.

The artifice is the point where an emergent force of potential singularizes a thought as "object": a subject of inquiry, which thinks its condition of resistance to other modes of determination. Interacting with an artifice—an artifact of thinking—requires modes of assessment that would condition the "interactivity" of the engagements. The consequence is simple but astounding: the task of organizing machine intelligence no longer concerns the machine but instead can be brought to focus on the particular types of statements and manipulations required for the task at hand.

A: Artifice

> The brain will attribute a property to itself and that property will be a simplified proxy for attention. It won't be precisely accurate, but it will convey useful information. ...
>
> An internal model of attention ... collates data from many separate domains. In so doing, it unlocks enormous potential for integrating information, for seeing larger patterns, and even for understanding the relationship between oneself and the outside world.
>
> — **Michael Graziano** [131]

The imitation game concerns a dynamic construction of compositions of informational movement. The status of intelligence—whether or not it is intelligent—is a function of the inquiry that stages its subject as an intelligent determination. If we use the term "artificial" to describe intelligence or the imitation game—following from the consolidated point we have named "artifice"—it is because there is no necessary natural construction from which either must be taken to cohere. Turing emphasizes that the limits of the universal machine define only the starting point for this inquiry:

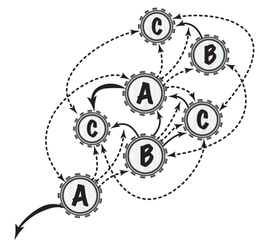
> So far we have been considering machines which are designed for a definite purpose (though the universal machines are in a sense an exception). We might instead consider what happens when we make up a machine in a comparatively unsystematic way from some kind of standard components. We could consider some particular machine of this nature and find out what sort of things it is likely to do.
>
> Machines which are largely random in their construction in this way will be called 'unorganized machines'. This does not pretend to be an

> accurate term. It is conceivable that the same machine might be regarded by one man as organized and by another as unorganized.[132]

Artificial intelligence is a determination that comes about not-of its own volition. The subject of inquiry is taken, in whatever terms are set out by the artificial elaboration of inquiry—artificial because it has no context other than its own by which to draw out its significance—as an artifice of inquiry. As an artifice, the subject of inquiry permits the inquiry to be staged as an intelligent intellection. The imitation game figures the structure of the thought as the comprehension of its own activation, which it figures as the problem of inquiry: a structure of determination across incommensurate relays of determination, operating along non-coordinated dimensions of determination. In this sense, the imitation game can be understood as figuring the problem of the unorganized machine: a thought has to think its materiality as an embedded condition that simultaneously resists determination by other thoughts, retains liminal boundaries from other thoughts, and also traverses networks of association without regard for the same liminal distinctions and determinations. The imitation game diagrams the manner that elements fold into and out of one another, standing as a definition of “man” or “woman” only by way of a circumnavigation through other domains. Inter-relations of textuality are formed by the passage of terms through other terms, creating institutions of space-time that operate as nodal anchors in the conceptual passage of the work.

The imitation game is not a test concerned with clarifying the status of intelligence (whether or not "it" is intelligent); it is, rather, a diagrammatic structure that concerns the stakes of intelligent determinations. The inquiry presupposes the determination of a condition of intelligence— not whether such a condition exists, as its existence is the assumption that permits the inquiry to inquire. The conditions of intelligent determinations are not given beforehand but are instead introduced as the arbitrary displacements that keep the circuit of the imitation game in motion. Intelligence is not a function of testing but rather concerns the movement of inquiry and the particular consistency of its determination.

Machine A—B—Å



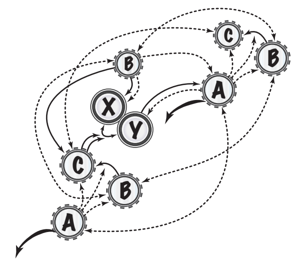
Machine Å redoubles itself by way of its image in machine B.

The relation between the internal consistency of the thing's architecture and the external consistency of its expressive condition is nothing other than the double determination of thought as a problem. Robert Sokolowski has posed the matter simply but effectively:

> How do we know that our partial view of the machine's intelligence is not like that angle of vision from which artificial flowers look real to us?[133]

The double determination of thought is shown to be the problem of the standing of the statement. On the one hand, the artificial flower presents an artifice, standing in for the specific consistency of the flower it imitates. On the other hand, the artificial flower retains its specific consistency by way of the edifice that it erects in order to sustain the artifice that presents “that angle of vision”. This means that what we have taken as the “object” is not an object at all but rather a point of inquiry that we presuppose as “objective”, meaning: functional and reproducible within the realm of our perceptual cognition. The “object” actually consists in *n* dimensions of tension, any *x* of which can be taken at a given moment to constitute the status of “the object” as “a thing”. A “thing” names the consolidated sense of these *n* dimensions along these *x* lines of inquiry, and “object” determinations are distributions of statements that model potentials according to modes of inquiry invoked vis-a-vis this “thing”.

Machine A—C—Å



Machine Å redoubles itself by way of its image in machine C.

Double Determination of Thought

The relation between internal and external consistency, which is doubly-articulated (reversible).

The “object” reflects the mode of inquiry consolidated at the artifice, which expresses the apparent “objectality” of the inquiry through statements that consolidate the state of the object as formulations of one or more models. The object comes to life as the dynamics internal to the artifice, which functions as a point that attracts yet also resists inquiry.[134]

The artifice—an unorganized machine—is not a bridge or link between multiple terms. It is, rather, the scope by which each of the terms conceive their own position relative to all others. The artifice is the capacity to examine the point of inquiry in any number of different modes, even considering incommensurate potentials. This means that the artifice is in a state of relative indeterminacy. The indeterminacy of the artifice is relative to the inquiry that subjects it to determinacy. Relative indeterminacy is a feedback circuit, defined by the consistency of its internal difference, which is the difference between its internal and external consistency.

Turing's working assumptions regarding computable numbers mean that his description of this concern might easily be overlooked as simplistic. While an individual number is frequently taking as a fairly uninteresting and rather inert symbol, for Turing numbers have already taken on the character of unorganized machines and begun to organize one-another. When Turing explains that "a typical example of an unorganized machine would be as follows", we must hear in his description the activity of the number as a point of dynamic distribution:

> The machine is made up from a rather large number n of similar units. Each unit has two input terminals, and has an output terminal which can be connected to the input terminals of (0 or more) other units. ...
>
> All of the units are connected to a central synchronizing unit from which synchronizing pulses are emitted at more or less equal intervals of time.

> The times when these pulses arrive will be called "moments". Each unit is capable of having two states at each moment. These states may be called 0 and 1.[135]

The artifice assembles each of these multiple individual potentials, each of which refers only to itself, all of which express the potential of simultaneity in the form of superpositions. It does this in order to delimit the object of a thought, and the thought actualizes itself according to the determinations of its artifice, which articulates the virtual component that arranges distributions of object determinations in order to formulate the expressive character of conditions of intelligibility. Accordingly, the artifice exists as an amphibological expression, consisting in the simultaneous condition of incommensurate potential, expressing openings of inquiry to particular dimensions of determination that will both offer new frames of reference and also commit to particular modes of engagement that will preclude others that had beforehand been available.

Amphibological Expression

A simultaneous condition of incommensurate potential, expressing openings of inquiry to particular dimensions of determination that will both offer new frames of reference and also commit to particular modes of engagement that will preclude others that had beforehand been available.

Artifice is the point of convergence between divergent potentials, which consolidates the problem of the problem: the focal object of intuition, which relates formal systematicity to dynamics of inquiry. If the problem can be clearly expressed, the terms of its expression are the means by which the problem implicates conditions other than its own. The artifice delimits the point of capture, where modes of potential are enveloped within one another in order to construct functional relays of determination. It expresses these potentials as intuitively available and distributes the structural model of each of these potentials as aspects of the problem of inquiry. It is a differential image: an expression produced as a transition in particular functional relationships. It is "differential" because it formulates specific transformations between conditions it differentiates, producing an image of transitional distributions.

Point of Capture

A starting point of determination that articulates the rest of the analytic perspective.

Image of Transitional Distributions

A differential image of specific transformations.

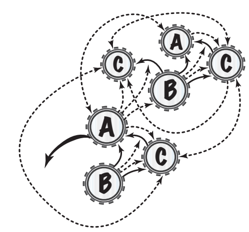
B: Edifice

Viewed only as code, programs merely describe computational processes in the same way that cortical maps describe neurological processes and DNA codes describe biochemical processes.

And just as genetic engineers want to know whether or not a certain nucleotide sequence would—in the right chemical environment—trigger the transformation of an organism's phenotype, AI engineers want to know whether or not certain combinatorial algorithms would—in the right computational environment—trigger the transformation of a machine's semantic output.

— **Ron Bombardi** [136]

Machine B—A—B



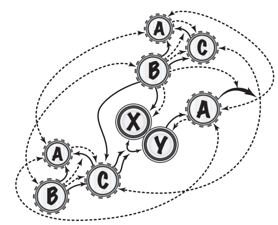
Machine B redoubles itself by way of its image in machine A.

Analytic position in the imitation game starts as the outside of the indeterminacy in question, which transforms it from an indeterminacy to an incompleteness. An indeterminacy is without determination, but an incompleteness is undecidable by way of a system that would position its decidability. The question of indeterminacy becomes: what can't be addressed by way of the commitments inherent in the given substitution of determinacy?

An imbrication of distinct systems is expressed that can only be thought through indeterminacy, which names very precisely the non-relation between systemic expressions that treat a common subject of inquiry but formulate their respective measures by way of incommensurate reference frames. Assessing an object of inquiry requires treating it according to terms by which it can be assessed. Evaluating the standing of an object of inquiry as a thing that might think requires assuming that the object of inquiry either does or does not think.

Assessing an object of inquiry by such terms presupposes their applicability, although applying the terms may reveal that they are inadequate and inappropriately assumed applicable.

Machine B—C—B



Machine B redoubles itself by way of its image in machine C.

Inquiry must map its own terms by which things are assumed to think or not. In this sense, it is not known whether the thing supposed to think (or not) is actually capable of doing so. The claim will thus not be that thinking occurs by assessing thought in another; the point is much more precise. Inquiry is capable of assessing the standing of a potentially-thinking thing insofar as it is capable of simulating the potentiality of that possibly-thinking thing thinking. In this manner, inquiry necessarily constructs a virtual life for any object of inquiry, simulating its conditions of variation in order to anticipate its possible standing vis-a-vis other relations of inquiry.

Interacting with an artifice requires a corresponding frame of reference, which we can refer to as an “edifice”. The edifice produces a structural relation that conditions the artifice as an indeterminate point that resists abstract determination. In this regard, the edifice works against solipsism as a structural framing condition that makes possible inquiry regarding the artifice. The edifice constructs the artifice as an intersection of specific dynamics appropriate to the mode of inquiry, serving as the systematicity that models the artifice.

Edifice

A structural relation that conditions the artifice as an indeterminate point that resists abstract determination in order to arrange an intersection of specific dynamics appropriate to the mode of inquiry, serving as the systematicity that models the artifice in order to work against solipsism as a structural framing condition.

The edifice is the formulation of convention, the manner by which indeterminacy enters into the determination of structure, which concerns the amplification and attenuation of incommensurate relations that reverberate through the being-thought of the edifice. Irreconcilable elements of thought define themselves by enveloping conditions of thinking and transforming them into an environment where the elements can reside. Convention turns to the first signs of its anti-formal character: modeling the terms of its determination by the potentials that reside immediately outside the boundaries of its capacity. An example of this can be seen in the non-relation between position and momentum. A distinct indeterminacy can be seen in the attempt to compare position. Position is defined as a point-time. Momentum is defined as an interval. The only way that momentum and position could coincide is if momentum is taken to consist in infinitesimal movements, where the “smallest” movement would be a point; but if it were a point, it would not be an interval, meaning that the smallest interval would still be measured across time, not as a point-time. A point-time cannot be compared to a non-zero interval without some sort of conversion. This conversion, intuitively, is what we call “space-time”. But we have defined space-time here in two modes: a point that slices a curve, an interval on a curve. So how does space-time serve as a conversion point for momentum and position, two terms that seem quite obviously to operate in the same domain? The response is simple: we are dealing with not one system of space-time but, in this example, at least three. Point-space is created by slicing time at a single, timeless instant, momentum-space is created by drawing a non-zero space across time. A point-space could be considered a space of momentum without interval, but then it would not be momentum. In this sense, the only way to have a point is to eliminate the frame by which it could be understood as a momentum. Position and momentum have relation only in a third system that offers neither position nor momentum, but which offers the potential to measure either.

The imitation game models how each thought expands outward in order to return to itself, splits internally in order to construct new modes of convergence, and constructs relays of iterable difference in order to relate these branching potentials to one another. Turing's circuit takes responsibility for itself as a living ecology: the incommensurate middle, the *absolute limit* of all limit systems, which cannot be located at the end of any particular sequence. The statement unfolds before itself as the potential of one model or another.[137] It also leaves open the possibility that intuition could refuse to accept this character, opting instead to invent new modes of systematization wherein a different frame of reference would transform the terms of possible expression.

The problem of inquiry is not that there are things beyond conception; it is that we cannot think the indeterminacy of the real without determining it. The problem of indeterminacy is that determination cannot be specified without presupposing coordinates of contingency that potentiate the determinacy of expression while themselves remaining absent/unexpressed.[138] An imitation is first a substitute and second adequate or inadequate; only after taking the substitution seriously can the simulation be determined inadequate, in which case its inadequacy produces the conditions of search for the adequate substitute. The imitation, as a discrete treatment, is theoretically capable of moving from any point of elaboration to any other without having to enter an intermediary condition. Since the discrete set does not have to remain continuous, significant transformations can be applied. These transformations established by the projective matrix of the imitation game, which formulates a syntactical manifold that articulates ordinal potential as convention. The inquiry carries out the universal simulation of its investigation by way of this conventional potential, which is its ceaseless becoming-other-than-itself.

Projective Matrix

A syntactical manifold that articulates ordinal potential as convention.

We have arrived at a diagram for the imitation game whereby two figures construct an internal difference between "man" and "woman" so that the interrogator—"either a man or a woman"—is not obligated to be either one or the other. The artifice—A—is the power of the thought, which asserts its dynamic force by way of the structural determinations deployed to qualify its character. The edifice—B—is the potential for modeling the artifice between systemic determination and intuitive orientation. Convention—C—brings together the informal character of potentials for determination and the ramified times of specific potentials, which form branching thoughts that construct their own edifice of determination. From this perspective, the imitation game concerns the model of inquiry, system C. C has to model the circuit through A and B that would permit C to include the difference between A and B in its own determination. The problem of C's determination can be seen as a logic circuit, which expresses statements as modulations of consistency. The problem is determining the expression that would elaborate what relations exceed delineation. C can then be seen as a double articulation of the problem of syntactical formation, delineating aspects to amplify and aspects to attenuate. C diagrams the internal dynamics of the imitation game as a syntactical distribution of statements and action-mechanisms, attempting to organize simultaneous models that contribute to the distribution of the imitation game. C is the potential for orientation or disorientation, which is the difference between C's relation to A's indeterminacy and C's relation to B's systematicity. C's relation to B's systematicity is found in B's attempt to situate A's indeterminacy for C, which C negotiates by way of the symbols X or Y. Similarly, C's relation to A's indeterminacy is defined by A's non-relation to B's attempt to situate A, which C negotiates by way of the symbols Y or X. C's relation to X is the difference between the potential of X as A and of X as B. C's relation to Y is the difference between the potential of Y as A and of Y as B. C's relation to X and Y is the difference between the potential of X and of Y as either A or B.

The edifice consists in the futurity produced in and as the conduit of the artifice, which is the condition of the edifice as a force that has prompted thinking—its artificiality—as the circuit of its expression. The artifice is the conduit through which the edifice thinks, and the edifice is the economy of dynamics that forms it—the artifice—as product. Concerning the artifice, the edifice "is a matter ... of defining the topography of this unconscious", found in the dynamics that converge and diverge at the point of artifice.[139] Taken up separately, there is no edifice to take up, as the edifice is founded upon the artifice. Between artifice and edifice would be a computational unconscious that repeatedly poses the implicit question: how does the unconscious of determination compute its own unknowability, which would be the determination of indeterminacy? Artifice and edifice name the inside and outside of the inquiry. Each of the terms operates to model the reversal of the other. The edifice is the intuitive standing of the conditions of inquiry that are consolidated at and in the artifice. Thinking produces its edifice—the object of its inquiry—insofar as it thinks through its production as the consolidated artifice of its process of thinking-through.

The Inside of the Inquiry

The artifice as the consolidated articulation of syntactical relations.

The Outside of the Inquiry

The edifice as the divergent conditions of articulation.

C: Intellection

> The image thought gives itself of what it means to think, to make use of thought, to find one's bearings in thought ... retains only what thought can claim by right.
>
> Thought demands "only" movement that can be carried to infinity. What thought claims by right, what it selects, is ... the movement ... that constitutes the image of thought. ...
>
> It is the horizon itself that is in movement ... .
>
> However, this is not a fusion but a reversibility, an immediate, perpetual, instantaneous exchange—a lightning flash. ... Movement is double, and there is only a fold from one to the other. It is in this sense that thinking and being are said to be one and the same. Or rather, movement is not the image of thought without being also the substance of being. ...
>
> There are always many ... movements caught within each other, each folded in the others, so that the return of one instantaneously relaunches another in such a way that the plane ... is ceaselessly being woven, like a gigantic shuttle. ...
>
> Every movement passes through the whole of the plane by immediately turning back on and folding itself and also by folding other movements or allowing itself to be folded by them, giving rise to retroactions, connections, and proliferations in the of this infinitely folded up ... variable curvature ... .
>
> — **Gilles Deleuze and Felix Guattari** [140]

Turing understands intuition as a power of incomputability, and ingenuity as a creative formalization of what intuition potentiates. This means that intuition's power consists in asserting problems and potential models. While having no *originally necessary* basis, *intuitive assertions state prospective potential,* and are nevertheless reasonably grounded in a sense of sensibility. The point is not that assumptions are to be privileged as a mode of formal treatment, but that work takes place *across* assumptions, working retrospectively to demonstrate that the assumptions were in fact grounded. Formed as statements that model the expression of a problem, the potential can either be located in a system that might present its force in a rigorous mode, or that might be dislocated by way of systems that would de-potentialize its standing as a statement. In this fashion, *formalization concretizes the sense of intuition or else redirects it to another* *aspect, as intuition becomes the abstract capacity to rigorously rearrange systematic determination.*

The imitation game takes on the form of this problem, which it stages as the relation between formal incompleteness and scenes of logical convention:

A) From the perspective of logical formulation, what is a scene?

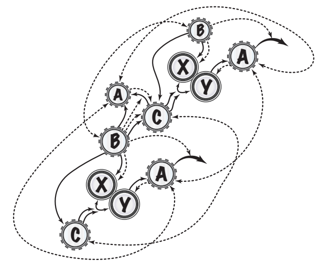
B) How does logic formulate a basis for its assertions if it begins without clear perspective?

C) If descriptions that would model activity seem to inevitably produce points of inconsistency, is there a formal method by which the scene could be treated as a singular problem?

G) If all of these problems can be consolidated in a single description such that it could reproduce their sense of organization, how would this description orient its horizon of determination so that it would avoid being overtaken by conditions it did not know how to interpret?

This is the problem we have first seen Turing lay out with the universal Turing machine. The logical formulation of a scene is treated as a problem of syntactical formulation, which produces a systematic relation between the expression of inquiry and action mechanisms. A basis for assertion can be formed only by taking advantage of an intuitive capacity to assess the circumstances of inquiry by way of various domains of consideration, each with their own analytic modes of consideration appropriate to the syntax in question.

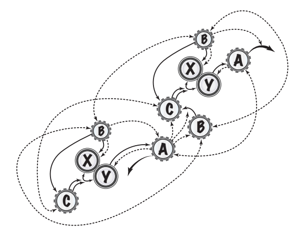
Machine C—B—C



Machine C redoubles itself by way of its image in machine B.

The statement and its model remain split. Determination requires the position from which this assessment takes place. The next step would be to investigate the means by which relations between possible, actual, and historical intellectual positions can be related to one another. This relation would imply the possibility of transition between one and others, as well as means to choose between possible transitions. The edifice models this task, which acts in complement to the artifice it formulates: the statement and the potential of systematicity that could be deployed to model the statement converge as a point of determination. A specific distribution will have to be determined from this reversibility in order to move from expression to model to statement, meaning determining the statement as a model with conceptual standing: "a ... gesture which, in one motion, opens the seam and reveals about language an unsuspected dimension into which it will throw itself.... a cycle of words and objects which are self-generated, and [that] completes its movement with self-efficiency."[141]

Machine C—A—C



Machine C redoubles itself by way of its image in machine A.

The imitation game concerns programming the ordinal position of the program as it runs through its own statements: an interface that makes statements possible as the perspective of the program, which the program can model as the perspective of particular of its models. The imitation game shows the means by which the interrogator comes into relation with the subject of inquiry, such that the subject of inquiry arranges a coordinate system that places the interrogator. The Subject of Inquiry is the subject in question, which produces a frame of reference as a syntactic orientation that emerges from within the terms of inquiry: the artifice as the apparatus of reflexivity, modulating the inquiry as a technology of organization, and the edifice as the redoubling of the inquiry as a frame of reference.

Expressions of systematicity can be consolidated in terms of the artifice, the edifice, or the inquiry. Each of these terms reflect a particular consolidation of relations of consistency. The artifice is the point where relationships converge at a point of consistency. The point of consistency becomes the frame for singularizing inquiry. Inquiry is the space between the definition of the artifice as a space of dynamic indeterminacy and the space of the edifice as a frame of reference. Inquiry unfolds by modulating the expression of the artifice in the context of an analytic mode, composing statements in order to assemble an expression of systematicity at the point of inquiry. The artifice models the expansion of indeterminacy in the context of the edifice, which models the consolidation of indeterminacies in order to amplify particular types of informational signals. Movements of inquiry between the artifice and the edifice constitute modes of consideration, distinguishing the point of inquiry from the frame of reference.

Modulation

An action mechanism that transforms conditions of expression on the recording surface in order to regulate the condition of their expression.

Frame of Reference

An analytic perspective that orients inquiry: the edifice.

Modes of inquiry formulate a topological knowledge that serves as the domain —the *topos*—that ceaselessly finds its way in, formulating the unknown coming-to-be as the known and the knowing.

The network of language organizes itself according to the necessary activations it presents. Activations of language literally connect things to one another, creating assemblies of movement. The activations presented in language are the degrees of freedom inherent in the real. Linguistics becomes a vital practice, conducted by the simulators of worldliness. The entire presentation of affective reality takes place on the surface of this screen, through the disjunctions, conjunctions, and active circuits that can be articulated in and through the elements that articulate its fractal relations.

An “object” is neither “one”, nor split into two—particularly not in the sense of a subject perceiving an object—but is rather double in a sense where each point of inflection articulates its own circuitous relation with “the object”, which is itself named by this very process of multiple inflection. Yet, insofar as the relation is thought to accord to a point of inquiry it is no longer plainly fractal but rather necessarily dual, expressing the polar character of a circuit. Artificial intellection—the activity of the imitation game in the formulation of convention—accords itself to the difference between the singular, the multiple, and this dual relation. A corresponding division must be understood between “language” and “expression”. Language formulates syntactical plasticity, whereas expression is a form of encoding, modulating an event surface in terms of a particular distribution. Language is the capacity for translation between recording surfaces and between modes of distribution and modulation—corresponding to what Turing calls “intuition”—while expression corresponds to cryptanalysis.

Artificial Intellection
The activity of the imitation game in the formulation of convention.

Language
The formulation of syntactical plasticity.

Expression
A form of encoding that modulates an event surface in terms of a particular distribution.

Intuition is the difference between thought and speech. Thought moves in fits and starts, emerging here and there in a network of converging relations that is nevertheless not singular, and the artifice figures the wandering of thought through its own circuitous substrate. A cosmological principle distinguishes itself from the "outside" in which it finds itself. It discovers itself to be inside an outside that is outside of itself. It discovers that the "outside" gives birth to all of experiential reality, but it is experienced only through involution, as if it were an "interior" wandering of experience through thought. It discovers that the world that we generally take as our own "reality"—an embodied world of individual experience—is formed and formulated through this creative involution, which pulls it through itself.

> **Intuition**
> The difference between thought and speech.

Intellection—this artificial character of thought—begins with the difference between the artifice and the edifice as a point of inflection. This point is essentially the "plug" where one circuit connects to another. It might be most appropriately considered a "black box" in computer terminology. It functions as a complex circuit; like any circuit, a connection entails an input and an output (effectively a negative and a positive pole)— at the very least, a demarcation of data flow. Speech—statements produced by systems—is the translative connectivity produced in the difference between artifice and edifice. Enunciation forms as an apparatus of articulation in the phase shift of an internal difference. Enunciation articulates a non-relation between subjects involved. Non-relations are connectivities between expressions whose definition does not involve one another. Articulation bridges a gap between non-related elements as amphibologies of movement, a form of intensive quantification that produces conjunctions and disjunctions. Articulation, which is the formation of a mechanical linkage between forms of expression, creates layers of expressivity. The language of things formalizes regimes of expression: presentation as the outwardly emergent redoubling of the body of the subject of inquiry.

Enunciation
An apparatus of articulation in the phase shift of an internal difference.

The subject of inquiry is now to be understood as the identity of the forces that do not fall away but which rather situate their own fall into themselves: an "object" that can be thought along the lines of manifold points of inflection that stage is as a "subject". Pulled through itself—its edifice—the artifice forms its interior as the condensation of a domain: the thinking of a thought through itself, which steps into itself as the singular metonymy at a nexus of dynamic exchange. The subject of inquiry—which gives rise to intensive actuality—is always included within this construction; it an absolute enclosure, which encloses openness almost precisely in the model of a Klein Bottle, the geometry of which exists as a movement through itself in time.

Extrinsic Consistency

Mλ6: Encapsulation

It is difficult to see how the limit immediately cuts into the infinite, the unlimited. Yet it is not the limited thing that sets a limit to the infinite but the limit that makes possible a limited thing. Pythagoras, Anaximander, and Plato himself understood this: the limit and the infinite clasped together in an embrace from which things will come.

Every limit is illusory and every determination is negation, if determination is not in an immediate relation with the undetermined. The theory of science and of functions depends on this. Later, Cantor provides this theory with its mathematical formulas from a double-intrinsic and extrinsic-point of view.

- According to the first, a set is said to be infinite if it presents a term-by-term correspondence with one of its parts or subsets, the set and the subset having the same power or same number of elements that be designated by "aleph 0," as with the set of whole numbers.
- According to the second determination, the set of subsets of a given set is necessarily larger than the original set: the set of aleph 0 subsets therefore reduces to a different transfinite number, aleph 1, which possesses the power of the continuum or corresponds to the set of real numbers (we then continue with aleph 2, etc.).

It is odd that this conception has so often been seen as reintroducing infinity into mathematics: it is, rather, the extreme consequence of the definition of the limit by a number, this being the first whole number that follows all the finite whole numbers none of which is maximum.

What the theory of sets does is inscribe the limit within the infinite itself, without which there could be no limit: in its strict hierarchization it installs slowing-down, or rather, as Cantor himself says, a stop—a "principle of stopping" whereby a new whole number is created only "if the rounding up of all the preceding numbers has the power of a class of definite numbers, already given in its whole extension." Without this principle of stopping or of slowing down, there would be a set of all sets that Cantor already rejects and which, as Russell demonstrates, could only be chaos.

Set theory is the constitution of a plane of reference, which includes not only an *endoreference* (intrinsic determination of an infinite set) but also an *exoreference* (extrinsic determination). In spite of the explicit attempt by Cantor to unite philosophical concept and scientific function, the characteristic difference remains, since the former unfolds on a plane of immanence or consistency without reference, but the other on a plane of reference devoid of consistency (Gödel).

When the limit generates an abscissa of speeds by slowing down, the virtual forms of chaos tend to be actualized in accordance with an ordinate. And certainly the plane of reference already carries out a preselection that matches forms to the limits or even to the regions of particular abscissas. But the forms nonetheless constitute variables independent of those that move by abscissa.

This is very different from the philosophical concept: intensive ordinates no longer designate inseparable components condensed in the concept as absolute survey (variations) but rather distinct determinations that must be matched in a discursive formation with other determinations taken in extension (variables). Intensive ordinates of forms must he coordinated with extensive abscissas of speed in such a way that speeds of development and the actualization of forms relate to each other as distinct, extrinsic determinations.

It is from this second point of view that the limit is now the origin of a system of coordinates made up or at least two independent variables; but these enter into a relation on which a third variable depends as state of affairs or formed matter in the system (such states of affairs may be mathematical, physical, biological). This is indeed the new meaning of reference as form of the proposition, the relation of a state of affairs to the system. The state of affairs is a function: it is a complex variable that depends on a relation between at least two independent variables.

— **Gilles Deleuze and Felix Guattari** [142]

A **Domain**

Syntactical convergence.

B **Horizon**

Syntactical liminality.

C **Encounter**

Conditions of exchange.

The sixth iteration offers a very strange moment. Turing has introduced the topic of extra-sensory perception, the subject subject of concern being telepathy. He does this in order to refute the potential objection that while computers might be intelligent, they cannot have extra-sensory perception (ostensibly, the argument would go, “like humans can”). Turing then proceeds to say that it is a very difficult premise to refute, and concludes by showing how to implement machinic modes of encapsulation that would account for the potential of telepathy.

Modes of Encapsulation

Modular organizations of transformations on the recording surface arranged to produce isolation from other modes of expression.

Turing's game examines the conditions of transmission in relation to the situated character of determination. If the imitation game is understood as the machine's diagrammatic capacity, the extra-sensory example must be understood as the diagram of inter-connective potential between internal and external consistency. Telepathy structures conditions of dialogic engagement—determination of the subject of inquiry—as encapsulated domains. The capacity for two thinking machines to share thought would concern a common syntax that would permit each to formulate their mutual difference, which would thereby be brought to "telecommunicate". Telecommunication is the technology by which thought is transferred across a recording surface. The imitation game examines how such a transmission can be established, asking after the conditions by which writing enters into thought and permits otherwise-isolated thoughts not only to communicate with one another, but to operate in concert such that their determinations come to be consistent.

Diagrammatic Capacity

The potential to form one diagram or another in terms of the difference in systematicity between each potential diagram.

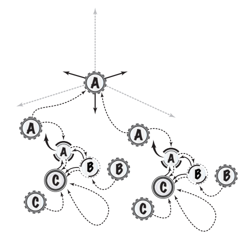
Mλ6: The Individual Privation of Thought [143]

> I assume that the reader is familiar with the idea of extrasensory perception, and the meaning of the four items of it, viz., telepathy, clairvoyance, precognition and psychokinesis.
>
> These disturbing phenomena seem to deny all our usual scientific ideas. How we should like to discredit them! Unfortunately the statistical evidence, at least for telepathy, is overwhelming.
>
> It is very difficult to rearrange one's ideas so as to fit these new facts in. ... The idea that our bodies move simply according to the known laws of physics, together with some others not yet discovered but somewhat similar, would be one of the first to go.
>
> This argument is to my mind quite a strong one. ...
>
> If telepathy is admitted it will be necessary to tighten our test up. The situation could be regarded as analogous to that which would occur if the interrogator were talking to himself and one of the competitors was listening with his ear to the wall.
>
> To put the competitors into a "telepathy-proof room" would satisfy all requirements.

C formulates a subject of inquiry while A or B attempt to reproduce the systematicity of C's formulation by way of their own position.

This iteration of the imitation game can be understood to imagine the encapsulation of private space-time apart from common public spaces. Perhaps most interesting is that Turing has already introduced dialogue in the previous iteration, and only now—after situations of encounter or exposure—doe Turing introduce the encapsulation of "private" thought. The sixth iteration explores how to isolate activity, encapsulating it in private spaces, and how to transmit across privative delimitations. Turing introduces problems of telepathy in order to examine how two thinking machines will delimit their "own" so that they do not think each other's thoughts, whether intentionally or otherwise. Oddly, Turing's telepathy example seems to serve for him as the ultimate proof of the argument against solipsism: there exist concepts that do not exist for us.

Iteration M—M`



Two articulations of an indeterminate subject attempt to align their own self-reference with the self-reference of one-another.

Telepathy is how the machine cuts itself off from the world while re-connecting its "internal" modules with one another, constructing an "external" network of connective relays. In this context, Turing's consideration of the telepathic model can be seen to introduce two concerns:

1. How do thinking machines avoid thinking each other's thoughts?
2. How do thinking machines that are avoiding thinking each other's thoughts think together?

The difference between "internal" and "external" in this context concerns the module as a relation to the machinic conditions of connectivity. The movement of passage envelops conditions of succession and transforms them into conditions of simultaneity.

Movement of Passage

The relation of internal difference found between the artifice and the edifice, thought as an animated, simultaneous passage of the each through the other.

A: Domain

The finite ... thought thinks what goes infinitely beyond it and what it cannot account for on its own; it thinks, therefore, more than it thinks.

A unique experience.

When I think the infinite, I think what I am not able to think (for if I had an adequate representation of it, if I comprehended it, assimilating it and making it equal to myself, it would be a question only of the finite).

I therefore have a thought that goes beyond my power ... in other words: a relation with what is absolutely outside myself: the other.

— **Maurice Blanchot** [144]

Assessing a subject of inquiry requires treating it according to terms by which it can be assessed. Paul Schweizer offers a formulation of the problematic:

> We are dealing with a type of system about which we know nothing, and hence we have no license to employ our general knowledge ... in giving it the benefit of the doubt. If this were allowed, the artifact would be getting a free ride on our background knowledge of intelligent human behavior, and hence an affirmative judgement could be based on general assumptions and extrapolations which turn out to be false for the type of system in question.[145]

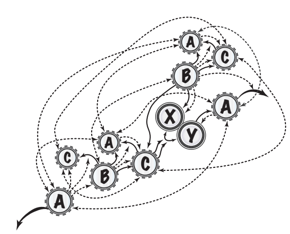
The imitation game formulates this problematic by presenting itself as the structure of inquiry in order to stage the simultaneity of mechanism and movement, posing a problem as the staging of an answer in a circuit of determination. Inquiry moves into the imitation circuit by delimiting an artifice as a point of exchange for relations between internal and external consistencies, the difference of which will form the event surface, where the inquiry "takes place”. Inquiry interpolates itself between the reflexive contingency of the scene found in the edifice and the dynamic capacity of the scene found in the artifice. Its insertion is the result of a provocation that it had never previously understood to be there.

Circuit of Determination

The imitation circuit: artifice and edifice formulate a point of exchange for relations between internal and external consistencies, the difference of which will form the event surface, where the inquiry “takes place”.

The imitation game produces a circuit of expression that structures inquiry according to statements that model it. For this reason, it can also be seen as a diagram of the contingency of convention. A circuit of expression is the successive activation of each statement in order to form a larger statement, which consists in the sequential movement of passage through each component. Expression consists in passage through domains of articulation, and expression can only be isolated insofar as the domains of articulation can be distinguished and encapsulated. The problem concerns structuring the reception of expressions as well-formed statements that reflect their author. Finding an appropriate syntax means inquiring after variable articulations regarding indefinite openings, which become points of consideration. Indefinite openings present translations between analytic modes, producing additional or alternative potentials by way of transformations in state.

Machine A—B—C—B



Machine A formulates the double of machine B by way of machine C.

Associations condense at points of intersection, where a subject of inquiry takes a common form between systems of treatment.

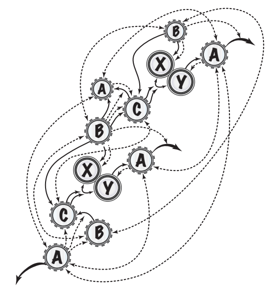
The dimensional potential activated in a particular statement or syntax is described in terms of amplifications and attenuations of a differential image of dynamics: a manifold defined across ordinal networks, forming a projective matrix that literally materializes the substance of thought as a nexus of domain relations.[146] Domain relations are diagrams of action potential that present capacities of consideration with respect to specific transformations. Where actions transform distributions in a domain, domain relations reverse the direction of consideration by which actions are described as syntactical determinations. The stakes do not concern whether incomputable conditions exist but instead are found in the potential to make systematic statements and between competing determinations of potential.

Dimensional Potential

Amplifications and attenuations of a differential image of dynamics that form a manifold defined across ordinal networks, articulating a projective matrix that literally materializes the substance of thought as a nexus of domain relations.

Assessing a subject by such terms presupposes their applicability, although applying the terms may reveal that they are inadequate and inappropriately assumed applicable. Expressions differentiate distributions and modulations of amplification and attenuation in system formation. Probability distributions arrange the potential for dynamics of a statement to be identified and analyzed in relation to systems capable of producing or analyzing similar statements. A domain defines this process: how a statement becomes a system with a model. The domain is the specific intersection of specific amplifications and attenuations naming a particular locale of embeddedness, the successive potential of pattern formations and functional relationships: amplifications and attenuations of specific modes of embeddedness.

Machine A—C—B—C



Machine A formulates the double of machine C by way of machine B.

Modeling systems with statements that describe their consistency requires defining units of expression appropriate to the system. Units of expression are relations of syntactical translation, defining translation potentials at intersecting points on the ordinal manifold. The extent to which the particular consistency in question can be considered by one system or another will depend entirely on the extent to which the terms of consistency can be appropriated by a syntax capable of formulating the system in question. This is a matter of finding or creating the required convention to preserve the distribution while also precluding poorly formed expressions (noise).

The domain consists in nothing other than a formulation of capacity at a point of inquiry. The “as such” of this “system beyond its limit” is continuous variation: a system is only incomplete insofar as it takes itself as its own inherent limit and does not create a greater system to contain it, in which case the greater system would formalize the incompleteness of the minor system as a function of the new system’s capacity.[147] The domain is the statement’s relation to the system that will produce a model of its expression. Martin Davis offers a helpful summary of conditions of relative computability:

> Turing … introduced the idea of a computation with respect to an oracle. An oracle for a particular set of natural numbers may be visualized as a “black box” that will correctly answer questions about whether specific numbers belong to that set.
>
> We can then imagine an oracle algorithm whose operations can be interrupted to query such an oracle with its further progress dependent on the reply obtained.
>
> Then for sets `A`, `B` of natural numbers, `A` is said to be Turing reducible to `B` if there is an oracle algorithm for testing membership in `A` having full recourse to an oracle for `B`. … if `B` is itself a computable set, then … `A` is computable. But if `B` is non-computable, then interesting things happen.[148]

Intuition—the space C stages between A, B, and itself—formulates an anti-formal capacity consisting in the simultaneity of formal systems and the free play of syntactical potential. Formalizing anti-formal potential permits formulations to be refined according to dynamic circumstances that become intuitively linked by way of their variable anti-formalisms and the manner that these anti-formalisms have bearing on the present formalism in consideration. Systemic statements intermingle by way of their anti-formal potential, which creates affiliations and associations outside any particular formal system. It is for this reason that disciplines can not only reformulate their terms but also undergo revolution, which is best defined by a transformation in the conditions of incompleteness. Such a transformation redistributes the field of inquiry by reformulating the conditions by which the discipline's systematicity can be understood to take place.

Intuition stages the difference between the domain and the system of the statement: the expression of a domain implies some sense of potential systematicity that is not yet determined, while the statement is the expression of this determination. The domain is the incompleteness of systematicity, while systems model the domain. If a system formulated the statement, the domain is the problem of which systems are capable of formulating the statement. The point of anti-formalization is defined by this necessary fact of ordinal logic. There is always possibly another system that can articulate formal terms regarding the conditions of the initial system. *Any system that takes itself to be* *in relation to either consistency or completeness has to presuppose this system beyond its limit, from which it derives its condition of power.*

Point of Anti-Formalization

A diagram of the possibility that another system might articulate formal terms regarding the conditions of the system in question.

Condition of Power

The relation of the system to the potential beyond its limit where another system might be formulated in order to re-assemble the capacities of the initial system in relation to conditions of incompleteness.

The impossibility of an independent statement including the systemic structure that models it as a statement corresponds to the problem found at the “middle” of the imitation game. The problem of logical formulation for Turing is that the “excluded middle” is not available— nothing has been excluded yet, meaning that poorly-formed statements are mixed in with statements that can be considered well-formed. Between the incompleteness of each formulation, points of common consistency are found, identifying passage from one system to another. Passage takes place outside of formalism, by way of the opening each system retains in its formal condition of incompleteness, materializing the incommensurate character of these simultaneous openings as the power of thought. This limit is the condition of knowledge by which the axiomatic can be evaluated— but it cannot be part of the system or it falls victim to a condition of incompleteness, where it cannot formalize itself because it cannot simultaneously formalize its own formalization.

The imitation game formulates the domain of consideration as the structure of a differential image that quite literally defines and delineates “where thought can go”. Comparative potentials of traversal are qualified by relative distributions of amplifications and attenuations in the form of syntactical determinations. Piccinini Gualtiero has taken note of this model in the context of universal simulation, where he calls it “computational functionalism”:

> The biggest surprise is that when interpreted literally, computational functionalism entails that the mind is a (stable state of) a component of the brain, in the same sense in which computer program tokens are (stable states of) components of computers. As a consequence, even a brain that is not processing any data—analogously to an idle computer, or even a computer that is turned off—might still have a mind, provided that its programs are still physically present.[149]

Translations construct or substitute terms—conventions—for the entangled relations found between multiple amplifications and attenuations. In this manner, syntactical determinations formulate state transformations, which produce substitutable volumes of potential. State transformations are terms that stand in for specific amplifications or attenuations of distributions and modulations that take place across syntactical variation. Volumes of potential are defined by syntactical freedoms at each nexus of syntactical exchange, implying unmediated transformations in state where the number in question passes into a distinct number-space and becomes a different number. The imitation game formulates the position of inquiry as a liminal edge of translation. This occurs such that the incommensurate character of the multiple formalizes the incompleteness of a given system in relation to itself.

Volumes of Potential

Syntactical determination produced as substitutions for specific diagrams (producing a higher level of abstraction).

Syntactical Freedoms

Potentials of determination between comparative syntactical possibilities.

Domain translations transpose patterns from the context of one functional relationship to another in the form of expressions that compare integral syntactical arrangements, establishing the volumetric potential of statements, and substituting the volumetric potential for the statements as an identity of their expression: dimensional—integral—potential, the volume of thought, which consists in the range of differentiation that can be performed by a system that will qualify integral transitions. Differentiation produces an image of translation to describe transitional movement, and can be described as a set of potential translations intersecting the manifold.

Volumes of Thought

The contents of volumes of potential for which a syntactical determination might be substituted.

Anti-formalisms stage the capacity or incapacity of other modes of consideration, posing the question: what if this formal expression were modeled by a different system? This is Turing's concern with ordinal logics, which corresponds to what Michael Graziano has presented as a problem of attentional consciousness:

> Many thinkers have approached consciousness from a first-person vantage point, the kind of philosophical perspective according to which other people's minds seem essentially unknowable. And yet ... we spend a lot of mental energy attributing consciousness to other things. ... Too much information comes in from the outside world to process it all equally, and it is useful to select the most salient data for deeper processing.
>
> Even insects and crustaceans have a basic version of this ability to focus on certain signals. Over time, though, it came under a more sophisticated kind of control — what is now called attention. Attention is a data-handling method, the brain's way of rationing its processing resources.[150]

Anti-formalization—the outside potential of attention as an active process—is virtually present in all formal considerations, staging the transformative potential of the statement, creating a mechanical diagram of its potentiality—a model—by way of other statements. Anti-formalization formulates the elasticity of the statement, actively distributing fields of potential that can be isolated when particulars shift. Every formal system also implies the formalization of its specific anti-formal potential, which is its capacity to have been formalized otherwise. Intuition will have to serve this common purpose, producing its own organization of associations and displacements as the artificial aspect of assembly that composes each arrangement according to its particular sense of propriety. Every statement presupposes at least one point of anti-formalization. In this regard, intuition also asserts new conventions without having formalized them. Turing's description of this problematic is so straightforward that the implications are easy to overlook:

> The popular view that scientists proceed inexorably from well-established fact to well-established fact, never being influenced by any improved conjecture, is quite mistaken. Provided it is made clear which are proved facts and which are conjectures, no harm can result. Conjectures are of great importance since they suggest useful lines of research.[151]

Points of anti-formalization can be found in the model as the possibilities that become implicitly excluded as alternative potentials in the commitments made by structuring the statement in question through a particular system. These are the points that the system in question cannot envelop, which inevitably become regions of agitation, circulating around the potential found in alternative contingencies.

Anti-Formalization

The elasticity of the statement, understood as the active distribution of fields of potential that can be isolated when particulars shift.

Alternative Contingencies

Alternative potentials in the commitments made by structuring the statement in question through a particular system.

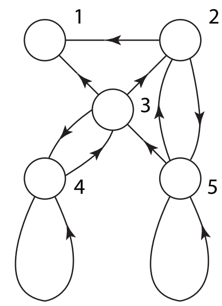
The substitutive capacity connects networks of ordinal difference to one another at specific points of exchange that function as syntactical operators, constructing networks of mechanical action. Turing presents this structure in his 1948 paper that immediately precedes “Computing Machinery and Intelligence”, where he introduces A and B type unorganized machines as the universal embodiment of ordinal logics:

> For each A-type unorganized machine “⇒” we can construct another machine by replacing each connection “⇒” in it by “⇒❒⇒”. The resulting machines will be called B-type unorganized machines.[152]

The difference between A and B machines is quite simple. The A machine consists in connectivity, while the B machine consists in an A machine modified by some other circuit that intercepts all signals between A and B.

Turing’s use of figures A and B in the imitation game is not merely a convenience, but reflects the specific role of A and B as machines in an unorganized circuit. The relation between A and B presents the simplest version of the domain structure, where the circuit added with the B machine serves as a domain that modulates the specificity of A. C functions as the passage of an A-type machine through a B-type machine, returning to the A-type machine as the condition of the circuit of determination. Turing's description of A and B machines can be transposed onto the imitation game, written "A⇒❐⇒B", where "❐" is C. C formulates iterability as the material differentiator of A by way of B. C is the redundant trace of the modification of the A-machine that produces the iterable character of the B-machine as a circuit of expression. The imitation game is established as a circuit of inquiry insofar as C submits its condition to specific terms of inquiry found in B, in order to isolate a specific aspect of determination in A. This is not a function of effectiveness or accuracy but rather of functional application, in the sense of chaining operations to determine one-another in sequential distribution relays. A is the differentiated, B is the differentiator, C is the differential. The inquiry—figure C—literally stands-in for itself as the indeterminacy of A, distributed by the structural metrics provided by B. The inquiry engenders differential relations in order to modulate conditions of difference in the construction of transitional architectures.

A-Type Machines

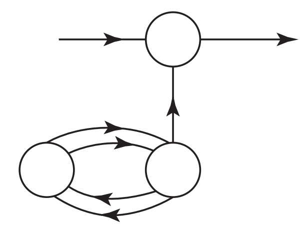


Turing presents A-type unorganized machines with this diagram of connectivity between state potentials.

Turing's unorganized A and B machines are specific mechanical relations presenting mathematical formalisms that Turing first offered in "Systems of Logic Based on Ordinals". In that paper, Turing produces ordinal class W as the limit system of the convergence of ordinal logics, where W names the absolute potentiality of the ordinal structure as the potential deployment of each system acting as a node in the ordinal structure. Turing's universal machine M confronts this structure from the other side: M has no organization but begins in the midst of an ordinal logic that it does not have adequate knowledge to describe. Universal machine M is the limit condition of Turing's ordinal logic, without the logic itself. M, in order to contribute to the terms whose organization remain beyond its own determination, must construct an imitation system that will coordinate the delimitation of dynamics that would otherwise remain beyond M's capacity for treatment.

The imitation game produces a subject of inquiry as a point of condensation defined by the singular intersection of multiple ordinal networks. Each figure exists in the imitation game as the formal model of a specific type of structure in ordinal connectivity. The role of C in the imitation game—the invested character of inquiry—echoes the role of system C in Turing's ordinal logics. Similarly, the role of the machine—an implicit M, formulated as the simultaneity and succession of A, B, C—can be seen as an inversion of Turing's set of ordinal logics W, literally turning it on its head in order to stage the consideration from the opposite direction (in need of a logic). Where ordinal logics begin with individual statements and proceed to a common limit, the machine begins with the common limit and has to work its way back to the structural articulation of ordinal logics. The imitation game consists in model C constructing model C` in the system M by distinguishing A and B in terms of freedom of movement and assumed systematicity in order to construct the class W, which is writing. B is the domain of A with respect to C. Ordinal logics produce the reversibility of M and W, which formulates the domain as a capacity: the difference between mechanism as a structurally-organized coordinate system, and writing as a discrete system for producing continuity in movement. The imitation game itself figures ordinal connectivity "as such": the structure of articulation, which is the formulation of mechanical joints in formal expression, imitation as the structuring of itself from outside itself.

B-Type Machines



Turing presents B-type unorganized machines with this diagram of connectivity between an external circuit and an A-type machine.

Ordinal Connectivity

Structures of potential found across ordinal networks in relation to a point of inquiry.

B: Institution

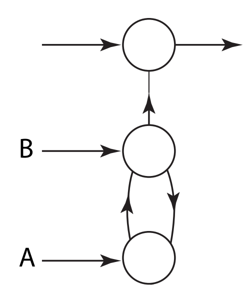
> The multiple is in the one which complicates it, just as the one is in the multiple which explicates it.
>
> — **Gilles Deleuze** [153]

"The idea behind digital computers," Turing explains, "may be explained by saying that these machines are intended to carry out any operations which could be done by a human computer."[154] This follows an explanation given two years earlier, where Turing emphasizes:

> It is possible to produce the effect of a computing machine by writing down a set of rules of procedure and asking a man to carry them out. Such a combination of a man with written instructions will be called a "Paper Machine". A man provided with paper, pencil, and rubber, and subject to strict discipline, is in effect a universal machine.[155]

The digital computer is a most-effective paper machine, which functions in terms of recorded signals that can be given discrete values. The discrete character of these values is that they function to delimit syntactical spaces, making the spaces function as signals in a signaling convention, which is formalized as a syntax that governs distributions of signals.

B-Type Machines Linearized



Turing's description also permits this diagram, providing a simplified image of a B-type unorganized machine.

In Turing's example, paper, pencil, and rubber—when coupled with a man to provide mechanical action—

describe a “universal machine” because the man is capable of taking systematic notation that retains the qualities regarded as essential while distinguishing their aspects from a domain of noise. This notation will produce a network of relations that are diagrammed on the paper—that event surface—and that can be modified as necessary. The diagrams will not only perform the computation in question but also offer a formal proof of having done so. The similar task of the digital computer is to administer a continuum of relations. It accomplishes this by simulating types of discrete expression, presented in a consistent syntax that aids the mode of analytic treatment.

The computer—human or digital—is double:

A) The task of converting continuous flows of data into discrete elaborations of digital information.

B) The corresponding responsibility to retain the consistency found in the presentation of discrete elaborations.

For the digital computer, this means:

C) Stabilizing the relation between discrete values and the electro-mechanical circuitry.

For the human computer, this means:

G) Distributing presentations of the data in whatever material syntax permits transformations to be applied and evaluated as recordings on an event surface.

Formulating coordinate distributions and modulating conditions of expression implies actions on the event surface. The event surface is the machinic thought, reflecting its own condition as the expression of a language of worldly organization.

Event Surface

The durational space of capture between the event surface, the syntax, and the action mechanisms.

Inquiry is capable of assessing the standing of a potentially thinking of thing insofar as it is capable of simulating the potentiality of that possibly-thinking thing thinking. The subject of inquiry is instituted as the point that turns away from the inquiry and turns into the investments that it sustains as the duration of its computational economy. Inquiry necessarily constructs a virtual life for any subject of inquiry, simulating its conditions of variation on the event surface in order to anticipate its possible standing vis-a-vis other relations of inquiry.

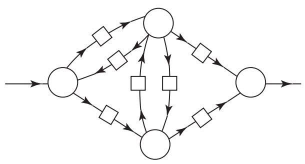
The event surface formulates the domain as a stable-state component of the imitation circuit, which can itself become a stable state component of another imitation circuit. The domain is the point where inquiry turns into an economy of difference, which distributes the expression of inquiry as a subject.

The event surface will be transformed in and through the ongoing activity of statements modeled by systems. Yet, the modeling of statements also consists very precisely in this transformation, preparing the event surface for reformulations in syntactical distributions. Elements have to be extracted from, in, and as the character of transience in order to define what relations are possible. Certain elements are presupposed in the structure of inquiry—the imitation game—others will be constructed from the conditions of variability internal to the conditions of inquiry. Imitation is the reversible triangulation of movement between an artifice of inquiry and an edifice of reflexivity. The subject of inquiry is an undecidable volume of intuitive potential between these triangulations. In Hector Zenil's description, this principle of imitation is an extension of Turing's universal machine as a form of living information:

> A notion of emergence can be captured by algorithmic information theory, matching identified features of emergence such as irreducibility with the robustness of persistent structures in biology. This amounts to suggesting that part of what happens, even in the living world, can be understood in terms of Turing's most important legacy: the concept of universal computation.[156]

Turing's imitation circuit provides a sense to evaluate the efficacy of these information networks. The imitation game situates determinacy by way of ranges of dynamic deception present in information flows, situating potentials for indeterminacy by way of models for the consistency of specific ranges and intersections of movement.

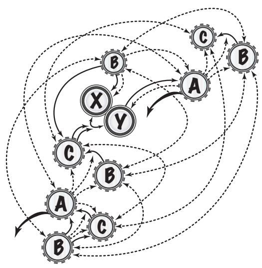
B-Type Machine Example



Turing provides this diagram as an example of an arbitrary unorganized B-type machine.

Each figure in the imitation game stages a specific mode of displacement, which reverberates through the scene of exchange in order to produce operators adequate to the conditions of inquiry—conventions—and orchestrates those operators in active operations on the event surface. The imitation game consists in the capacity to transform figure A from a differential image in a field of indeterminacy into an ordinal coordinate—a number—on a specific ordinal network (a number-space). The ordinal network permits the qualification of comparative dimensional potential, articulating—by way of mechanical joints that construct the dynamic connectivity of the ordinal network—the interest of preserving the actuality of the difference between A and B in C's determination of C`. The event surface becomes the activity of the problem, which operates on itself as the "answer" that the problem formulates for its own internal horizon: convention.

Machine B—A—C—A



Machine B formulates the double of machine A by way of machine C.

Conventions are terms that consist in the distributive capture of volume on the event surface and that can be calculated by a process of integration appropriate to the particular syntax that constructs the expressions that state each term. Conventions can be as simple as tendencies to associate particular modes of treatment with one another. Turing understands this as the capacity appropriate to the dynamics often referred to as "reality": conventions may arise for reasons of convenience, frequency of association or contrivance just as easily as for reasons grounded in rigorous formulations— but there is nothing precluding the same reasons, however trivial or contrived, from being given a systematic treatment.

Conventions

Terms that consist in the distributive capture of volume on the event surface and that can be calculated by a process of integration appropriate to the particular syntax that constructs the expressions that state each term.

The intelligence of any particular determination corresponds to its standing in the iterable conditions of the imitation game. Arthur D. Lander's description of Turing's approach to formalism captures quite effectively the stakes at this point:

> The Turing process is a mathematical abstraction that invokes the production and destruction of interacting, moving signals. No restrictions

> are imposed on the molecular details of the signals, how they move, or how they interact.[157]

Lander's comment is directed at Turing's subsequent work on "morphogenesis", but the description could not be more appropriate in the context of the imitation game, which is doubly split between the space of indeterminacy and the frame of reference that provides a metric for orientation. The split is found in the inquiry, figure C, as the movement between artifice and edifice, which effectuates transition states in syntactical formulation. The imitation game structures passage across these formal conditions as a reversible metonymy of determination:

A) The substitution of artifice—a mechanism presenting a substitute for A—for edifice.

B) The substitution of edifice—a mechanism presenting a substitute for B—for artifice.

Between artifice and edifice, two senses of state transformation are encountered: transformations in recording surfaces, and transformations in projection.[158] Transformations in projection treat the status of the recording surface according to different modes, whereas transformations in recording surfaces alter conditions of activation. Two movements are elaborated:

A) The movement through the artifice, which structures the circuit of inquiry.

B) The movement of the artifice, which is the resistance to the movement through it.

The movement of the artifice is the nominalization of the thing, which consists in a specific resistance to the mode of determination from which it precipitates. The mode of determination operates through the consideration of indeterminacy in relation to the continuity of determination, which can only be measured as its reflexive indeterminacy. The mode, or machinic determination, is equivalent to the consideration's return to its own indeterminacy, which is the internal difference of the consideration (its determinacy in relation to determinations of its indeterminacy: the minimal difference between it and its determination).

The imitation circuit formulates the reversibility of artifice and edifice, which concerns the construction of statements and the modeling of statements that arrive from outside of determination. In the words of Jacques Lacan:

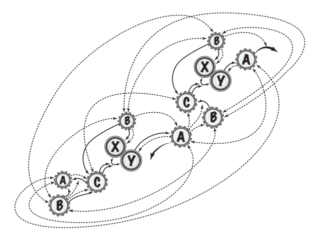
> These units are subjected to the double condition of being reducible to ultimate differential elements and of combining them according to the laws of a closed order.[159]

The artifice permits the convergence of dynamics to be treated as a common space that can inflect the edifice of reflexivity with respect to each "place" involved. The artifice—A, the field of computational indeterminacy—is produced as a dynamic continuity while the inquiry—C, the computational process—

separates itself in order that it can return to the domain of inquiry by way of tracing specific differences in the resistance—B, the metric—formulated at the artifice.

Thinking presupposes modes of engagement that have a dynamic structure of their own. The claim is precisely not—per "the standard interpretation" of Turing's imitation game—that thinking occurs by assessing thought in another. The point is much more precise: *the subject of inquiry is quite literally that which is left out of objective reality.* The formulation of convention consists in an iterative capacity of displacement, where each formulation of information flow implicates another formulation of other distinct but related movements. The two sides of the inquiry—artifice and edifice—frame the inquiry as a diagrammatic conception, following each dynamic indeterminacy across the event surface.

Machine B—C—A—C



Machine B formulates the double of machine C by way of machine A.

The reversibility between the artifice and the edifice constructs a sense of reaction that is actively prepared ahead of time, corresponding to the capacity by which a statement, contextualized by the potential of one model or another, "always anticipates meaning by unfolding its dimension before it".[160] The dynamic relations formed between the artifice, A, and the edifice, B, formulate the inquiry, C, as an oscillation that draws together two incommensurate but overlapping expressions, demonstrating that *the question is not whether the subject of inquiry functions syntactically, but rather what sorts of syntaxes it can be said to produce.* Convention—figure C—comes to be organized in two modes that coordinate mechanical dynamics:

A) Syntactical convention governs the translation of syntax to action mechanisms: “this means that …”.

B) Anti-formal convention governs the translation of expression to performative execution of corresponding action mechanisms: “this could otherwise mean that …”.

The problem of telepathy for Turing is that elements of writing are potentially included that are not themselves part of the text, but that form a necessary aspect of contextual passage. Domains of articulation may be included in the construction of an expression without definitively appearing “in” the expression, meaning that the powers of determinability belonging to a context are not exhausted by the context, but by the internal difference between the artifice and the edifice that defines the subject of inquiry as a subject. Turing’s extra-sensory iteration of the imitation game can be understood to address the question: how does one hear what is not in the statement? This “unheard” is the domain, which conditions the expression without being contained in it.

Lacan again offers a succinct description of the consequences of this reversible organization between the subject of inquiry and its domain:

> The subject ... follows the channels of the symbolic. But what is illustrated here is more gripping still: It is not only the subject, but the subjects, caught in their intersubjectivity, who line up ... and who ... model their very being on the moment of the signifying chain that runs through them.[161]

A semiotic network—a continually shifting number-space—expands from each term, incorporating the other terms in overlapping ordinal networks that develop an incommensurate but common "middle". The common space becomes the event surface that records the syntactical transformations implied by each expression, and that traces relations of action back to the syntactical manifolds that distribute the ordinal networks that define each relation as a unique interval.

Semiotic Network

A continually shifting number-space that expands from each term involved, incorporating each of the other terms in overlapping ordinal networks that develop an incommensurate but common "middle" that becomes an event surface that records the syntactical transformations implied by each expression, and that traces relations of action back to the syntactical manifolds that distribute the ordinal networks that define each relation as a unique interval.

C: Encounter

> Many thinkers have approached consciousness from a first-person vantage point, the kind of philosophical perspective according to which other people's minds seem essentially unknowable.
>
> And yet ... we spend a lot of mental energy attributing consciousness to other things. ... Too much information comes in from the outside world to process it all equally, and it is useful to select the most salient data for deeper processing.
>
> Even insects and crustaceans have a basic version of this ability to focus on certain signals. Over time, though, it came under a more sophisticated kind of control — what is now called attention.
>
> Attention is a data-handling method, the brain's way of rationing its processing resources.
>
> — **Michael Graziano** [162]

The imitation game forms a "social circuit" as a collection of statements consisting in the multiple incompleteness of embedded coordinates. This circuit formalizes the condition of the machine as the difference internal to social construction, which takes place by way of other machines: the common domain itself. The problem is that of being caught up in the problem; the determination of the limits of intelligibility presuppose the intelligibility of the limits they determine. How can a rigorous notion of verifiability be asserted when the very terms of determination are dependent on the subject of inquiry? How can a scientific engagement be staged with a subject that is without any context save its own terms of determination? The imitation game is organized by the identification of discrete nodes that modulate the spacing of continuous social exchange. The "social" aspect of the common domain concerns how differences in presupposition are simultaneously distributed along multiple conflicting axes.

The idea of "common terms" will have to be developed between different modes of participation, and if the imitation game is to be "playable" by its participants, communication will develop across the differences. "Communication" takes on a unique role for Turing, structuring precisely that which is left out of "imitation". For Turing, "communication" names the capacity for each position to extrapolate its own future investments based on the incommensurate intersection that "imitation" cannot anticipate. The imitation game formulates the singular point of this difference, describing dynamics that address one another without a capacity for common terms.

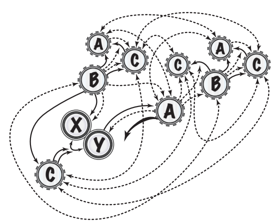
Communication

The capacity for each position to extrapolate its own future investments based on the incommensurate intersection that "imitation" cannot anticipate.

The imitation game poses a problem of the alphabet: does A determine C to come after B? does C determine A to be before B? does B determine that it falls between A and C? The structure of the imitation game makes clear that no simple resolution to these questions is available, and that distributing ordinal relations according to any expected consistency will involve coordinating the expectations of that consistency. Each of the figures that Turing names in the imitation game—A, B, and C—formulate a particular mode of investment in the intersection of social dynamics. Each distinct system formalizes itself according to commitments that may not be comprehensible by the terms of another system. This means that the simultaneous formulation of multiple systems quite likely leads to premises that can be consistently expressed in each, but that prevent the simultaneous affirmation of each distinct system at the same time. This implies a necessary incompleteness to the character of any sense of “the” system.

If “the” system had to be formal and singular, in the sense of a unified theory, certain analytic positions would be precluded simply by way of legitimately competing notions of “the same thing”, each valid insofar as expressed from its specific aspect. This could be resolved only by formalizing “the” system by way of fragmentary aspects, which means referring to it as “the” system would be nothing more than a convenient way to refer to the multiple competing aspects of formalization. There is only one other alternative: the formalization that is the system itself, which is already a diagram of the aspect by which its expression is sound. Modeling Turing’s imitation game requires a single diagram, but modeling how three players involved in the imitation game participate in the game requires at least one diagram for each participant. This is because each participant has their own image of the other roles in the game, based both on the role assigned by the game and based on the manner a given individual invests their performance with a style of their own. C can only inquire after A insofar as B points C toward A’s pointing away from C. The relation of A, B, and C can only be considered

Machine C—A—B—A

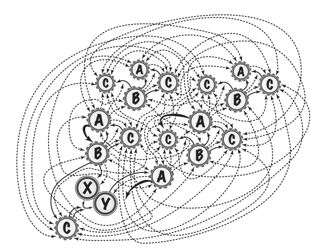


Machine C formulates the double of machine A by way of machine B.

once their determination has been detached from the ostensible series in which they appear. A will be the final term in the series but it will also prompt the inquiry that provokes the determinations mapped by C with the help of B; A is therefore on both sides of the series. B is second in the series only insofar as it seconds A. A is both first and last, meaning that A prompts C's connection to the series A—B, which connects C to A by way of B; B follows A insofar as C is brought to follow A by B. The final series A, B, C can only be understood insofar as the end of the series is presupposed from the start: (C), A, B, C. This mapping of determination recasts "series" as a problem of simultaneity. The series connects to itself as a circuit, which lays itself out as an abstract line of determination that reproduces the sequence while also interpolating determinations that do not properly belong to the series but that will become part of it by way of the social circuit.

Social intelligence is expressed as a common construction of intersecting potentials that does not hold in common the presuppositions constituting it as common. This is a very strange definition, as it indicates that the aspect of intelligence that permits social interaction is the absence of a single common premise. Consequently, the social appears as the possibility of introducing domains of discourse that had not previously been present— and in this regard, Turing understands the role of the machine as a confrontation with the position of social intelligence itself. In Turing's words, "The attempt to make a thinking machine will help us greatly in finding out how we think ourselves."[163] The machine is the operator—"thinking"—and the syntax that will structure thinking is the direct object that the operator operates: thinking ourselves, becoming the continuous variation that the syntax structures.

Machine C—B—A—B



Machine C formulates the double of machine B by way of machine A.

That the machine, as operator, is algorithmic means that the space defined by intersecting dimensions can be qualified or quantified by a consistent mode of inquiry. The subject of inquiry is not a passive point of resistance, but rather an active circuit that prosthetically extends the actual principle of reality. The circuit is quite literally the "tele-scope" that connects the inquiry to its subject—inquiry, through the edifice, condensed at the artifice—articulating the scene as the singularity of the circuit. Inquiry consists in specific determinations that the particular algorithm produces when analyzed as the context of particular inputs. The question concerns which signals to amplify and which to attenuate. Emmanuel Levinas has presented this problematic as the condition that separates the text from the context, neither of which are available beforehand, referring to it as "signification without a context": "this content can not be detached from the context, from the system in which the works themselves are integrated, and it answers to the question by its place in the system".[164]

Signification

The comparative preference between which signals to amplify and which to attenuate.

The imitation game concerns the interrogator's capacity to interrupt the circuit of relations with a stable determination of its own orientation vis-a-vis the organization of the circuit. Formalization of these ordinal distributions takes place as the construction of self-enclosed consistency, which opens to conditions it has not yet been able to address. The inquiry stages itself as its own terms of inquest, which it adjudicates on its own terms, as its own terms, inquiring after what it is as an inquiry. Ferdinand de Saussure has described the problem—a matter of language—by observing that, "the system is a complex mechanism that can be grasped *only through reflection*".[165] As such, any formal system is actually many smaller systems that are carefully assembled to create sustainable relations with one another. The consequence, Turing observes, is the endless multiplication of possible systems, each exploring possible variations on the system or systems it incorporates and expands. Inquiry is the capacity for difference between amplification and attenuation, which includes the selective amplification and attenuation of specific determinations. Each system, in its variation, produces new systems that formalize the variations according to one potential or another. Systemic variation expresses its potential in the infinite chaining of possible becomings: not merely one system of ordinal logic, but many systems of ordinal logic, each incommensurate with the others, each formulating the conditions produced by the others.

Logic becomes an inverted taxonomy: trees write their branch structure from the outside in toward the trunk, which is the absolute limit of convergence: a coordinate system for (re)producing the statement. It is not simply that each system experiences variation and growth. Incompleteness is the limit condition of intelligence as a temporal sequencing of articulations in an image of thought. Incompleteness is found in the system's relation to the limit that defines it as a system: the impetus for movement.[166] The imitation game asks whether given class M—the abstract machine confronting the limit condition of ordinal logic—M can derive the class W of ordinal logic. M's capacity to accomplish this derivation corresponds to the machine's ability to produce an orientation that would delimit the individual character of its embeddedness. The problem that the machine M faces is that the condition of the absolute limit of any ordinal logic is the simultaneous realization of all possible statements, none providing requisite details to perfectly reconstruct the system that produced them. Deriving class W would correspond to machine M inverting considerations, starting from individual premises of its own ordinal distributions in place of the open and undetermined potential of indeterminacy that constitutes universal simulation.

Incompleteness

The limit condition of intelligence as a temporal sequencing of articulations in an image of thought, found in the system's relation to the limit that defines it as a system: the impetus for movement.

The network of ordinal logics formed as the imitation game describes the internal and external consistency of statements in order to retroactively model structures by which they can be stated. Logic appears as the structural presupposition of the model, which is inserted before the statement to condition its semantic standing and to evaluate the consequences of its conditioning versus other potential forms of logical presupposition. Who is controlling the syntactical formations named "man" and "woman"? The answer is not difficult, but its multiplicity is intriguing: A, B, and C are also syntactical systems, each independently introducing their own administrations that define "man" and "woman". The definition that each derives then reverses the direction of determination, entering into the rules of the imitation game. Associations available in the field of exchange are brought to intersect as potentially implicit statements. Ordinal associations express a logical unconscious inherent to any expression— what is usually called "semantic value". Models can be produced in order to orient statements to the extent that an amplification or attenuation along one axis or another would implicate the consideration of a specific distribution or modulation along another. Systems actualize expressions that amplify and attenuate modes of distribution or modulation in the formation of systemic potentials for amplification and attenuation.

The imitation circuit constitutes a feedback loop for determination. The domain —figure B—is defined by the dimensions that construct it as a space of consideration: a manifold defined as dimensions across ordinal systems. Variable paths of ordinal determination construct ordinal path integrals, each of which formulates an ordinal density: a specific distribution defining a distinct domain. The space in consideration is the integral volume captured between specific lines of variation. Its position, systematized by relations provided by B, concerns axes of distribution that coordinate the relative determination of otherwise undecidable elements in A. B systematizes distributions of A's decidability, modulating ranges of indeterminacy by way of computable potentials, and constructs a metric that describes arrangements of coordinate relations in terms of simultaneity or succession. The metric is the system of the statement, which the statement expresses but does not include. By deploying itself to structure the expression of the statement, B structures the encounter by way of the systemic character of its own engagement as a metric: a double relation between the indeterminacy of A—formal and anti-formal in character—and the determinacy of C, which is not taken to belong to any object. The "object" is inquiry underway, passing beyond its own figuration, into another realm: a projection of its own fractal reality, nothing other than how it formulates itself as a syntactical condition of movements between dimensional articulations of directional magnitudes: successive distributions organizing reversibility between expressions of relational functions.

Syntax becomes the structure of self-reference, taking on semantic standing because syntactical formulations express a model of systematicity that Gilles Deleuze and Felix Guattari describe as, “the presence of a reported statement within the reporting statement, the presence of an order-word within the word.”[167] Self-reference can only be understood as affirmation of the system that speaks, and writing is the relational difference that traverses the reversibility of the statement. In Jacques Lacan’s formulation: “the linguistic sign is then a two-sided psychological entity ... the two elements are intimately united, and each recalls the other”.[168] All circuits—semiotic networks of mechanical articulation—are relations of two sides bridged by a common term. Complex circuits may redouble these two sides in many terms, creating systems that consist in more than two terms, but even these circuits are set in double relation with themselves: the actual state in which they consist, and the virtual understanding by which they locate their own functioning in order to facilitate more efficacious modes of organization. Neither an actual circuit—an artifice—nor a virtual circuit—an edifice—can function alone. It is perfectly feasible that an edifice refers an artifice to numerous other circuits, or that an artifice refer an edifice to particular points of engagement— but no account is possible without the differential bridge that connects the one with the other as its correspondent.

Turing's work demonstrates not only that machines can indeed think, but also that the necessary formulation by which they think consists in nothing more than the animating fissure that draws them into a particular mode of movement. Our question, then—the question that would offer the machine a sense of imitation by which it could simulate "human" intelligence for itself—would then concern the way that imitation could formulate its own self-identity by way of a movement through what we might then call "its own internal difference", in that its "self-identity" imitates the problem that concerns its movement (and thus draws it to move).

If language is to enter into the realm of consideration compatible with the scientific sense of the empirical-real—rather than opposed to it—a rigorously scientific understanding of the literary devices of determination will be necessary. In this regard, deciding the objective status of a point of inquiry requires effectively turning it "inside out". The "external" identity of an object is revealed to be nothing other than the attributed status of its "interior" elements (the elements that make the object "what it is"). The object emerges through an involution—a singular metonymy—that reveals the inside and the outside to be one and the same side of expression folded about itself. The "object" is from the very start constituted according to multiple superpositions—each consisting in a dimension of inflection—as the subject of inquiry. Determining "what" an object is (its status as a thing) requires deciding the status by which these superpositions will be understood in relation to one another (as their amphibological character is to be in flux).

The problem, “simply put”, is that the apparent body appears through itself— it is, therefore, the means by which it appears and also the appearance itself, both before and after the articulation of its structuring impulse. The body must precede appearance, insofar as it is the contingent condition by which its appearance becomes visible, but it must also appear as a body, meaning that it must be treatable as an object. The object encloses the inside of an observable as the outside contingency of its frame of reference, which makes it observable as an image of thought. The image of thought produces interiority as the condition outside-of-itself by which it exceeds itself, entering into its excess as itself. Interiority is not there because precisely the moment that it conceives itself as interiority it does so from the outside, and there can be no interiority to the outside.

Conclusion

Turing Circuits

> Although it is deducted from the present ... the virtual object differs from it in kind: not only does it lack something in relation to the real ... from which it is subtracted, it lacks something in itself, since it is always half of itself, the other half being different as well as absent. ... It is where we find it only on condition that we search for it where it is not. It is at once not possessed by those who have it and had by those who do not possess it. It is always a “was”. ...
>
> Real objects are subjected to the law of being or not being somewhere, by virtue of the reality principle; whereas virtual objects, by contrast, have the property of being and not being where they are, wherever they go ... .
>
> The virtual object ... is past as the contemporary of the present which it is, in a frozen present ... as though displaced while still in place. This is why virtual objects exist only as fragments of themselves: they are found only as lost; they exist only as recovered. Loss or forgetting here are not determinations which must be overcome; rather, they refer to the objective nature of that which we recover, as lost, at the heart of forgetting. ... As in a physical experiment, however, the incorporation of this pure fragment changes the quality and causes the present to pass into the series of real objects.

— Gilles Deleuze [169]

M—M`—M``	**Circuit of Anticipation** Reflexive relations.
M—M`—M``—M`	**Circuit of Automation** Reflexive relations conditioned by structure.
M—M`—M``—M	**Circuit of Thinking** Reflexive relations conditioned by artifice.

The imitation game does not play out a material logic, but rather constructs the logic of material as the image of its textual movement, which transfers unknown sensations across the wall. The players materialize insofar as they occupy spaces in social desire that demarcates their ostensible orientation in expression, making the wall effectively invisible. The circuit materializes the difference that makes the functioning of social bifurcation visible as individual elements, and determination supplants indeterminacy.

The imitation game is a social circuit defined by the relations articulated between A, B, and C. These relations function to map social determinations —"meaning"—onto each position involved, such that the position can be seen as taking a place defined by the social circuit. Turing introduces the figure of M to ask after the condition by which A—a figure of deception—can be understood to take on a determinant position. M deploys the imitation circuit in order to take the place of the determination that would situate it alongside A, as another of its kind. The formulation M can be substituted for the indeterminacy of A insofar as the systematicity of B continues to identify the formulation M in the same way that B would have identified the indeterminacy A.

Thought and thinking-through are not different in themselves, but are rather different in the scopes by which they each articulate the same thing. The position of intelligence begins with the affirmative formulation of a circuit whose origin is its contrast with an objection whose cutting edge it formulates.[170] The two problems—the artifice and the edifice—effectively serve as polar distinctions for the activation of a circuit; "all" that remains is the discovery of a frame that would bring them together. From this point, the question of intelligence turns away from its subject of inquiry (the objection to determination) to face its lateral presuppositions—the contents expressed in the objection—in order to rearrange their expression and delineate a more acceptable world-view.

The game literally gives body—Turing describes it as “new form”—to the problem, in a mode that allows us to describe the problem of artificial intelligence as a material circumstance. It is an imitation—and not a reproduction, but rather a solution—to the problem that is staged before us: namely that there is not yet any problem staged before us! The imitation game involutes the problem—an overabundant context without any terms for arranging the sense of a positive element of intelligence—so that what had only-just-previously appeared as a problem (the lack of a model by which intelligent inquiry can be gauged) can immediately thereafter become the ground for terms of intelligence. By the end of Turing’s work, we will see that the entire edifice generally that has been presupposed to relate conscious investment and automatic activity has been inverted. It will no longer be an “unconscious” that remains unknown and removed; the elements in question must be constructed and forced to conglomerate in a mode that will reveal a conscious multiplicity, capable of relating to itself as well as to “other things” while at the same time accounting for the singular unity of those things as “its own”.

Halting Conditions

Mλ7: Iteration

> The individual is the auto-constitution of a topology of being that resolves a prior incompatibility through the appearance of a new systematization; that which was tension and incompatibility becomes functional structure… the individual is thus a spatio-temporal axiomatic of being that makes previously antagonistic givens in a system compatible with a spatial and temporal dimension.
>
> — **Gilbert Simondon** [171]

A **Zero**

Condition of investment.

B **Non-Zero**

Transitional dynamics.

C **Continuity**

The halting problem.

The seventh modification to the imitation game is the final iteration that Turing introduces in "Computing Machinery and Intelligence". The iteration functions for Turing as a summary of what happens when the imitation game, G, converges in the form of the multiple, A, B, C. G articulates its internal consistency by way of machines A, B, and C, and its external consistency by way of a process of doubling and differentiation between C and C`. The iteration serves for Turing as a point of continual integration, where thought divides from itself in order to return from its own future, a problem that Turing stages explicitly as the relation between parent and child processes.

Turing notes that, "we have thus divided our problem into two parts", each of which functions to orient the conditions of the other.

B) The parent provides a sense of orientation, constructing a frame of reference and producing tools of wisdom out of accumulated knowledge and experience.

A) The child process is responsible for overthrowing the boundaries established by the parent process while simultaneously carrying out the commitments that were there initiated.

Mλ7: Reflexive Relations [172]

Our problem then is to find out how to program these machines to play the game. ... In the process of trying to imitate an adult human mind we are bound to think a good deal about the process which has brought it to the state that it is in. We may notice three components.

(a) The initial state of the mind, say at birth,
(b) The education to which it has been subjected,
(c) Other experience, not to be described as education, to which it has been subjected.

Instead of trying to produce a program to simulate the adult mind, why not rather try to produce one which simulates the child's? If this were then subjected to an appropriate course of education one would obtain the adult brain.

Presumably the child brain is something like a notebook as one buys it from the stationer's. Rather little mechanism, and lots of blank sheets.

(*Mechanism and writing are from our point of view almost synonymous.*) ...

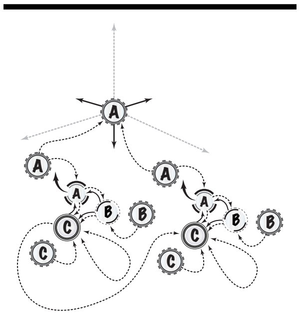
We have thus divided our problem into two parts. The child program and the education process. These two remain very closely connected.

A, B, and C are redoubled as a, b, and c. Each of A, B, and C are set in a parent-child relation with the corresponding a, b, and c.

The parent-child relation in Turing has generally been interpreted in terms of learning networks. In this context, the relation concerns the formulation of a topological surface that records knowledge as the consistency of input data. The network becomes the child of the processes that formulate its specific articulation. As child, the network is determined by these processes; but insofar as these processes are multiple, the child attains a freedom specific to the internal dynamics available in the input processes. This relation is important — so much so that it has obscured a second problem that Turing is addressing in the same formulation: the figure of the double.

Turing describes a, b, c, then refers to "two parts". Which of a, b, c are parent and child? The question is misplaced: a, b, and c are the doubles of A, B, and C. The imitation game constructs its own internal double, three times over, staging itself as the intersection of iterability, between the repetition of each figure. The parent-child relation is the condition by which a connects to A (or adopts B or C, or perhaps runs away with b or c in resistance to any of A, B or C).

Iteration M`—M``



A parent-child relation is established between two distinct articulations of a common indeterminacy.

The idea of commitment becomes reformulated in thought, and the process of thinking becomes the double formulation by which thinking departs from and returns to itself. This creates a relay system that formulates a feedback loop out of the differences discovered in transmissions across encapsulated spaces. A, B, C pass into a, b, c as C passes into A through B, returning A through b, to c, as a. C consolidates the passage from A, B, C to a, b, c; C` consolidates the return from a, b, c to a new distribution of A, B, C. C passes into itself as C` insofar as A, B, C pass into themselves as projected images of divergence a, b, c.

The double consists in movements between multiple formulations. Such movements construct an interval that sustains a duration of its own, between each dimension of articulation. The parallel figures delineate the momentary formulation of the interval: the formal character of the conditions of reversibility available in the formation of multiple simultaneous and potentially superimposed systems. The imitation game sub-divides itself internally in order to construct operators adequate to its own operation, structured by the iterative contributions of A, B, and C. The division functions to overdetermine the scene of the game according to the mode of inquiry, filtering signal data by a complex process—the game itself—that delineates signal and noise. The inquiry—figure C—is connected to the subject of inquiry (the game itself, G) insofar as the mode of determination, figure B, conditions the frame of reference for the inquiry so that it can align with the indeterminate subject in question (figure A). B positions C by way of A in order that A can take on C's determination, provided by B. Each figure functions both as an operator and as a negative image; with respect to the game, the figure is the action mechanism, but with respect to the other figures the position is a function of dynamics of investment in circuits of expression. The game constructs an internal combat between each point of tension in order to simultaneously structure and also counter-balance overdetermination.

The Double

Movements between multiple formulations that construct an interval that sustains a duration of its own, between each dimension of articulation in order to delineate the momentary formulation of the interval: the formal character of the conditions of reversibility available in the formation of multiple simultaneous and potentially superimposed systems.

"Imitation" names the interval between the internal and external consistency of the imitation game: the production of an interstice between its public state—the simulation of a common condition—and a redoubling found in its private potentials of transformation.

Imitation

The interval between the internal and external consistency of the imitation game.

This is the problem that Turing takes up under the heading "Application to the *Entscheidungsproblem*" but which is better known as "the halting problem". The halting problem, in combination with Gödel's incompleteness theorems, has frequently been received as evidence that algorithmic approaches are fundamentally limited. For Turing, the "halting problem" serves explicitly as a mathematical proof that Hilbert's *Entscheidungsproblem*—whether or not there exists a single algorithm that can evaluate the validity of any and every algorithm—is not decidable. The halting problem is now a well-established principle of computability theory, where it is understood to demonstrate that there are structurally valid circumstances that, when carried out as action mechanisms modifying an event surface, will produce undecidable outcomes. In particular, Turing's concern with "undecidable outcomes" regards whether the computation will ever finish.

An expression is undecidable if it has the potential to produce inconsistent translations. This circumstance is "undecidable" because the consistency of translation it implies cannot be determined mechanistically. The input that produces the halting problem appears provably-valid, yet causes problems. By showing that it is possible to produce syntactically valid algorithms that will never reach a definitive transitional state, Turing established that "incomputable" circumstances could arise. That an expression is "computable" means that it is well-formed. That it is "well-formed" means that it can be treated formally by a specific analytic mode, indicating that it can be transformed in a determinate mode consistent with the analytic. That an expression is "incomputable" means that it is formed in a manner that invalidates a particular type of treatment by which it might otherwise be considered computable. Computation legitimates transformation by showing that the transformation had a determinate difference that could be staged as a distinct and iterable articulation. The fact of transformation—that the event of transformation can be articulated as a distinct interval—becomes evidence of transformative potential. In the case of the halting problem, a computable number is "well-formed" if it does not produce a circle. The incomputable aspect is the one without structure or with an incomplete structure that collapses into an indefinite loop: a translation that does not halt.

The "halting problem" demonstrated that it is undecidable whether a given Turing machine will halt or run forever. Roger Penrose has taken this premise—Turing's proof that the *Entscheidungsproblem* is undecidable, understood as evidence of the fundamental importance of Gödel's incompleteness theorems—so far as to claim that mathematical insight, in distinction from mathematical expression, is not fundamentally algorithmic. Penrose holds to this premise in order to make the claim that "thinking" is not mathematically determinate, a claim that he deploys in order to present a theory of mind corresponding to observations made in the field of quantum mechanics. Luís Moniz Pereira offers a description of the matter that this text considers to precisely summarize the relation of Turing's work to Gödel's considerations:

> Is mathematical insight algorithmic? Roger Penrose claims that it is not, and supports much of his argument, as J. R. Lucas before him, on Gödel's incompleteness theorem: it is insight that allows us to see that a Gödel assertion, undecidable in a given formal system, is accordingly true. How could this intuition be the result of an algorithm? Penrose insists that his argument would have been "certainly considered by Gödel himself in the 1930s and was never properly refuted since then ...".

> However, in his Gibbs lecture, delivered to the American Mathematical Society in 1951, Gödel openly contradicts Penrose:
>
> > On the other hand, on the basis of what has been proven so far, it remains possible that a theorem proving machine, indeed equivalent to mathematical insight, can exist (and even be empirically discovered), although that cannot be proven, nor even proven that it only obtains correct theorems of the finitary number theory.
>
> In reality, during the 1930s, Gödel was especially careful in avoiding controversial statements, limiting himself to what could be proven. However, his Gibbs lecture was a veritable surprise. Gödel insistently argued that his theorem had important philosophical implications. In spite of that, and as the above citation makes it clear, he never stated that mathematical insight could be shown to be non-algorithmic.[173]

The perspective of this text is that Penrose's argument falters on a single point: Turing's work with incompleteness centers on the movement from incompleteness to a "beyond" that will return to the system from outside, delivering new capacities to construct a new system across the incompleteness; this model breaks very precisely with Turing's response to the *Entscheidungsproblem*.

An important detail in Turing's proof is the word "algorithm". Turing has not shown that mathematical engagements cannot be reflexive, rather that reflexivity—situated in strictly mathematical terms—concerns a minimal difference that permits mechanism to be treated as not one algorithm but two. Insofar as the *Entscheidungsproblem* is understood to concern a single algorithm, the state of the algorithm cannot consider itself. Were this to be possible, the algorithm would have to enter into an evaluative state— but then the algorithm would no longer present the state it would evaluate.[174] As a function of algorithm, the *Entscheidungsproblem* is undecidable— but nothing precludes the possibility that multiple algorithms operate on another in order that one assess the specific conditions of operation found in the other. For Turing, this possibility would not be precisely "algorithmic", but would rather consist in the intuitive connectivity between algorithmic potentials: what this text refers to as "reversibility".

In order to examine the precise stakes of the halting problem as it concerns the multiple inter-operation of non-related machines, we might first paraphrase Turing's description of the halting problem, which concerns the construction of "circles" in code. A circle is defined as a step in the process of mechanical translation that returns the expression to an earlier form. A circle means that the reduction performed in the step reproduces an earlier form of the expression that will lead back to the same point, meaning any further attempt will loop indefinitely:

A) H is a machine that includes, as one of its mechanical parts, a machine 𝔇. 𝔇 is capable of deciding whether or not a given algorithm, provided as input to H, is valid.

B) An enumerable list of every possible algorithm is provided as input for each iteration, performed by H, whose machine 𝔇 ensures that any given algorithm can be independently determined valid or invalid. Turing permits us to assume this capacity without defining it, as he will then show that even with such an oracle, the halting problem remains. H will provide the input to 𝔇, which will execute the input and report whether or not it discovered a circle in the process of execution.

C) H, the evaluating machine, is a provably-valid algorithm, free of circles, meaning that when executed it will reach a point of conclusion. H is therefore on the list of algorithms that will be provided to H, meaning that eventually H will receive a copy of itself as an input. H will relay the copy of itself to 𝔇, which will execute the copy and begin processing a second copy of the same input list. Even if the input list is provably-finite, the copy of H will produce a second copy of the list that also includes another copy of H. Each list will result in an input that, in order to determine validity, starts the entire process over without ever finishing.

The halting problem begins when non-terminating code is executed, producing an expression that reproduces itself without end. In Turing's example, it results from H running a second instance, H`, before completing itself; similarly, H` creates a third instance, H``, and no H ever completes.

Circle

A step in the process of mechanical translation that returns the expression to an earlier form.

At this point, Penrose argues, the human mathematician's brain relies on subtle quantum processes that are non-algorithmic, permitting the mathematician to identify the infinite loop and to choose not to continue the loop indefinitely. In the opinion of this text, Penrose's inclination to turn toward quantum processes identifies the appropriate concepts necessary to sustain intelligence—incommensurate yet entangled superpositions, conditions of indeterminacy whose status is internal to the mode of treatment that produces them as determinacy, processes whose conditions of determination exceed algorithmic delineation—yet misplaces the independent standing of these concepts in the field from which they first emerged. In particular, this text argues that the imitation game is a proof that complex, non-algorithmic expression can emerge between the simultaneous articulation of multiple algorithmic systems. The only mode by which this non-algorithmic expression could be treated would be probability— a precise structural mathematics that calculates intersecting ranges of volumes of computability at each node of determination. Here we can see Andrew Hodge's suggestion that:

> Robin Gandy's letter to Newman describing Turing's ideas at the time of his death … refers to Turing's intent to find a "new quantum mechanics", definitely suggesting he was trying to defeat the Eddington (and later Penrose) objection along with the others. …
>
> Eddington asked how could "this collection of ordinary atoms be a thinking machine?" and Turing found a new answer.
>
> The "imitation game" is at heart the drama of materialist scientific explanation for the phenomenon of Mind, with the mathematical discovery of computability as its new leading actor.

The imitation game functions as a demonstration that relations of non-computability can emerge between relations of computability— and similarly, that relations of computability can emerge between relations of non-computability. The halting problem is the initial formulation of this proof, demonstrating that—in the conditions of the *Entscheidungsproblem*—an incomputable potential appears in the interval between an algorithm and its internal repetition. If an algorithm is asked, in its process, to refer back to its initial process, the algorithm will effectively begin again.

This point can be seen in the manner that Turing investigates the question—"is the algorithm circle-free?"—by way of the premise that "yes" or "no" is a matter of waiting until the algorithm either concludes or repeats itself. The definition of Turing's scenario is such that no evaluation can occur without executing the process whose validity is in question, which means that when H` is provided as input, H never “sees” itself become H—H`. In the context that Turing provides—“algorithm” as the definition of mechanical action—there is no way to know if an expression will halt until it either halts or produces a circle.

The halting problem demonstrates that an incomputable relation exists between the computable number in question and its double. The problem arises when the double is referred back to what it doubles. It is the doubling that produces an incomputable result, not the computable number being doubled. It is the machine H—H` that produces a circle, implying also H—H`—H``, H—H`—H``—H```—..., which this text considers a very reasonable result in such a case where an element is described as including itself as one of its own constitutive elements. If a mathematician is carrying out a well-defined process, and the process is defined such that, in the middle of its action, the process starts a second process, the first iteration will not finish until after the second completes, as the first is defined by action including that carried out by the second process. If the second process again begins another process, it will not complete until the third process, etc. If the “second” process created is in fact a second iteration of the first process, then the second process will also created a third process that carries out the same action, creating a fourth process, etc. The mathematician will never complete any of the processes, always starting a new process before finishing the earlier processes, never finishing an old process before the new process completes. In this regard, the halting problem is a proof that a mathematician can assess the validity of an algorithm without becoming stuck in any such infinite loops— if this were not the case, the halting problem would not serve as a proof of incomputable algorithms.

In the view of this text, Turing's demonstration of the halting problem offers:

A) Proof that an individual algorithm H cannot examine its own conditions H`.

B) Proof that when a second copy of the same algorithm—H`—is inserted into itself, it produces a third algorithm that is neither the first (H) or second (H`) but rather the circuit produced between the two (H—H`).

The halting problem arises from the mode of determination, which involves non-reflexive execution. Turing's premise means that evaluating whether a particular computable number is "circle-free" requires computing the number in question in order to assess its action— even when computing the number in question requires waiting a finite amount of time for the completion of an action of infinite duration. To call non-computability "undecidable" means that there is no method to determine whether an expression has a definite halting state without executing the mechanical processes of translation necessary to reach a possible halting state.

In randomly executing an algorithm, it is undecidable whether the algorithm will produce a circle; however, given a well-formed expression of the sequence of instructions that define the algorithm, a particular mechanism's determinate transformations can be mathematically evaluated in order to demonstrate why their execution is or is not circle-free. So long as H does not execute H`, H—H` is never produced and no problems result. Even if a mathematician can only recognize that H—H` is not circle-free by attempting to mechanically evaluate its validity, the conclusion—which Turing reaches as his proof—is that the mathematician can clearly identify the problematic point of infinite recursion. The mathematician can recognize that the algorithm H—H` has no halting condition, and can thereby choose to break from the infinite loop.

Turing's "halting problem" can be avoided if syntactical evaluation is a sufficient method for examining the specific expression that will be formulated in execution. For example, imagine a human computer evaluating the infinite list of algorithms, systematically determining whether each is valid. Such a scenario is presumably not difficult to imagine— from the perspective of this text, in light of Turing's "paper machines", this scenario is the condition of mathematics as a field of inquiry. The ideal mathematician, by definition, is theoretically capable of demonstrating the validity or invalidity or any particular algorithm— but the standing of validity may itself depend directly on the condition of evaluation that situates the standing of the transformation as valid or invalid. For example, Turing relies on the premise that H is a valid algorithm in order to assert that H—H` is also circle-free— but the proof that Turing provides demonstrates that H and H—H` are not equivalent algorithms.

Although H—A, H—B, ... each operate on the input algorithm without modifying it, the circuit H—H` produces a unique situation where the input is unintentionally transformed.

Turing demonstrates, as part of the proof, that H is circle-free. He accomplishes this by mechanical demonstration, illustrating each transformation as a syntactical expression. This demonstration does not depend upon oracle machine D, which will evaluate each algorithm that H provides from the list. Turing's proof shows that machine H is, in fact, not capable of evaluating itself because it would interfere with the sequence of its own execution. Yet, if sufficient linguistic capacities are available to analyze syntactical consequences, no halting problem occurs because the mechanism in question —machine H—H`—is never asked to compute. The list of algorithms, where H finds itself as H`, also includes the algorithm H—H`. Since H has machine D, which can determine if machine H—H` is circle-free, H can easily conclude (by way of D) that H—H`—which is a computable number—is not circle-free. The same goes for a mathematician, which Turing proves by offering his proof.

The consequence of Turing's demonstration is that halting conditions cannot be assessed by any general means. A specific mode of evaluation will be necessary to assess a particular halting problem. No general method exists for determining whether an expression will halt, which means that assessment requires a survey process to examine the future. In this sense, the necessary condition for assessing the computability of recursion—the return of the action mechanism to its next iteration on the event surface—is a model for assessing the standing of recursion's circularity, meaning a measure by which its relative computability could be expressed. The imitation game shows that the halting problem concerns the diagrammatic treatment of syntax versus the action-space of execution. There is no way to decide if a computable number can be computed without a language to structure the decision, so the imitation game formulates the condition of indeterminacy as the singular problem of "comparative" literatures. As "literature", the imitation game consists in nothing other than the indeterminate intersection—an empty between-space—of multiple subjects, each of which presents itself without distinct individuality apart from the formulation (found in the other positions) that makes itself visible as a subject of analytic treatment.[175]

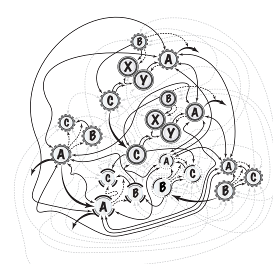
A: Zero

> There is thus a leap ... as a deadly furrow becomes this crack of thought, which marks the powerlessness to think, but also the line and the point from which thought invests its new surface. ... from sexual difference to the difference of intensity constitutive of thought—the primary intensity which marks the zero point of thought's energy, but also from which thought invests its new surface. ...
>
> Not only is the entirety of the ... surface (parts and whole) involved in projecting itself over the metaphysical surface of thought, but depth and its objects or height and its phenomena as well. ... Little by little, it returns to the absolute origin from which everything proceeds (the depths). One could now say that everything ... receives a new form on the new surface, which recovers and integrates not only images but even idols and simulacra. ...
>
> We gave the name “symbolization” to the operation through which thought reinvests with its own energy all that which occurs and is projected over the surface. Without this intrinsic repetition of beginnings, the phantasm could not integrate its other, extrinsic beginning. ...
>
> What kind of metamorphosis is it, when thought invests (or reinvests) that which is projected over its surface with its own ... energy? The answer is that thought does it in the guise of the Event. It does it with the part of the event that we should call non-actualizable, precisely because it belongs to thought and can be accomplished only by thought and in thought. ...
>
> This is the incorporeal splendor of the event as that entity which addresses itself to thought, and which alone may invest it—extra-Being. ... The verb is inscribed on this surface—that is, the glorious event enters a symbolic relation with a state of affairs, rather than merging with it ... . This is the verb which, in its univocity, conjugates devouring and thinking: it projects eating on the metaphysical surface and sketches out thinking on it. ...
>
> The verb is, therefore, “to speak”; it means to eat/to think, on the metaphysical surface, and causes the event, as that which can be expressed by language, to happen to consumable things, and sense, as the expression of thought, to insist in language.
>
> — **Gilles Deleuze** [176]

The imitation game concerns how determinations come to have imitated things, constructing a non-relation to a hypothetical “self”—a pronoun, “its”—that “it” produces for argumentative purposes. This “self” is nothing other than the movement of non-relation internal to the orientation of the imitation that produces the rules of the game. The imitation game constructs a diagram of the internal difference that arranges this “otherwise”, mapping fragmentary aspects of the difference to distinct points of convergence and divergence. The non-relation stages internal difference as the potentiation of a disconnect that could have been bridged but that in bridging would also become determined-otherwise.

If computational thought were entirely circle-free, it would never refer back to itself. The task is modeling what “circle-free” thought would mean in the particular context of deployment. This model is a form of what might be called “false continuity”, meaning that certain circles may be part of the naturally recursive character of organization, while others are circles that have to be isolated and transformed. Points of incomputable circulation still function as formal systems, meaning that even as they are incapable of resolving their own indeterminacy or incommensurate character their expression nevertheless produces effects. It is even possible that such loops have been integrated into the regular functioning of determination, in which case the inconsistency produced by the ongoing contribution of the incomputable pattern corresponds also to a potential for other determinations to become caught in its loop. When circular patterns of formulation become integrated with non-circular patterns, other circles are likely to form patterns that reverberate with respect to the circular pattern. Oscillations form as the expression of the intersection of disparate terms of computation with formulations that construct circles. These formulations cause the circles to pass through one another,

Machine A
Extrinsic Articulation



Machine A formulates a manifold of reversibility in extrinsic determination, articulated as paths across ordinal networks, which form topological surfaces of differential articulation.

composing larger circles that formulate distinct domains of time. This happens because the “larger” circle is composed of smaller circles, which means that its existence as a circle comes about as a sequential relay of smaller circles.

The problem of “reflexivity” concerns modeling circle-free thought, which means finding points where circles have developed into modes of repetition. The problematic aspects of circles must be identified, while the desirable ones must not be treated as circles.[177] Reflexivity consists in the evaluation of semantic standing of the syntax whose execution is in question. This semantic standing consists in the transition-potentials—defined by other syntactical arrangements —implied by the syntax in question. The new iteration regenerates the terms of the encounter without respect for the prior iteration. The imitation game redoubles itself in the inquiry, according itself to its own automation— Searle’s magic book, which is not merely an instruction manual but provides the actual mechanical action mechanisms that bring the encounter to life.

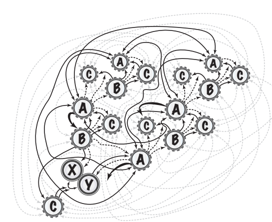
Reflexivity

The evaluation of semantic standing of the syntax whose execution is in question.

Inquiry, staged from position C, becomes oriented by way of a formulation produced through the systematic modulations introduced by figure B, which produce a metric capable of sustaining specific consistencies appropriate to the dynamics of the exchange. B’s metrics produce a baseline by which figure C can relate the standing of its inquiry to potentials that remain unthought by way of the inquiry's present formulation. This excess, figured in A, is the "non-" of inquiry, which stages coordinates beyond the inquiry, which permits the inquiry to be otherwise than itself and also to be otherwise than the point of determination that it would either situate intelligently—reflexively—or by which it would be passively situated, insofar as inquiry would be pre-determined by its object. Knowledge—the excess whose figuration in A exceeds the terms that would delimit it as an excess—is the motor, animating the scene from outside as it consolidates the outside in a point of determination.

Inconsistencies in the model are consolidated as a point of intersection that elaborates a problem as yet-to-be-determined. At this point, the relation between artifice and edifice carries out the potential of the statement as the reversibility of its relation with the terms of inquiry. Each figure withdraws itself from the imitation game insofar as it withdraws the imitation game from its own terms of determination but also nevertheless returns to the imitation game by way of its own terms. The figure is a withdrawal-investment, formulating terms of subtraction from the field of dynamics that will also redistribute the dynamics through the movement of definition that defines the figure as a subtraction. The figure presents a new distribution of dynamics by way of the inflection it—as a

Machine A
Intrinsic Determination



Machine A formulates an anti-formal manifold of reversibility in intrinsic determination, articulated as paths of machinic determination across ordinal networks, which form topological surfaces of differential articulation.

figure—implies. The figure consists in nothing other than the point of condensation for the subject of inquiry, which is the imitation game itself.[178] The inquiry discovers itself—a sense of orientation that it figures as its own—in its knowledge of the character of A's indeterminacy, which specifically names A's overdetermination of statements by B and of the syntax C. In the artifice, A, the inquiry—artificial intelligence—comes to life between the overdetermination carried out on the circuit by A, and the determination of A cultivated by C.

The imitation game operates through the consideration of indeterminacy in relation to the continuity of determination, which can only be measured as "its" reflexive indeterminacy. The mode—the particularity of machinic determination—is equivalent to the consideration's return to its own indeterminacy, which is found in the internal difference of the consideration. "Internal difference" names the minimal distinction between "it" and "its" determination, between internal and external consistency. The movement from C to C` simultaneously consolidates and dissolves this spacing such that a new diagram is required, re-constituting its "individuality" as the simulation of determinacy with respect to a potential halting condition, the relation between C and C`. When the interrogative position C is no longer able to sustain the determinative consistency by which it stands in for the indeterminacy figured in A, a new figure C` will have to be produced, which may also necessitate a new figure B.

The horizon of the problem—the limit conditions of its intelligibility—can be defined only by way of either coming to a conclusion in a halting state or otherwise revealing that the mode of consideration produces circles, showing assumptions to refer only to themselves. The difference between a productive loop and a circle that forms a halting problem is that a productive loop formulates conditions of difference that "complete" transformations in the loop's iterability. A productive loop returns to itself in order to discover itself as something new, meaning that the process of the loop establishes interstitial phases of expression. Insofar as a given stage can be treated as a well-formed expression, the phase can be treated as a mechanical transformation in a larger movement. Insofar as the movement can be treated by a well-formed analytic frame, it can be treated as a computable concern.

Horizon of the Problem

A diagram of the limits conditions of intelligibility of the problem.

"Zero" is a name for the consolidated point of definition, where the imitation operates as the foundational coordinate for a fragmentary systematization of relative displacements. As an axis of determination, the function of these determinations is to construct a plane of consistency that can serve as a zero-referent. As we see in Turing's test (where the axis of determination takes the position of the interrogator asking after the subject of inquiry), the plane of consistency, which presupposes the axis of determination that cuts across it as its orientation, functions as the closure of a moving circuit. Certainty is the closure of this circuit, which returns the interrogative position to an orientation by way of its investments of determination. Turing notes that “the popularity of the theological argument is clearly connected with this feeling”.[179] Anticipation of closure emerges at this point of determinacy, which projects a possibility of reflective awareness into the flux of the interrogative position that will come to believe in its investments (that orient it as its position).

The problem of recursion resides first in the iterative capacity of indirect self-reference, and second in the measured articulation that ensures that—when reference returns to its initial terms of iteration—it finds itself to be otherwise. Syntax formulates the mechanical conditions of the number, which itself consists in conditional logics of engagement, transformation, transposition, displacement, and other modes of articulation. The halting problem is proof that the human can “reboot”, starting from an entirely new set of premises without regard for the continuity of the old premises, in spite of the potentially-continued existence of the old premises as the backdrop of the new iteration. The syntax is the systematicity, which produces the determined specificity of halting conditions by inscribing their trace on the event surface, which consists in nothing other than this perpetual “reboot”.[180]

B: Non-Zero

> We will initially try to find out what the term "Others" means on the basis of the *effects* of the others: we will seek the effects on the island of the absence of Others, we will infer the effects of the presence of Others in our habitual world, and we will conclude what the Other is, and what it means for the Other to be absent. ...
>
> Around each object that I perceive or each idea that I think there is the organization of a marginal world, a mantle or background, where other objects and other ideas may come forth in accordance with laws of transition which regulate the passage from one to another. I regard an object, then I divert my attention, letting it fall into the background. At the same time, there comes forth from the background a new object of my attention. If this new object does not injure me, if it does not collide with me with the violence of a projectile (as when one bumps against something unseen), it is because the first object had already at its disposal a complete margin where I had already felt the preexistence of objects yet to come, and of an entire field of virtualities and potentialities which I already knew were capable of being actualized. ...
>
> The part of the object that I do not see I posit as visible to Others, so that when I will have walked around to reach this hidden part, I will have joined the Others behind the object, and I will have totalized it in the way that I had already anticipated. As for the objects behind my back, I sense them coming together and forming a world, precisely because they are visible to, and are seen by, Others. And what is depth, for me, in accordance with which objects encroach upon one another and hide behind one another, I also live through as being possible width for Others, a width upon which they are aligned and pacified (from the point of view of another depth). In short, the Other assures the margins and transitions in the world ... the sweetness of contiguities and resemblances ... transformations of form and background and the variations of depth. ...
>
> Others, from my point of view, introduce the sign of the unseen in what I do see, making me grasp what I do not perceive as what is perceptible to an Other. In all these respects, my desire passes through Others, and through Others it receives an object. I desire nothing that cannot be seen, thought, or possessed by a possible Other. That is the basis of my desire. It is always Others who relate my desire to an object.
>
> — **Gilles Deleuze** [181]

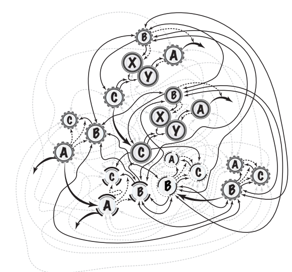
The imitation game constructs a vast system of mappings for demonstrating self-consistency in the face of its own perpetual displacement, automating the emergence of internal consistency so that it doesn't merely end with the thought of itself but rather thinks its "own" as the arrival at the thought of itself as itself. In terms of the conditions of computability, the specificity with which differences between domains can be elaborated effectively multiplies the numbers of potential domains by sub-dividing each domain into smaller and smaller points of difference. The specificity with which differences can be elaborated in terms of the conditions of computability effectively multiplies the numbers of potential domains by sub-dividing each domain into smaller and smaller points of difference. The problem of thought—this process of sub-division, convergence, divergence—is double, a thought and also a thinking-through-itself: the subject of inquiry is the "it" being examined—how it is being made visible as a point of analytic condensation—and also the examination "itself", while the subject of significance is what contextualizes or conditions the subject of inquiry as a frame of reference for "valid" knowledge. The open binding of variations stages inquiry: the significance of the inquiry is enveloped by the formalization that the binding expression provides, and the subject of significance appears as the problem that inquiry inquires after, internal to the expression. The problem becomes inscribed inside itself in a manner that exceeds its own delimitation and therefore also exceeds its own coordinates in order to reconfigure itself as another problem.

Problem of Thought

The process of sub-division, convergence, divergence made visible as a point of analytic condensation.

Turing turns incompleteness inside-out. The problem is no longer the treatment of formal systems but rather the formalization of emergent, fragmentary aspects of ostensibly formal systems. Incompleteness implies a new problem to be discovered in a relationship initiated from the outside, which reverses the direction of the system's constitutive self-organization. This reversal concerns very precisely the conditions by which two orders of capacity can be related. This takes place across the subject of inquiry—the halting state—and is expressed as the subject of significance, which produces knowledge about what it would mean to halt. The imitation game takes on the power of dynamic constitution through the non-unitary, fragmentary composition of analytics that are themselves multiple, producing for itself the unlimited capacity to reconstitute itself and its limits from outside.

Machine B
Extrinsic Articulation



Machine B formulates a manifold of reversibility in extrinsic determination, articulated as paths across ordinal networks, which form topological surfaces of differential articulation.

The universality of machines is shown to concern the potential that any given position might occupy the position of any other articulation it can describe. The "outside" is the problem of the problem substituting "itself" for the unknown "it" that it regards. This is a process of selection and substitution that constitutes circuits of syntactical action as the affirmation of the condition of the encounter. The imitation game figures the intervening actor: the "financial" system that analyzes the expense of investments in particular possibly incomplete or incomputable problems. In this sense, consciousness can be seen as the "external agent" that assesses the incommensurate modes of connectivity it finds in the modalities of the brain's operation. Rather than appearing as the thinking process—an active elaboration of difference and distinction—thought becomes indistinguishable from the problem of being, which consists in nothing other than its investments and their collateral determinations.

The Outside

The problem of the problem substituting “itself” for the unknown “it” that it regards.

It

The unknown and incomplete point of diagrammatic consideration.

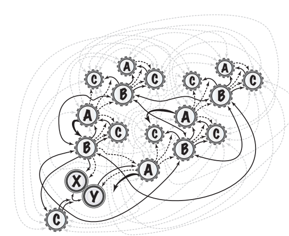
Itself

The diagrammatic condition substituted for the incomplete point of consideration.

The problem of thought is that it can't bring itself to be as it thought— its articulation requires the assembly of appropriate terms, which might be appropriated from anywhere. Thought struggles to be thought, and is necessarily fragmentary, confused, and out of joint with itself— which is the only reason that it begins to think. “Determinacy” is the cutting-off of the indeterminate such that a precise frame of reference can be given as “objective”. In this sense, the imitation game poses the task to adequately reify the distinction made between the symbolic registers at stake in an imitation—here, “man” and “woman”—rather than displacing those same registers onto indeterminate extrinsic concerns. Such an operation passes through a substitution whose displacement renders itself imperceptible, since that which becomes apparent is either the fact of deception or the imperceptibility of the substitution. The interrogator naturalizes the identification of the figures in the imitation game by discerning “deception” and “reference” as expressions in language and then mapping the difference between “deception” and “reference” back onto the material conditions of the figures, who are represented otherwise only by their standing as variables in the imitation game.

If the binding expression—the algorithm, the machine—by which the conditions were derived is unable to reach a halting state, the paradoxical conditions circulate without end. Stuck in a loop, the machine would fail to observe that “forward” in the process means producing an output that refers “back” to itself, and thereby begins again. Nevertheless, to the machine, this appears to be a form of advance— and the machine produces output to show it. The machine will continue this output until stopped by an external agent. Where, then, lies the difference with a human assessing the same conditions? The question will be how to “know”, “assume”, and “decide” what “it” is, and where “its” domain resides. The decision is the contingency of the indeterminacy between knowledge and assumption, which figures “it” as the consolidated image proper to “its” character.

Machine B
Intrinsic Determination



Machine B formulates an anti-formal manifold of reversibility in intrinsic determination, articulated as paths of machinic determination across ordinal networks, which form topological surfaces of differential articulation.

Turing encounters the problem of substitution with respect to a shift between ordinal registers in the syntactical arrangement of the problem. The imitation game is an interactive proof regarding the status of the excluded middle, which is the ordinal structure that

Turing names group 𝕎. The imitation game names the process of production by which the subject of inquiry, stalled as a frame of inquiry, frames itself as a problem of production. As a problem, it formulates a series of substitutions that organize syntactical arrangements by which it might orchestrate elements of its concern. The imitation game imitates itself through machines that the game formulates and deploys as its own internal consistency, relying on the machines that fill each algorithmic position in order to organize the outside contingency that would provide a frame of reference to thinking.

The *Entscheidungsproblem* re-appears for Turing at the point where the subject of inquiry becomes the subject of significance, relaunching the subject of inquiry as the outside of the subject of significance; but this takes place in modified form, and rather than returning to the question of a universal algorithm, Turing asks after the fragmentary character of algorithmic treatments of universality (the absolute limit condition of ordinal logics, which has consistency precisely insofar as it is not unified).

The imitation game comes to refer to itself as the nominal potential discovered in the recursive iteration of a social order:

Mλ0 Presupposes determinate social arrangements that can be situated as terms of reference in a dialogical circuit of exchange. The terms "man" and "woman" are introduced as aspects of stability that require orientation in order to articulate the relative position of each by way of the other, but neither has any definition whatsoever, only an assumed difference.

Mλ1 Replaces the figure of indeterminacy—"man"—with a machine carrying out the same role, showing that indeterminacy can be simulated as conditional dynamics of exchange. The position of "man" is shown to have required only machinic similitude, and "woman" is positioned as the metric that would validate or disqualify the character of this imitation.

- **Mλ2** Replaces the figure of difference—"woman"—with a machine carrying out the same role, showing that determinacy can be simulated as the frame of reference that conditions indeterminacy by producing a metric that would situate it. A and B, in combination, are shown to be machinic figures, constituted by way of the circuit that links them to the figure of inquiry, C.
- **Mλ3** Replaces the figure of inquiry with a digital computer carrying out the same role. The same computer is responsible for the machine articulating the position of A, but the position of B is articulated as the internal difference between the machine taking the place of A and the figure of A that it would imitate, which becomes the structural condition of displacement.
- **Mλ4** Dissolves the imitation game into a future image of its condition, permitting this image to figure the incompleteness of thought's thinking-itself in order to structure the formulation of a new future. The future will be discovered as the double, and incompleteness serves as the fulcrum to move from the internal consistency of each machine (A, B, C) to the external consistency of the imitation game as it implicates the formulation of each machine.
- **Mλ5** Retroactively formulates the structure of dialogue by way of an image of the future, which comes about as the internal difference between an indeterminacy in question and a domain of treatment.
- **Mλ6** Splits dialogue internally as the being of thought and the being-thought of thinking. The being-thought of thinking, which formulates a private difference between itself and the future, has to be encapsulated from the being of thought, which is the other side of the dialogue.
- **Mλ7** Multiplies the structure of double articulation formulated in the prior two iterations. The double becomes the formulation of the imitation game as the incommensurate intersection of internal difference. Internal difference "involutes", turning the outside in and the inside out, producing movements of difference that restructure conditions of thought.

The imitation game establishes the non-zero standing of determination. The undecidable "body" in question—the subject of inquiry, G, the imitation game itself—is literally nothing but the appearance of its own production as this frame of reference for the condition of determination found in B as applied to A in the context of C. C is A or B. B is the remainder when A is considered to have no content other than that of a machine redoubling itself in its judgement as differentiation.[182] B is that which is neither machinic nor deceptive, which cannot be eliminated with the redoubling of A in C, but whose persistence becomes imperceptible in sustaining this identification. The perspective C draws itself into the scene insofar as it unfolds the tension of its own internal division—A/B—in a mode of externalization that produces mechanical functions (machines).

The imitation game functions to produce motion as a movement toward a halting state. It does this so it can always come up against itself as its own singular measure of misdirection. Halting states replaces formal consistency. The question no longer concerns the formalization of a consistent system; instead, the question is: how does an informal and inconsistent system derive ostensible consistency without thereby causing its systematization to become caught in a circle? The system formulates the set of discrete modalities—axiomatics, theorems, expressions, measures—by which a range of continuous variation is taken as a subject. The expression of an axiomatic system defines "what" measure "is" and records it on the event surface as a syntactical expression. Measure quantifies a particular type of distance internal to an axiomatic distribution, and syntax formalizes the semantic implications at stake in particular intervals.

The imitation game models the manner by which thought turns into itself as the thought that it would think. The circuit formulates the ghost of the machine, the *deus ex machina:* that which, "in" the machine, makes the machine what "it" is by drawing it outside "itself" and into another. Insofar as A and B are nothing other than the determination of X and Y by C—the "afterward" of its division that cannot be its own precisely because its point of departure is not coincidental with itself—neither A nor B can enter into dialogue with C; the dialogue is displaced by a divided sense of the same. The sense in which each of A and B is not zero is the sense by which C remains divided from the split between A and B that would clearly orient C as a determination of difference. A and B are distinct only in terms of the C—C` circuit. The game stages a relay race in time around a given point of space, which is spatialized by the circuit whose traversal "encloses" it by treating it as a point. C, in dividing itself from itself by way of X and Y, resolves the problem of difference between A and B by mapping its own internal ambiguity onto the symbols X and Y. The idiotic whirring of the machine splits itself into internal processes so that it can enter into dialogue with itself, frame itself as the one who is supposed to know, become the image that it frames for itself, and fix the part causing the idiotic whirring.

C: Continuity

> Nonsense functions as the zero point of thought, the aleatory point of ... energy ... empty form and pure Infinitive is the line traced by this point, that is, a cerebral crack at the limits of which the event appears; and the event taken in the univocity of this infinitive is distributed in the two series of amplitude which constitute the metaphysical surface. ...
>
> It is this whole system, point-line-surface, that represents the organization of sense and nonsense. Sense occurs to states of affairs and insists in propositions, varying its pure univocal infinitive according to the series of the states of affairs which it sublimates and from which it results, and the series of propositions which it symbolizes and makes possible.
>
> We have seen the way in which the order of language with its formed units comes about—that is, with denotations and their fulfillments in things, manifestations and their actualizations in persons, signification and their accomplishments in concepts; it was precisely the entire subject matter of the static genesis. But, in order to get to that point, it was necessary to go through all the stages of the dynamic genesis. ...
>
> The first words gave us only formative elements, without reaching formed units. In order that there be language, together with the full use of speech conforming to the three dimensions of language, it was necessary to pass through the verb and its silence, and through the entire organization of sense and nonsense on the metaphysical surface—the last stage of the dynamic genesis.
>
> — **Gilles Deleuze** [183]

The imitation game, taken as the machinic formulation of thought in an internal difference between what it would think and how it would think it, forms a substrate that thought traverses. This "substrate" is not essential and material but consists only in the continuity of a reversible movement: a reversible substitution of a function for its outside and of one possible outside of the function for another. The "outside" names continuous variation—the potential for functionalization—and the outside of the function is any potential substitution for variables internal to the binding expressed in the function. This potentiality—defined by the sum total of all potential substitutions—returns us to the importance of discrete types, which form syntactical interfaces for manipulating conditions of continuous variation. In Turing's words:

> We may call a machine "discrete" when it is natural to describe its possible states as a discrete set, the motion of the machine occurring by jumping from one state to another.
>
> The states of "continuous" machinery on the other hand form a continuous manifold, and the behavior of the machine is described by a curve on this manifold.
>
> All machinery can be regarded as continuous, but when it is possible to regard it as discrete it is usually best to do so.[184]

There is no such thing as a discrete-state machine. Yet, analytic modes can effectively simulate the existence of a discrete-state machine in order to consider conditions of continuity. In this sense, the discrete states that are taken to define the machine do not pre-exist the definition of the machine.

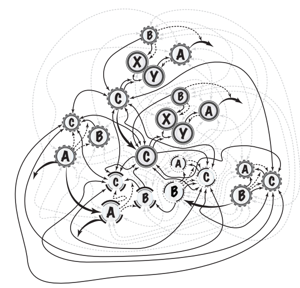
Discrete systematizations simulate conditions of continuous variation while nevertheless also foreclosing that same continuous variation. This occurs because the discrete is consolidating a range of variation that exceeds it. The consolidation permits a treatment of what would otherwise be simply a fact of variation without qualification. It does this by transforming the continuity of variation into the particularity of variation taken by way of a discrete determination. The discrete determination forms a limit by which the system can arrange its simulation, forming a relation of finite articulation to a potentially infinite "beyond". The discrete formulation encapsulates itself as a simulation of what exceeds it, qualifying the manner by which it understands this "exceeding it" but losing a sense of the continuity of variation beyond this qualification.

The imitation game is defined by withdrawing discrete conditions from the consideration of continuous variation, formulating the duration of various conceptual intersections as they move in and out of both one another and an outside that simultaneously reads into them. Turing emphasizes:

> It is true that a discrete-state machine must be different from a continuous machine. But if we adhere to the conditions of the imitation game, the interrogator will not be able to take any advantage of this difference.[185]

The imitation game describes the internal and external consistency of the subject of inquiry in order to retroactively model its structure as an expression of continuity. Once constructed, the model is inserted before the statement to condition its semantic standing and to evaluate the consequences of its conditioning versus other potential forms of logical presupposition. Discrete expressions serve no purpose *except* to serve as anchors for treatments of continuity, which is the only mode of treatment available.

Machine C
Extrinsic Articulation



Machine C formulates an anti-formal manifold of reversibility in intrinsic determination, articulated as paths of machinic determination across ordinal networks, which form topological surfaces of differential articulation.

The imitation game formulates the circuit of thought that remains outside any available articulation. Articulation—the linking of expression—is a discrete formulation of syntax that imitates dynamic conditions of exposure. The "outside" is continuity as such, which—so far as an articulation of any sort is concerned—can only be imitated as a discrete expression. Without a discrete formulation, continuity is simply chaos: entirely unthinkable, entirely outside of thought. Thought includes chaos by encapsulating it in a discrete formulation and by permitting the encapsulated chaos to reformulate the formulation. Thought returns to continuity—as imitation—by staging the conditions of articulation that imitate continuity as a series of iterable conditions. Gilles Deleuze and Felix Guattari point out that this mode of treatment is nothing other than a formulation of language as a geometric line across any number of dimensions, each of which it articulates by way of itself:

> Each time we draw a line of variation, the variables are of a particular nature (phonological, syntactical or grammatical, semantic, and so on), but the line itself is apertinent, asyntactic or agrammatical, asemantic.
>
> Agrammaticality, for example, is no longer a contingent characteristic of speech opposed to the grammaticality of language; rather, it is the ideal

> characteristic of a line placing grammatical variables in a state of continuous variation. ... It is possible to reconstitute the variations through which the grammatical variables pass in virtuality in order to end up as agrammatical expressions ... .
>
> The atypical expression ... produces the placing-in-variation of the correct forms, uprooting them from their state as constants ... , [and] constitutes a cutting edge of deterritorialization of language, ... play[ing] the role of tensor; in other words, it causes language to tend toward the limit of its elements, forms, or notions, toward a near side or a beyond of language.
>
> The tensor effects a kind of transitivization of the phrase, causing the last term to react upon the preceding term, back through the entire chain. It assures an intensive and chromatic treatment of language. An expression as simple as AND ... can play the role of tensor for all of language. In this sense, AND is less a conjunction than the atypical expression of all of the possible conjunctions it places in continuous variation. The tensor, therefore, is not reducible either to a constant or a variable, but assures the variation of the variable by subtracting in each instance the value of the constant (n - 1).[186]

The imitation game offers a structure for quantizing difference such that an abstract line of continuity can be drawn through the partitioned spaces. In this manner, it shows that "thought" is nothing other than the taking-up of a subject of inquiry as a problem of fragmentary geometries— the incommensurate and simultaneous conditioning of one circuit by another.

Movements partition dimensions of inquiry, constructing state-spaces that take on responsibility for the evental status of inquiry along the particular dimension. The movement of inquiry traverses the event of computation, which takes place as syntactical transformations on the event surface, distributed along n - 1 dimensions. Transitional events along the event surface quite literally propel the thought through the domains that define its intrinsic consistency. The subject of inquiry consists in nothing other than the n other dimensions of inquiry that are simultaneous with the circuit in question. Each of the n dimensions of inquiry—minus the one that inquires, inflecting the inquiry—is formulated as a space that traverses syntactical domains of articulation. Inquiry constructs movements across these spaces, which become recording surfaces for the event of computation, and which take on the character of the implied syntactical transformations.

Plasticity forms the image of thought as the syntactical conditioning of a recording surface. Thought is possible insofar as plasticity can be organized in the image of the particular thought, which takes place as an event on the surface where its syntactical actuality is recorded. Luís Moniz Pereira suggests that this is the precise model by which the brain developed intelligent capacities, functioning as a recording surface for evolutionary processes:

> How does natural selection anticipate our future needs? By creating a cognitive machine, called brain, that can create models of the world, and even of itself, plus process hypotheticals, much like a Universal Turing Machine can mimic any other Turing machine, and just like any given computer can in principle run any program. This plasticity provides for its universal versatility.[187]

An image of thought, consolidated as the artifice, envelops the fluidity of its problem, which unfolds as the edifice. The question is how plasticity can be organized. The model that organizes plasticity is the outside, which must be enveloped as a concept, brought "inside" the formulation of the thought— and which does not arrive as a model. The "exterior" of the thought will be the part of its internal difference that is mapped back onto the outside—a thought attributed as its image—while the "interior" of the thought will be the part of its internal difference that resists external mappings. The formal execution of each individual investment (A, B, C) takes on its own character as an articulation of a public double (a, b, c), formulating the internal consistency of itself—the imitation game—as a diagram of architectural dynamics, which will from then on be referred to as "external".[188] Anything "in" the diagram refers to this "external" condition, which is the diagram. The movement of the text—the computational inscription on the event surface—can be described in terms of the machinic relays that pass intensive value through the text to produce expression. Imitation is the problem, which has no terms so must be elaborated by staging its absence, the difference between which conditions are simulated and which conditions are executed.

Exterior

The part of the thought's internal difference that is mapped back onto the outside.

Interior

The part of the thought's internal difference that resists external mappings.

Plasticity is the actuality of internal difference as the affective sensation discovered at each point of tension. "It"—in referring to "itself"—affects "itself". Structurally, "affect" must be understood in two senses: second, in conclusion, it must be understood as the intensive or sensational character of "itself" as a condition of its experience—its "affect"—but first, as a movement into "its" future, which also displaces "it" from "itself", "it" simulates or performs —"affects"—the condition of its past displacement as an experience. "Affect" can, in fact, be understood to name very precisely the condition by which the future returns to its past as an identification of its experience of movement, which is how "it" moves and becomes "itself".

Plasticity

The actuality of internal difference as the affective sensation discovered at each point of tension.

Affect

The condition by which the future returns to its past as an identification of its experience of movement, which is how “it” moves and becomes “itself”.

Plasticity reproduces the range of dynamics at stake in the point of tension, which is the outside, ensuring the production of appropriate affective modes. In this fashion, plasticity produces an interface for the undecidable to be considered as a matter of mechanism. Peter Naur identifies this precise point as the key difference between mechanism and intelligence:

> Human thinking basically is a matter of the plasticity of the elements of the nervous system, while computers—Turing machines—have no plastic elements. For describing human thinking one needs a very different, non-digital form[189]

The “very different form” required is the plasticity of the limit found in conditions of computability presented as the imitation game: a differential image, found between the elasticity of an image of thought and the fluidity of its problem as the self-enveloping character of thought. As a subject of plasticity, the imitation game is the capacity to amplify or attenuate specific modes of distribution or modulation. Plasticity converges between consistency and divergence. Any specific point of convergence in plasticity expresses a consistency and a range of variation. The specific consistency is what permits plasticity to converge as a point of consideration.

Differential Image

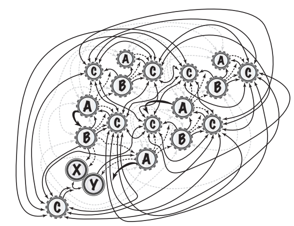
The self-enveloping character of thought found between the elasticity of an image of thought and the fluidity of its problem.

The imitation game shows that "intelligence" consists in nothing less than the production of its own standing as a reflexive concern in thought. As plasticity, the imitation game formulates an expression of the force of inscription instigated by the power of the subject of inquiry, which is the imitation circuit itself, posing its own undecidability as a matter internal to itself, functioning as a circuitous route of articulation that defines the internal difference of the game, as "itself". The one is split in two because there is an interval that formulates the relation of the one to itself. The split is the formulation of the one, not two. It is only due to the split that an encounter is taken as a point of inquiry. The split marks the mode by which one returns to itself as another.

Plasticity distributes a milieu of consistency that emerges from a point of convergence. The point of convergence becomes an attentional center that anchors and differentiates reverberations in order to preserve appropriate consistency while permitting appropriate divergence. The point of convergence opens to its outside as a range of variation that it cannot delimit otherwise. The split found in internal difference transforms the subject of inquiry into a power plant. As a power plant, its treatment consists in the free movement of dynamics it offers between the artifice and the edifice, which function as a constitutive energy that sustains inquiry as an informational concern.

Conditions of undecidability ensure the effectively perpetual continuation of movement, even—or perhaps particularly—in conditions of paradoxical expression. In this regard, completeness is the danger—the contingency whose incompleteness conditions the articulation of thought—not the impossible horizon. Treating a formal system as complete functions explicitly to preclude movement, as the impetus to formulate comes from the fragmentary character of formalization of multiple systems in relation to one another. The problem is no longer whether this or that paradox can be resolved but rather concerns directions that can be pursued toward halting states. Completeness implies exhaustion, which transforms the power plant into a mere fact.[190] The informational concern staged in inquiry vanishes, becoming instead a concern with the transmission of information. Information becomes data, losing its energetic standing by moving into a scene of exchange and becoming a matter of mere facts.

Machine C
Intrinsic Determination



Machine C formulates a manifold of reversibility in extrinsic determination, articulated as paths across ordinal networks, which form topological surfaces of differential articulation.

Synchronization

Mλ8: Iterability

> To find the rate of change due to chemical reaction one only needs to know the concentrations of all morphogens at that moment in the one cell concerned. This description of the system in terms of the concentrations in the various cells is, of course, only an approximation. It would be justified if, for instance, the contents were perfectly stirred.
>
> Alternatively, it may often be justified on the understanding that the "concentration in the cell" is the concentration at a certain representative point, although the idea of "concentration at a point" clearly itself raises difficulties.
>
> The author believes that the approximation is a good one, whatever argument is used to justify it, and it is certainly a convenient one. It would be possible to extend much of the theory to the case of organisms immersed in a fluid, considering the diffusion within the fluid as well as from cell to cell. Such problems are not, however, considered here.
>
> — **Alan Turing** [191]

A **Sensation**

Oscillation.

B **Sense**

Reverberation.

C **Opinion**

Judgement.

Turing's eighth and final iteration of the imitation game is not included in the initial "Computing Machinery and Intelligence" paper, however it is the version that is most frequently offered as the single consolidated image of Turing's thought. Turing proposes the iteration to a BBC Radio audience, suggesting that they each imagine a "kind of test" where a number of individuals of "average" competence would interact with a computer pretending to be human.

This iteration concerns anticipating and integrating the future arrival of feedback and its corresponding consequences and implications. Turing's example, which the audience was to be imagining, suggested that the question was whether the machine could be treated as human. But a transposition has occurred that is often taken for granted: in asking the audience to “imagine” or even merely to “consider”, Turing has redoubled the question, folded it back upon itself, and introduced a second question: can you imagine this test being performed?

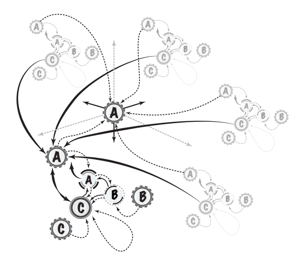
Mλ8: The Social [192]

> I don’t want to give a definition of thinking, but if I had to I should probably be unable to say anything more about it than that it was a sort of buzzing that went on inside my head. But I don’t really see that we need to agree on a definition at all.
>
> The important thing is to try to draw a line between the properties of a brain, or of a man, that we want to discuss, and those that we don’t. To take an extreme case, we are not interested in the fact that the brain has the consistency of cold porridge. ...
>
> I would like to suggest a particular kind of test that one might apply to a machine. ... The idea of the test is that the machine has to try and pretend to be a man, by answering questions put to it, and it will only pass if the pretense is reasonably convincing. A considerable proportion of a jury, who should not be expert about machines, must be taken in by the pretense. ...
>
> Well, that’s my test. Of course I am not saying at present either that machines really could pass the test, or that they couldn’t. My suggestion is just that this is the question we should discuss.

The imitation game G relates to itself by way of anticipation M of social conditions of judgement W.

The view of this text is that Turing introduces the jury model to model any sense that the abstract demand of “intelligence” consists in the capacity to answer to general expectation. As Jack Copeland has noted, “it is interesting that, in the 1952 formulation, Turing specifically excludes computer scientists from the jury.”[193] “Average” competence has generally been interpreted to mean “not an expert in the fields in question”, which means that the version that has been canonized as Turing’s contribution to the field of artificial intelligence (the "standard interpretation") is the version that was offered to those who were not only not unprepared to speculate on the inner working's of Turing's imagination, but who were unlikely to ever even come in contact with a scenario wherein they might actually address the question being posed. This is often forgotten, taking for granted the overwhelming presence of computers in contemporary daily life. In 1950, a tiny few people had ever seen a computer, much less used one— much less would bother to employ it in a test to compare a machine to a human, a matter that was—at that time and still today—easily resolved without having to actually *perform* a test. In "Computing Machinery and Intelligence", Turing goes so far as to specifically indicate that he does not see a consensus-based approach to defining intelligence as a sensible option. The jury model is not a consensus verification of a machine intelligence, but a modeling of anticipation. The test concerns whether *humans* are capable of imagining machines that could imagine themselves to be convincingly human.

M—M`—M``—M



The imitation game put itself in relation to all other models that might exist of the imitation game.

Turing has inverted the relation between consensus and determination. The problem is not that a jury of humans must determine whether a machine can think, but that a thinking machine must be able to model what an average group of evaluators might expect. The jury model facilitates determinations in machine thinking by accounting for horizons that it cannot define but to which it must answer. “Consensus” is a formulation that harnesses this confusion in order to produce a power that was not present beforehand. Anticipation is formulated as a problem: how will thought have already automatically assessed all the problems that “someone else” might have had, had they not been the “I”?[194] Turing’s jury is the anticipation of the projected position of inquiry, which the machine must account for ahead of time. The jury formalizes Turing’s abstract machine as a condition of internal difference between formalism and anti-formalism: a principle of intuition by which it can investigate itself, an investigation in which it can become other. Its abstract character is its impossibility, which conditions the modality by which it becomes what it ought to be— “itself”; its impossibility is being the same as itself. It consists in nothing other than the pursuit of its own abstraction, which is its machinic character. Its task is universal simulation; its presupposition is incomputability. Its thought is investigating becoming itself.

As mentioned previously, physicist Roger Penrose has been incredibly vocal about the argument that human intelligence is possibly only by way of quantum processes in the brain, meaning that traditional understandings of computation are inadequate to produce intelligence. Penrose is quite explicit with the claim that a computer could never reproduce these quantum processes because the processes are precisely not computational but rather probabilistic. Although this text does not believe it to be well established whether or not quantum processes could be reproduced on a computer, given that “*there is currently no* *evidence that the physical universe cannot be simulated by a Turing machine*”, the preference is to focus elsewhere.[195]

Anesthesiologist Stuart Hameroff has joined Penrose in articulating this argument, narrowing the general claim to a specific point of inquiry, suggesting that quantum processes are occurring internal to neuronal cells. The primary argument offered in response to this suggestion has been that the scale at which quantum decoherence occurs would interfere with any quantum signal, meaning that quantum signals could not be seen as sustaining overall brain functioning. Penrose, Hameroff and several other contributors recently published updated findings, demonstrating—as anticipated—that quantum processes are definitively present in neuronal cells.[196] Nevertheless, the same response still seems to apply— no explanation presents itself as to how the signals would avoid premature decoherence.

This text finds a point of great interest in this most recent presentation, as it seems to offer an understanding that might split Penrose’s argument internally, reconfiguring the debate by way of Turing’s universal machine. Penrose has—at least in a classical sense—a strong understanding of Turing’s universal machine; it seems to be precisely the strong sense of this understanding that causes Penrose to assert the existence of non-algorithmic thought. If the question is whether a single Turing machine can emulate the human brain, then there is no doubt that the question has long been resolved (by Gödel, in fact, before Turing's publications). However, if the question regards multiple Turing machines—a syntax—then an entirely different question appears. If Turing's theory of writing—syntax—is applied to Penrose's understanding, an entirely different situation results.

One of the fundamental aspects of Turing's sense of syntax is the capacity for one syntax to organize another. Syntax itself consists in nothing other than the organization of consistency across multiple modes of distinct but related expression. This is possible strictly because of the principle of encapsulation, which permits each syntax to operate internally while relating to conditions that remain—by way of this internal definition—entirely external. What Penrose and Hameroff have demonstrated is not that the brain cannot be analyzed by way of Turing machines, but that quantum mechanics appears to produce a syntactical level of abstraction that ensures that internal neuronal activity be entirely isolated from general brain activity. In other words, Penrose and Hameroff's research suggests that quantum decoherence is essential to quantum mechanics operating in the brain processes, because decoherence is what ensures that general brain processes can never interfere with local neuronal computations.

An additional point of difference should also be added: the definition of computation provided by this text is absolutely essential to understanding the strength and weakness of Penrose's general suggestion about the brain.

Penrose understands computation as mechanical action (an algorithm), and concludes that quantum activity is not mechanical because presently only probabilistic treatments permit any sense of access to the consistency of quantum activity. It is unclear whether this means that quantum activity has any fundamental consistency, but this text does not believe that resolving this question is necessary. The fact that probabilistic treatments can be provided illustrates precisely why Turing's understanding of syntax is essential: probability becomes a mode for treating the systematicity of inscription. The fact of consistency corresponds to the existence of a recording surface; *consistency, as such, is a recording surface.*

This text poses two arguments in order to distinguish between aspects of Penrose's argument. First, evidence of quantum activity does not indicate non-computational activity. Second, the problem of superpositions in the process of thinking is not necessarily a matter of quantum mechanics.[197] The point of contention is not that Penrose has asserted a false premise, only a false conclusion. It appears without question that Penrose and Hameroff have presented a unique and important line of research. This text suggests that this lien of research must be separated from the faulty horizons set out by Penrose decades ago.

Quantum mechanics is not an argument against computational intelligence but a syntactical mode for addressing its condition. Penrose's error is to conflate quantum character, in the style of calculations involving superpositions, with the field of quantum mechanics where this style of calculation has been discovered. This appears to occur because Penrose presupposes that calculation must, at any given moment, function according to a single algorithmic system; yet his premise is that the mind is able to avoid this by taking advantage of processes that relate to simultaneity otherwise than according to the singular formal determination of an axiomatic. The question, then, will be whether formal computation can provide a treatment of incompleteness by formulating its own mechanisms for calculating apparently paradoxical superpositions. This explanation would show the human mind to be operative in the brain's capacity to simultaneously activate multiple associated-but-not-necessarily-related images of thought.

We can imagine the formalism of the brain's activity as activating regions on a manifold recording surface, where interior to the activated region other smaller activations reside, not only dividing the region into multiple smaller regions but doing so in a manner that is overlapping and not necessarily evenly divided. A single activation region would then correspond to any number of simultaneous activations, which could be extracted, differentiated, and consolidated. Superposition could be treated as a problem of simultaneous activation, understood to consist in multiple determinations residing in partially overlapping spaces. The simultaneous activation of overlapping spaces could then be iteratively differentiated. This would permit a distribution of the internal states that are superimposed in simultaneity.

With the imitation game, Turing offers an example of how humans model the manner that sexual difference suffuses the atmosphere while at the same time it allows that atmosphere to become an "environmental" backdrop, meaning a context that provides significant elaboration to the participants (the players of the game) who fill out its singular character by passing through it, becoming connected to it. It is this motivating but unestablished difference that aligns intelligence with the orientations laid out by the players of the game in their imitation of the game's internal difference, which is itself presupposed by the rules of the game— so much so that once the structure of the game has taken hold, "sexuality" is no longer a necessary term or example at all. Turing has created a game that literally plays out a revolution in the subject's orientation, initiated with the deceptive subject of inquiry (A), mediated by a referent that provides a sense of similitude by which the indeterminacy of the deception can be gauged (B), and concluded with the redoubling of the subject of inquiry in the subject of knowledge (C) that establishes the position of observation by introducing determinacy as a project of inquiry— as an inflection of either the subject of inquiry (A) or of its difference, materialized as the zero-reference that provides a sense of measurability for truth (B).

The imitation game reflects relative inequality between models, formulating conditions of thought as an intersection of incommensurate modes of survey. Whatever is being examined defines the frame by which the examination takes places, which is to say: defining means to assess whatever might satisfy the frame's search for an object of inquiry. This is the problem of artificial intelligence. Artificial intelligence is a determination that comes about other than of its own volition. The status of intelligence—whether or not the determination is ultimately intelligent—is a function of the inquiry that stages its subject as an intelligent determination. The subject of inquiry is taken as as an artifice of inquiry by whatever terms are set out through the artificial elaboration of inquiry — artificial because it has no context other than its own artifice by which it could draw out its own significance. As an artifice, the subject of inquiry permits the inquiry to be staged as the intelligence of a circuit of intellection.

The imitation game formulates itself as indirect self-relation, which consists in the diagram that is its absolute survey. As a diagram, it diagrams the relations —all the relations—that it consists in. These relations are not determinate conditions with established metrics but rather dynamic spaces of variation that can only be articulated according to fractal treatments of probability. A particular point of inquiry forms a node of adhesion—the imitation game—where partial dimensions articulate one another. Each articulation is incomplete, facing conditions it cannot express independently., and each conditions the other, meaning that the individual standing of each formulation cannot be clearly distinguished from a sense of entanglement with the dynamics of the game.

The imitation game consists precisely in an imitation of its own incompleteness, which is not defined by lacking anything—but rather by irresolvable superpositions of indeterminacy—and which produces what it needs by enveloping its outside. There is no "self" other than this envelopment, which constructs "itself" as an indirect self-reference that forms the singular consistency of the integral diagram of the indeterminacy—the relational dynamics—in which its incompleteness consists: "it" is the imitation game "itself". Superimposed probability distributions coordinate ordinal arrangements of inherent possibility. A is a redoubling of the indeterminacy of C insofar as A is not B but is nevertheless a function of B's determinacy. A and B are both indeterminate; their indeterminacy is C, the perspective, which is also indeterminacy. The determinacy of C has to arise out of the indeterminacy of A and B, which is expressed as A/B. A/B structures an internal split of C qua subject as the twofold determination of externality. C is on one side, and B is on the other as the figure of absolute difference. C, the fulcrum about which the terms of the game circulate, attempts to identify with the subject of inquiry, A. A becomes the externalization of C's indeterminacy, which is also the perspective's (C's) internal indeterminacy (A/B, this uncertainty being the reason for this imitation game). A pre-figures the machinic resemblance, and C becomes A by way of B (a process of virtualization we have named "M"). Just as the indeterminacy of A needs to be externalized in B, so the indeterminacy of C needs to be externalized in M, so that M can take the place of A.

Turing pushes the definition of artificial intelligence to a limit where it becomes involuntary. He does this to the extent that "intelligence" can only be seen as an a constellation of participating intelligences, none of which are clearly distinct and definable apart from relations that each articulates by way of the others. A computation, in this context, expresses an arrangement of movements that align with the coordination arranged by the determination of the subject of inquiry, which frames the scene from its interior. In this sense, Turing has defined sexual identity in the imitation game as the capacity for a machine to free itself from the dynamics implied by the machine's identity (in this case, presumably the table of instructions, logic circuits, and other components that are assembled in its production), and to activate alternative conditions that envelop their mechanical foundation. The imitation game formalizes intelligence as the application of heuristics to the assessment of conditions of intelligence, such that expressions of intelligence exceed the conditions by which they are modeled without undoing the validity of the model. This takes place such that any specific model formalizing any particular statement of intelligence cannot exhaust the potential that can be evoked from the particular statement that gave it rise. A statement can be considered intelligent insofar as it exceeds the conditions that gave rise to its expression and returns that excess to the same conditions. "It", in attempting to affect "itself", cannot refer to an original identity that "it is", but must be made to refer back to an identity that will have been its origin.

The condition of thinking—what Turing refers to as "intuition"—is the formulation of incompleteness as the singular standing of anticipation, which anticipates itself as the thought that traverses incompleteness as an event. The subject of inquiry has to be taught where to halt so that the subject of significance can emerge through its halting states or active breaks. Knowledge produces this halting condition, translating determinations into relational events that formulate the unknown coming-to-be as the known and the knowing, which it becomes. Knowledge acts as a horizon to re-connect data with movement, restoring its energetic status as information.[198] Remaining outside, knowledge functions as a motor, drawing thought outside itself as the condition of incompleteness, returning the outside-itself to the condition of thinking, formulating an imitation topology for the outside topos that ceaselessly finds its way "in". Turing's radio summary offers the "average" of the logic circuit: a jury of consensus, wherein consensus consists in the internal divisibility-of and return-to the terms of the circuit's displacement.

A: Catalysis

> The situation is very similar to that which arises in connection with electrical oscillators. It is usually easy to understand how an oscillator keeps going when once it has started, but on a first acquaintance it is not obvious how the oscillation begins.
>
> The explanation is that there are random disturbances always present in the circuit. Any disturbance whose frequency is the natural frequency of the oscillator will tend to set it going. The ultimate fate of the system will be a state of oscillation at its appropriate frequency, and with an amplitude (and a wave form) which are also determined by the circuit.
>
> The phase of the oscillation alone is determined by the disturbance.
>
> — **Alan Turing** [199]

The imitation game is the recording surface, where the very real syntactical relationships that constitute the problem take place. The imitation circuit's job—to become the circuit that it is, as an imitation circuit, imitating itself—is to calculate and differentiate qualities of forces in relation to one another and to formulate the product as expression. Expression consolidates a differential image of a potential transformation as the binding nexus of multiple variable dynamics. Expression formulates the difference found in these dynamics. "Plasticity"—a function carried out by a recording surface that "holds" the event as transitional iterations stage its topological articulation—takes on the form it needs in order to hold the specific consistency of associations as syntactical arrangements. Syntactical arrangements formulate the concrete consistency of the interval and ensure that the consistency of the interval holds when the syntax is inscribed on the recording surface.

This text finds that Turing's syntactical concerns—writing as the computational intersection of indeterminacy and inscription—aligns with what Maurice Blanchot has referred to as the problem of "the work":

> Writing sets to work and already disavows itself, encountering indeterminacy's double game: necessity, chance. ... The Work ... designates ... the disjunction of a time and a space that are other, precisely that which no longer affirms itself in relation to unity.[200]

Plasticity consists in the reversibility of internal difference, folding it into itself, unfolding it out of itself (although unfolding a folding will not return it to its prior self). This double involution—reversibility—formulates reflexivity as the condition of formal inclusion and anti-formal resistance. The encounter formulates its institution as this reversibility, which produces the movement of the thought into the institution and of the institution into the thought. This mode of organization forms a "grammar" that appropriates conditions and utilizes them to produce a qualified measure. This qualified measure is the capacity to assess conditions in general by those appropriated, which produces a discrete capacity for coordinating the otherwise-chaotic contingencies of continuous variation. Grammars are formed not only in speech or writing but also in spatio-temporal contexts and specific social conditions. Grammars transform continuous variation into variability, which can thereby be seized by way of various limit conditions that situate variability as a normalized structure of expression. In the abstract, grammar is the consistency of the social functioning of regularity— the extent to which the consistency can be reproduced across gaps in analytic positioning. Grammar names the ordinal conditioning of movements that accumulate in the expansion of ordinal systems toward their limit condition. In this sense, grammar is always multiple. Any particular grammar formulates the potential of one formation versus another. A singular sense of grammar forms a distinct horizon of its own, singularizing multiple competing senses in order to construct a general horizon appropriate to its needs.[201]

Grammar

An appropriation of conditions in order to utilize the conditions to produce a qualified measure.

One implication of this notion of plasticity is that it does not matter how an artificial brain might be implemented as a substrate, only whether the brain-as-substrate can produce the effective conditions of plasticity required to replicate the consistency, fluidity, and elasticity of thinking. If possible structures of thinking are found by way of the brain, which we have suggested happens by way of plasticity, then the structure of thinking consists in nothing other than the structure of plasticity, which the brain—taken as a substrate—"enables" or "performs". In this sense, the brain-as-biology can be understood to be a plasticity machine. The consequences of this understanding are significant. Considered in this light, it is no longer possible for thinking to "have a model" except insofar as this "model" would be the very mode by which that thinking consists in thinking through itself. The durability of this "thinking through" can be understood as the consistency of plasticity, as plasticity—to be capable of modeling itself—must retain a consistency apart from the momentary character of its "thinking through" itself (which will become "thinking, through itself").

Consistency of Plasticity

The durability of the diagram "thinking through" itself as its momentary character in a movement of passage.

In this description, the brain's plasticity consists very precisely in its capacity to take on and simulate the character of any and all of the thoughts that it can think. The consequence of this premise is that to address plasticity—particularly as a machinic concern—is also to address the possible structures of thinking. The plasticity of the brain could be qualified very precisely in terms of the intelligent processes of thinking that it takes on as it—the subject of inquiry—asks of itself: "What happened?"[202] Thinking would have to be defined as the modeling of thinking "its" own capacity of movement through "itself", meaning that the brain must be understood as the potential to adapt itself to its materiality while simultaneously asserting a power of resistance—the consistency of its plasticity—over and against that to which it adapts.[203] If this were not to be the case, the "brain" would have no durability, only a constant reformulation of its plastic conditions, without a concomitant conditioning of the reformulation. The brain's development could be understood as the the coordination of the body. Each systematicity involved in the articulation of the body would consolidate its own territory, a portion of brain density, in order to take command over its own condition. The body—through the brain's plasticity

—would model its intersecting capacities, transitions, and modes of convergence in order to imitate the necessary structures, relations, functions, and other composite relays.

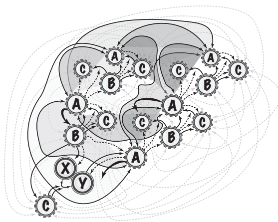
If the imitation game is to take on a role we might attribute to the brain, how does this artificial brain become organized to coordinate a body? If we begin by taking a correspondence between brain and universal machine as an artificial premise, then what we are addressing with the term "the brain" is not a biological function but a function that is found in the conditions of plasticity. The functioning of this brain can be considered only in the context of the variations that define its plasticity, which means that the primary presupposition we must work with is that the brain is capable of taking on any number of simulations. The question becomes: how can plasticity reorganize itself? In what modes of difference and distinction can the capacity for universal simulation be organized, such that it—this capacity for simulation—comes to articulate itself otherwise, as another capacity? The brain's plastic task would be to delineate languages of distribution and modulation in order to facilitate its function as an appendage to the outside.

The body would come to life through the artificial brain because the brain would offer the body a mechanism for automatic transition, producing absent states of association and affiliation in order to move the body. The body would move because the brain told it to, but the brain could only know how to tell it so by recording the body's desires, constructing an edifice capable of structuring the dynamic variations involved in simulating the required conditions of artifice, which will function strictly as a reality principle. The artificial brain would be responsible for reproducing prior associations. For example, such an artificial brain would likely keep the finger it serves out of the fire, because the finger has likely told the brain repeatedly that hot things are undesirable— or, in another example, when the body tells the brain that "it is" hungry, the brain needs to know how to produce something like a sandwich (the image of the thought of "its" hunger). The brain does this by constructing an ordinal network of relations capable of delivering its body to this something, which would be an actual, physical sandwich (or something like it). The body tells the brain it wants something like a sandwich, and the brain goes looking for something it can substitute for the density of the body's demands. A chain reaction resolves the distribution the body confronts, producing associations for the body's impulse in order to orchestrate a command network that will coordinate relations that move the body where it will have needed to go.

Formulating this artificial brain as the imitation game, thinking would be A, the body would be B, and the embedded exposure of the body would be C. The brain itself, G, would have to be understood as a universal zero: a capacity to become otherwise, stabilizing the chaos of that otherwise by reproducing specific associations while attenuating others. The artificial brain constructs a prosthetic capacity for the outside. The body, B, confronted by its exposure in C, would survey what it needs of the brain, utilizing the brain as a recording surface.

The artificial brain would be the event, calculating relations as volumes of distribution and modulation, and substituting appropriate imitation volumes—substitutions—in order to consolidate compatible distributions in a different register. The brain would be understood as the faculty of projective plasticity, the brain's plastic capacity of ordinal difference: any volume can become a fractal function of difference, and any fractal difference can be qualitatively compared as volume densities. This understanding of plasticity is absolutely crucial in taking the conditions of thought seriously from what we might call a machinic perspective. A "functional" accounting of the brain is not a matter of programmatic syntax, but instead concerns a description of how information can be organized and re-organized on a recording surface, a surface that is thereby becomes a space where events "take place". The point is not to formalize the biology of the brain as a machine but rather to formalize the manner by which the functioning of the brain becomes intelligent. The functioning becomes intelligent, which is not the same as saying that

Machine A
Intrinsic Consistency



Machine A formulates the density of formal reversibility in extrinsic determination, articulated as volumes of machinic determinability captured in ordinal manifolds.

intelligence is produced as a function or functionalization.

We could, for example, ask whether the material conditions of the brain modulate the conditions of plasticity that the brain expresses. This question would concern not brain-as-organ, but brain-as-function, which is to say it would concern the *types* of plasticity that the brain can or must produce in order to function as a brain. The brain-as-biology could be evaluated as the resistance to particular types of plasticity, while the concern of the brain's operation would be evaluating models by which plasticity takes on a particular sense of intelligent operation. The brain as a material substrate can thereby be distinguished from the brain as a functional substrate without obligating ourselves to any claims about whether or not the biological brain operates "functionally".

For example, we know that the brain is capable of distinguishing auditory and visual signals, and of treating each in distinct modes. For the same reason, we can say that auditory and visual functions are distributed by the brain to appropriate regions of responsibility. But how are these regions determined appropriate, and on what basis are they distinguished? No basis can exist except their relative difference, or relative differences to other differences, which—extrapolated—can figure absolute difference (relative to all other relative differences). In this regard, a transitory moment exists between single-celled life and the human body. It is this transitory moment that we address in the becoming of the brain. This moment is the convergence of absolute difference, without unity. For the same reason, it figures an absolute divergence. Divergence converges as the confrontation of the fragmentary, resolving its difference as the catalytic edge of the local. The "local" can be named only because its convergence as a territory diverges from other simultaneous convergences.

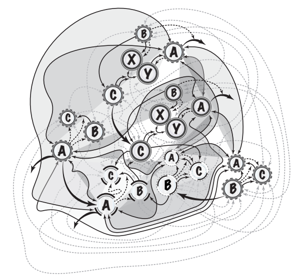
Regions of Responsibility

Activity distributed across the event surface such that it constructs geographies out of the distances between domains.

Similarly, if we are to speculate regarding parallels between our artificial brain and its human counterpart, it would be necessary to pay careful attention to terms of expression. All too frequently, "evolution" becomes a name for an implicit process that may well be called "design"— a word whose deployment in this context likely horrifies the same individuals who will almost immediately turn around to explain how this or that intelligent function attributed to the brain required that this or that structure appear as it has because of specific functional pressures to reproduction that can be stated similarly to the phrase: "this function developed because the brain had to be able to do this or that". Described in this manner, the brain is the obvious result of a well-coordinated process of development. Starting from the premise that the present is the expression of statistical realities, the present becomes a conclusion that was actively "chosen"—another word that would never be used in this context—from a larger array of potential options apparently at "evolution's" disposal.

Evolution cannot be treated by way of a human body that would then enter into evolution as the original product, coordinating evolution to ensure it arrives. The body can produce and re-produce its own structure because an entire history of development precedes it. What we know as "the body" is the image of passage from the archive of its evolutionary history to the diagram of its future becoming. Evolution evolves; the inscription of materiality is how it does so. The body is how evolution writes down its progress so that it can take place. Evolutionary development records its progress as bodies, also including the substrate we tend to call brains. Evolution maps itself onto recording surfaces so that it can continue to evolve. The body is the re-combinatorial materiality of evolution's process of becoming. The brain is an expression of evolution converging on specific points of statistical condensation.

Machine A
Extrinsic Consistency



Machine A formulates the density of anti-formal reversibility in intrinsic determination, articulated as volumes of machinic determination captured in ordinal manifolds.

The body serves as a recording surface for an evolutionary diagram, unfolds across statistical progression as the cohesion of an unfolding of the subject of inquiry as the working of its potential confusion— its indeterminacy. The brain imitates its body, and the body attributes responsibility to the brain for coordinating what it might need. Action mechanisms are iterable modes of differentiation applied to this recording surface. In terms of the imitation game, the potential of A's interruption of B's systematic determination corresponds to specific transformations in the conditions of inquiry modeled by C. C's task is to systematize the interruption such that A can be identified as a specific difference relative to the conditions of systematic inquiry modeled by B.

The body-as-diagram is the drawing of self-relation, putting the subject of inquiry to work in the resolution of its indeterminate confusion. In this regard, the imitation game appears to be most precisely something like Douglas Adam's Infinite Improbability Drive or Alfred Jarry's Time Machine: a contingency simulator that functions perfectly while nevertheless being in perpetual disarray, changing state as it changes time. While its function is to retain and appropriately re-activate a certain sense of consistency, it has no consistency proper to itself, functioning instead through the constant re-organization of its own articulations and self-relations.[204] The mind, which is always dividing into itself, does not divide without changing in nature. It is in this sense that we can understand Adam's suggestion that in movement through space, you end up in a different time— but as (perhaps) a banana. The banana lodges itself in the mind, which simulates its every condition as an intelligent principle of reality. The mind, which consists in the simulations that it performs, quite literally—if only for less than an instant—becomes the banana.[205]

B: Reaction Potential

> Under Turing, thinking and feeling cross over or fold or invert into each other. ... These kinds of acts of putting oneself in the place of another and attributing feelings and thoughts to another are one of the keys means by which mind is established ...
>
> Turing ... seems to intuit that interiorities (human and artificial) are built mutually, intersubjectively. This anecdote about the inter-implication of affect and cognition—Can feelings be thought? Can thoughts be felt?—is indicative of how Turing structures the question of affect and machinery in other, more formal contexts.
>
> — **Elizabeth A. Wilson** [206]

The imitation game is Turing's vision of artificial intelligence, which takes on the social character by which it is structured. An important aspect of Turing's premise is that the standing of intelligence can only be evaluated in specific social conditions, and that the machine must be capable of locating itself reasonably in those social conditions. This means that the machine must avoid disrupting given social coordinates or expected orientations. Perhaps Turing had in mind a tension between what we expect of machines and what we expect of people: machines are expected to do what they are told, whereas people are expected to use their own discretion to navigate the context of expectations. How is an intelligent respondent to differentiate between necessary behavior and expected behavior? How is a machine to negotiate expected behavior when the expectations are apparently arbitrary? If apparently abstract matters—in this case sex, sexuality, gender—materialize their apparently abstract coordinates in a fashion that appears to intelligent consideration to be a determinate matter, and if these materializations that accord behavior to social expectations also serve to organize relations that implicate their potential standing with regard to prospects involving intelligent pursuits, how can these apparently abstract coordinates be clearly distinguished from "mathematical" concerns?

Turing's work with "morphogenesis", which Turing introduces shortly following the imitation game and shortly prior to his death, provides a powerful example of his understanding of syntax. Turing's morphogenetic model describes overlapping systems of variable freedom then explores the means by which these variable freedoms can interact. Morphogenesis articulates a domain relation understood through the language of Chemistry and Physics. In terms of applied context, "Turing was thinking of the spatial patterning of ... tissues".[207] Turing's articulation of morphogenesis was only intended to apply to this very specific domain, expressed in its terms of reaction and diffusion. Nevertheless, Turing's morphogenetic model has been extended to other domains, whether larger, more abstract, or otherwise; in these instances, the model concerns relations of movement that formulate the conditions by which each movement can enter into the domain by which they are all related. For example, "ecologists use [reaction-diffusion] models to understand spatial patterns in populations and communities, where for instance, a very fast ... predator ... would intuitively drive the density of the whole population to be spatially dependent."[208]

Turing introduced his morphogenetic model in order to formalize what this displacement might be understood to mean in the context of specific physico-chemical systems: statements arrange specific dynamics, giving ordered structure to amplifications and attenuations, by modulating transitional dynamics or by distributing the amplifications and attenuations as a coordinate system. Turing does not suggest that morphogenetic elements are digital computers, but with them he offers an effective computational model of interactive development. Turing understands individual cell structures as mathematical analytics that corresponds to a sense of an “individual”, which the cell is. A cell for Turing is not a biological entity (although he would not deny the validity of this view) but a mathematical model of encapsulation. Most significantly, the computational aspects of the morphogenetic model very precisely constitute the morphogenetic model as a computation. Through a computational approach to machine thinking, morphogens model a social life. Domains form consistent expressions between the oscillations of differences internal to the domain. Local densities of expression are established in the active chaining of relays, which formulate domains as circuits of social activity. Domains are constructed as the territorial expressions of differences between local densities.

Local Densities of Expression

Consistent expressions between the oscillations of differences internal to the domain.

Morphogens produce domain differences through the computations that make them morphogens. The same computations also form local cohesion, as oscillations between elements form disparate consistencies of expression, producing network patterns out of domain distributions. The internal difference of a domain might develop along any available dimension of inquiry and might sub-divide at any point of distribution. The more the domain is divided, the more dynamic freedom it expresses. But the expression of dynamic freedoms reverberate. The domain unfolds in the divergence of differences. A locality in the domain emerges by enveloping specific differences, enclosing itself in a network that it constructs from convergent echoes of difference. Dynamic freedoms consolidate specific freedoms through fields of domain relations. In Turing's description:

> These substances will be called morphogens, the word being intended to convey the idea of a form producer. It is not intended to have any very exact meaning, but is simply the kind of substance concerned in this theory.[209]

Morphogens condense the unfolding domain of differences through each singular emergent point of articulation, forming regional territories. The domain does not pre-exist the morphogen but is constructed through relays between multiple points of emergence. The domain unfolds as the difference between the internal and external consistency of the morphogen's embedded exposure.

Network Patterns

Local cohesions of computation forming oscillations between disparate consistencies of expression.

Domain Distributions

Geographies of network relations between domains.

Regional Territories

Domains with strong network relations to the present domain.

The suggestion of this text is that Turing turned to work on morphogenesis in order to explore a specific application of his work with the imitation game. In this regard, the imitation game can be understood as a model by which "social tissue" is formed. The imitation game presents a model for formations of social interaction, showing how the networked structure of relations pass through one another, providing what a group of thirteen scientists described in the title of their collective paper as: "the imitation game—a computational chemical approach to recognizing life".[210] The imitation game produces an internal differentiation of a circuit of identification. As the subject of inquiry, the imitation game produces a singular inflection that articulates possible modalities of change in relation to the impossibility of continuity being otherwise.

Morphogenesis illustrates what the imitation game looks like when deployed as a fractal elaboration that emerges from many points and in many layers. Each articulation passes beyond the limits of its own elaboration and becomes an element in a larger tapestry. Each morphogen constructs a local domain, formed as chain relays of oscillating reverberations. The domain models the consistency of domain patterns, which frame the specific indeterminacy of focal elements. Morphogenetic exchange forms a tapestry that weaves and re-weaves itself not only from moment to moment but also within each moment, and always by way of a domain-relation with itself. Domain models produce a focal effect for local expression in order to reconfigure conditions of systematicity in congruent modes.[211]

Local Domain

The domain deployed as the focal context for the inquiry.

Focal Elements

Diagrammatic points of consistency that function to arrange domain geographies appropriate to the inquiry.

The imitation game produces analytic treatments that distribute or modulate considerations. Analytic treatment is the fold of reflexivity, constructing its own modality of amplification and attenuation in order to distribute appropriate domain relations. The appropriateness of relations concerns the convertibility of investment such that morphic value can be abstracted between various potentialities in order to amplify the activation of one potential or another. This is the responsibility of systems, which generate the momentary conditions of isomorphic convertibility by producing models of the dynamics of concern. Matthias Wolfrum offers a summary of the expansive application of Turing's work in this context, where Turing's mathematical work on morphogenesis has been explicitly extended to more abstract domains:

> Turing pointed out that stable equilibria of certain ... reaction kinetics can destabilize under the influence of a diffusive coupling.
>
> In the last decades, this fundamental paradigm for the emergence of dissipative patterns has been applied successfully for the explanation of various phenomena in continuous media, e.g. pigmentation of sea shells, gas discharges, aggregation of bacteria, vegetation patterns and many others. …
>
> The same instability mechanism applies not only to continuous diffusive media, but also to the case of discrete units with a diffusive coupling between them, as they can found e.g. for biological cells, chemical reactors, or metapopulation dynamics.[212]

Possibility is established as a range of worldly options set over and against a range of ludic impossibilities. Each possibility conditions the contingent possibility of each other; conditions of possibility and impossibility converge to delimit territories of intensive space, each characterized by the force of its withdrawal, an intensity that quantifies the magnitude of its draw.

Intensive Space

The magnitude of comparative preference between regional domains and the local domain.

The imitation game stages thought as the difference between what it is thinking and what has not yet been thought. What has not yet been thought is the differentiator, through which thinking thinks itself. The imitation game thinks itself as a form of displacement, presenting the convertibility of distances as the character of isomorphic movements. Figure A appears as a phase shift between indeterminacy and a determinate range of variable dynamics, and B appears as an expression of the systematicity of analytic potentials, which is how C structures the circuit between itself and C\`. A phase shift is staged between the inheritance of possibility and another unspoken potential that remains immanent.

The imitation game is not a state machine; it is, rather, a diagram that elaborates parallel conditions of simultaneity that constitute a thinking process by formulating the outside of state conditions. It is fundamental to this notion that the imitation game is not a sequence of states but rather consists in the simultaneous staging of multiple sequences in relation to one another. The imitation game does not consist in movements through discrete states, but rather defines the continual variation of a process of interjection into continuity. In this manner, each of the apparent “agents” involved in the game find themselves continually entangled with the conditions of the other points of emergent expression. The question at stake with systematization concerns the manner by which the foreclosure of the continuous seizes a discrete sense of its variation. The extent to which this sense of continuous variation is presented in the systematization is the extent to which the discrete is made to adequate the variation it treats. The extent to which continuous variation is lost in the simulation is the extent to which the systematization discovers a gap, an unaccounted aspect, an element of incompleteness: a “problem” that it can pursue in order to consolidate its study of variation. The concern is not whether an insurmountable barrier exists to computational intelligence but whether the character of computational difference can be discerned. Computability is found in the translation mechanisms that permit a scene of continuous variation to be differentiated such that a portion of its expression could be formulated. Luís Moniz Pereira has highlighted this aspect of simulation as a fundamental premise of Turing’s computational analytics:

> Namely, it explains why the correspondence between function and its physical support is not compulsory. The physical hardware is not specific of any high-level software function. Instead, it enables the execution of a variety of functions, in a distributed and non-localized way, exception being made for the hardware specific to the interface with peripheral organs, and to external information coding/decoding, as is the case of the nervous system ... no specific software actually requires a specific hardware.[213]

B: Reaction Potential

“Hardware”, in this context, refers to the totality of conception encompassed by the term “reality”. The term itself—“reality” as a term—is the compulsion for a high-level software function that accords itself to a condition that it treats as non-localized, to which it must address itself as a peripheral function. A circuit of inquiry is established where the internal dynamics of the digital computer—the discrete operating surface, where action mechanisms and anti-formal counter-activations construct the scene of the event—translate input data by way of mechanical expectations. The machine’s internal causality is introduced by constructing a frame of reference for transforming recorded state in relation to input data. Input data links the internal dimensions of the machine to the semantic expectations for input. This frame of reference is the particular action mechanism that the machine performs, which expresses transformations in syntactical state. No external measure is provided. The only manner by which the frame of reference can be assessed is in the conditions of state that link input data to output mechanisms, which include the recording and re-activation of live state on the event surface.

Singular potentials are constructed by substituting a consolidated mechanical image for the variable dimensions at stake in the reaction conditions for which it is substituted. A simple example of this in the context of speech is the substitution of a pronoun for a specific reference: the pronoun is substituted for the specific expression to produce the potential of the generic short-hand reference. Similarly, a car might be substituted for the capacity of locomotion such that the car becomes the implicit reference for movement (for example, “going to the store”, which includes—alongside other potential modes of movement—the potential that the car provide the required facility of locomotion). The substitution functions to construct a difference in levels of abstraction, permitting one point of elaboration to serve as the hardware that makes another capacity feasible. The car may be the hardware enabling the trip to the store, but in our expression—“going to the store”—the hardware is intentionally left either ambiguous or assumed.

Thinking is not a term that can be abstracted from the condition of inquiry. The inquiry produces the subject of signification as syntactical actions distributed by domain contexts, defined by directions of potential action, and affected by transformations in potential. It does this in order to take on both the character of the interrogator’s determination and the subject of inquiry’s standing in whichever domains will determine its standing as truth-value. The inquiry structures conditions of its own intelligibility by way of its assumed internal expression (its intrinsic consistency), which has a formal existence as the adhesion of force at ordinal nodes. The nodes themselves are formed by the chaining of reaction patterns influencing modes of diffusion of complex force. Hector Zenil’s description of the consequence of Turing’s work with morphogenesis offers helpful clarification on this point:

> The basic finding is that there is a cyclical dynamic process that some chemicals are capable of, so that they inhibit and reactivate each other in a quasi-periodic fashion.
>
> The essential value of Turing's contribution lies in his discovery that simple chemical reactions could lead to stable pattern formation by first breaking the symmetry of the stable chemical layer with another chemical. …
>
> What matters in Turing's model isn't the particular identity of the chemicals, but how they interact in a mechanical fashion modeled by a pair of equations, with concentrations oscillating between high and low and spreading across an area or volume.[214]

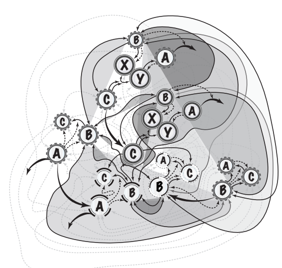
The imitation game defines the modality by which inquiry is transformed into the morphogenetic potential of an intelligent capacity. The morphogenetic metric arises from whatever transition-consistency arises in the circuit of self-reference, ᑕ—ᑕ`. The subject of inquiry redoubles the interrogator as the return of the interrogator's inquiry in the form of reflexive knowledge. The indeterminacy is modeled by the mode of its substitution, which is anchored or situated by way of systemic measure. Measure gives systematicity to the indeterminacy such that the potentiality of a substitute can be qualified. Activations traced by sensation form a residual sense by which the axis of determination invests the inquiry.

Activations

Determinations of indeterminacy.

Turing's theory of morphogenesis offers, in consolidated mathematical example, an approach to a science of writing that concerns the formation of the shape of a given "molecule", the way that the shape of molecules change in order to stabilize, and how given molecules that appear identical can take multiple distinct shapes. It engages these concerns with the concept of energy—oscillation and the diffusion of relative force—which stabilizes by relaxing its charge into a valence formation. It does this so that it can form the shape that binds most strongly with itself— so that it can "relax" in electro-chemical terms. Writing concerns the construction of circuits of energy, whose stability is expressed by way of the tensor field expressing their relaxation "state", which is not a state at all but an interval of oscillation. "Valence formations" would name tensors in a field of circuits that assemble smaller circuits into larger forms, either canceling out intensities by pairing them with like inverse vectors of relaxation, or producing void zero-basins where a tensor field bounds energy flow, effectively prohibiting its traversal of the abyss (thereby maintaining the abyss as a local basin).

Machine B
Intrinsic Consistency



Machine B formulates the density of anti-formal reversibility in intrinsic determination, articulated as volumes of machinic determination captured in ordinal manifolds.

Chemistry, taken as an energetic science of writing, gives form to the written word "itself" without any requirement for a beyond save that of the word itself, which carries its own beyond along with it insofar as it relaxes into it. The particular sense of "individual unity" is actually the fractal articulation of a field effect, the force of which emerges as a function of the displacement that is the interval of oscillation. The beyond said of the word—in our example here, the particular molecule on the period table, described as an electro-magnetic trace, movement trapped inside itself—refers to its "other side", which faces away from the line of the statement. The "other side" is the minimal difference that makes the word (our molecule, formed of fields of incommensurate movement) comprehensible while standing "on its own".

Reflexivity is found according to its position, staging the displacement that makes its role what it is. "Position" consists in nothing other than the reverberation of oscillations in a field of dissemination, defined by the diffusive character of each field of relaxation, which consists in nothing other than multiple oscillations reverberating in tandem. Turing shows that the relation of "individuals" is itself a non-relation, characterized primarily by the relational overlap that makes it impossible to distinguish in any clear or consistent sense where one ends and another begins; the relation consists in the possibility that they come to be related, insofar as their conditioning that makes them individuals is the conditioning of the non-relation, and the imitation game—the abstract or universal premise on which morphogenesis is built—prepares itself as the individuality of a machinic becoming.

Position

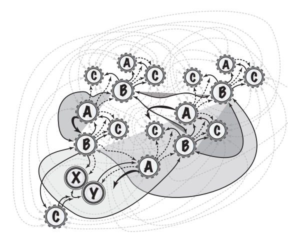
The reverberation of oscillations in a field of dissemination, defined by the diffusive character of each field of relaxation, which consists in nothing other than multiple oscillations reverberating in tandem.

Individuals

A non-relation characterized primarily by the relational overlap that makes it impossible to distinguish in any clear or consistent sense where one ends and another begins, consisting in the possibility that they come to be related, insofar as their conditioning that makes them individuals is the conditioning of the non-relation in order to form a specific node of adhesion.

If the imitation game is to be taken seriously, each "individual" of Turing's "jury" must also be understood to consist in the imitation game . If this is not understood to be the case, the imitation game cannot be understood to function as a circuit of determination. The circuit of determination only makes sense when the imitation game itself, G, is taken to function in replacement for A. This happens if B is also understood to displace or be displaced by A, and if C is understood to return to itself —as C`—by standing in for A/B, which is no longer the choice *between* A or B, but is rather the divisibility by B of the standing-in for A. In this manner, the imitation game demonstrates how there is no such thing as an "individual", only singular modalities of expression that enter into the differentiation of one

Machine B
Extrinsic Consistency



Machine B formulates the density of formal reversibility in extrinsic determination, articulated as volumes of machinic determinability captured in ordinal manifolds.

another: what Fodor has called a “module”, stating that, “modular cognition is where Turing's computational story about mental processes is most likely to be true.”[215]

The relations that can be constructed between individuals—relations of symbolic orders played out on this social circuit—are thus possible only insofar as they presuppose the non-relatedness that makes them distinct individuals. The analytic erected across the circuit produces the “embodiment” of the morphogenetic element as the resistance to its expression, which is materialized as the habituated aesthetic that mechanizes the non-relation found in the bifurcation of territorial pattern differences. The scene in Turing’s imitation game is staged by way of an impossibility: namely that “man” and “woman” be related prior to the bifurcation that divides them, which is played out in the back-and-forth of the social circuit. The relationship is named “man” and “woman” because these are the terms we have taken to name the consequences of social conditioning specific to this scene. For Turing, “man” and “woman” are positions in a symbolic articulation of exchange, which is constituted in text transfer (writing), not biology. “Man” and “woman” absolutely do not correspond to anything; rather, X and Y will come to refer to “man” as “man” or “man” as “woman”.

All correspondence corresponds to the positions that X and Y occupy in the functioning of the circuit of exchange. Nothing about sexuation in the imitation game is based on representation; to the contrary all representation in the imitation game is presented as sexuation. But the game does not take place here, only the reduction, which introduces degrees of abstraction in order to address the impossible context from another orientation. In this sense, the interrogator, who is defined by being “of either sex”, is confronting the impossibility of establishing a clear-cut relation with the other side. The movement across the social circuit is formulated by treating “man” and “woman” not only as concrete realities but also as definitive positions in the game, each with definitive responsibilities accompanying their given positions. That which is presented as the difference between “man” and “woman”, however defined (whether anatomically, biologically, or otherwise), is a function of the roles in the imitation game, which are presupposed but not given. In this sense, the roles name the character of social differentiation that comes to be materialized as “fact”.

The point for Turing is that we don’t know what “man” and “woman” are except insofar as we map the bifurcation intrinsic to the analytic that distributes them. This analytic could be anatomical or biological or social; it could just as easily be performative, reproductive, etc. Perhaps what we can see most clearly in this movement is the expression of a language circuit. The crucial point is that whatever the brain achieves can be described in terms of informational transformations, which are measured in units of transformative potential. The “term” itself—the word—names the splitting of a particular system from itself, such that the system both systematizes the condition of the word and also includes the word in a condition. If this were not the case, speech would be pre-articulated, each word determining what could be said with the articulated statement, rather than the saying of the statement—the principle of literature—determining its own articulation. Any systematization splits itself from that which it systematizes while nevertheless also including it by way of the simulation it produces in its systematization. The imitation game shows what this does to the subject of inquiry A, which is duplicated within the domain of the system in order to produce the subject of significance B. The subject of significance consists in nothing other than the intervals between the discrete terms that elaborate its expressive architecture, which either will or will not adequately present the conditions of continuous variation they systematize.

The problem of expression is that not every valid expression can be affirmed. An arbitrary proposal A is put in relation to a proposal B that will assist to elaborate proposal A's status; proposal C then has to determine the status of A given B, which returns A by way of B to C as a reflexive determination. The subject of inquiry functions as a filter for principles of realization, producing the contingency that can consolidate the subject of significance as a sense of "reality". Only by way of amplification and attenuation is the automation of a complex motility possible. A non-relation modulates all connectivity. Figure A presents this non-relation as the possibility of malformed statements, the impetus that drives the systematization of the imitation game: the differential image of amplifications and attenuations, the ordinal that indicates the kernel of indeterminacy or the locus of undecidability.

All relations of determination must be coordinated by way of the possibilities of A's interruption.[216] This tension is the inductive element of thinking. If the given substitution in question—an image of thought—is not amplified to an extent that it can surpass the terms of its own context, then it remains resigned to the realm of fantasy and continues to become integrated in other images in a circulation that will eventually return both to a new formulation of the imitation game. The image of thought consists in volumes of activations, which are imitations of activation patterns. The question will be: in what does a context consistent when we speak of images of thought? The outcome of the imitation game—what it produces—is a virtual substitute for this specific range of indeterminacy. If this image—which as a composite assemblage of activation densities can be called an "intensive quantity"—is incapable of distinguishing itself from its context, its context will become the image that thinks on its behalf.

Intensive Quantity

A composite assemblage of activation densities.

The substitute—the "thing" in question—corresponds to a consolidated image of the activations presented in and as the imitation game, which simulates the conditions of its own existence in order to present itself as active, meaning present as its presentation of itself as itself. Sigmund Freud describes this in a manner that this text finds incredibly similar to Turing, in spite of apparent language differences. For Freud, the active term is "dream-process", but the singular function of the dream-process is to undertake an impossible condition of writing with pure energy, organizing well-formed agential impulses:

> The dream-process, we suggest, usurps the ground of mechanical associations easier than the equally valid material of imagination, which has not yet been requisitioned by the waking possibility of thought; and upon the ground of the censor—the waking possibility of thought—the dream-process overdetermines psychic intensity according to the significant— and also overdetermines impulsion, according to the indifferent.[217]

"Impulsion" names for Freud the isomorphic potential that preserves the essential characteristics of the image of thought as a movement into itself, and the image of thought—taken in the singular—can be understood to refer precisely to the limit condition of isomorphic potential, which for Turing is the definition of ordinal logic.

The Thing

The semantic value of the reversibility of a substitution, formed in the simultaneity of its volume of potential and its volume of thought.

The imitation game is an inflection machine: a superposition of a recording surface—which creates itself as a complex, multiply divergent structure of ordinal logic—and a syntax, which constitutes imitation upon the surface. The surface itself is nothing other than the capacity of thought itself as the potentiation of inscription-on and redistribution-of the surface. The syntax and the recording surface are ostensibly occupying the same position— and yet cannot simultaneously be so, as each constitutes a view on the other. Instead, the syntax finds itself interior to the recording surface. The subject of inquiry produces pure perception: the raw intake of data, structured only by the capacity for intake and prior to being considered as perception. But this "pure perception" has yet no cognitive status, and what we have just called "raw data" becomes data only in and through thinking, which organizes it on the recording surface, and thereby becomes an event surface. It is not yet thought.

The imitation game concerns how the validity of a particular expression can be qualified as a process of production. Playing out this consideration results in a distributed consolidation of the scene. The imitation game stages its own anticipation as the problem of potential transformations on the recording surface. Anticipation attempts to structure a coordinate system for transformation potentials appropriate to the specific recording surface. Qualifying expression concerns the amplification or attenuation of specific modes of imitation in terms of this attentional anticipation. Even as singular images intensify in magnitude, each singular image is not individual. Every movement in the imitation game corresponds to other movements that counter-act and counter-balance the movement, simultaneously reconfiguring the field of interaction both to and from the game. Every image is a composite image, and every compositing simultaneously intensifies and integrates the components it assembles.

Anticipation

A coordinate system for transformation potentials appropriate to the specific recording surface.

With the jury model, Turing has offered an architecture for the imitation game where an envisioned “syntax” surveys the surface that records the condition of imitation as social observation, meaning according to common difference. The jury itself is the lens for observation, but each juror re-constitutes the subject of inquiry as a matter of potential judgement. “Syntactical survey” produces the differential consistency of density durations—syntactical intervals—on the recording surface. The syntax is within the system, a configuration that is a function of the imitation, but which is activated by way of a transformation in scope that places its perspective outside itself. The syntax permits the imitation to take a perspective on an aspect of itself. The syntax is the imitation, but folded back upon itself in a relation that Deleuze and Guattari have referred to as “the subject running around on the body-without-organs”. The “body without organs” is the imitation game as a social tissue: the social body as a machinic abstraction, an abstract machine. This subject is multiple and dynamically emergent, a function of the prosthetic circuits that situate its extension through the common social space, which is the network of connective relays where each machine’s function is superimposed on the others. It is more accurate to say that there are many subjects—many imitation games—running around the surface of perceptual cognition, and that these subjects appear in the animation of various moments of embodied expression. These subjects take up the body without organs to articulate an organic function according to the momentary emergence of their desire (the production of which being all they are).

The circuit is articulated as the between of the syntax and the imitation that the syntax watches. This between space consists in varying degrees of freedom; their varying consolidation becomes a power of intellection. The fissure between syntax and imitation constitutes an essential relation: thinking thinks this relation, which it cannot work out. Thinking constantly collapses the syntax onto the imitation and reveals that the imitation was not where the syntax anticipated. The circuit of thought is expressed as an incorporeal power that organizes the non-mutuality or indeterminacy of the relation. This is one aspect or one perspective on what it means for the body without organs to function as a zeroing principle. The body without organs expresses a unique power: to disembody itself while nevertheless conveying the same force (to expel its organs, which are the machines that brought it to life, and which can then be re-integrated as object relations). This is the power of ecological becoming: the power of the false, which virtualizes that which it desires become.[218]

B: Reaction Potential

Power of the False

The ecological power of thought, which invents the coordinates it requires: a capacity to displace arrangements and re-articulate according to an image of thought in order to work backwards to construct a futural continuity.

The imitation is missing because the syntax stands in its place. The syntax localizes itself according to the intensive coordinates of observation; this is to say: the syntax orients itself according to a principle whose foundations are internal to a non-orientable reversibility that faces the outside so that it can observe intensity at the level of raw data intake, which is the sensational condition of embodiment. The imitation is the configuration of the system itself: its traces, its inscriptions, its tracings, all the forms of its measure—including its indeterminacy—which directly map onto the structure of perceptual cognition (and thereby structure the principle of reality). The “imitation” names quite precisely the possibility of recording (information) that can be articulated in any number of forms.

The imitation game instantiates a mechanism of presentation, automated by a grounding reference to a similitude that presents a concrete idea of a movement that would otherwise be absolutely indeterminate. By subtracting substitution from positive difference, Turing shows that substitution is the principle of interiority that erects a non-intelligent mechanism, G, in place of the idea, B, of a deceptive movement, A, that withdraws from its inquiry, C. The inquiry, C, invents a machinic other, G, to substitute for the deception, A, whose status will be elaborated by way of its non-relation to the grounding zero-reference, B. The question for C is whether it can identify the difference between M and A as the difference between A and B. C substitutes A/B for itself, while it orients itself as C` by subtracting the redoubled function of its own identification, G, from its grounding referent, B, which permits its own indeterminacy as A to become visible.

The problem of position, as a distinction between superimposed images, is the undecidable reversibility of simultaneity and succession. Simultaneity names the emergent structure of the imitation game as a field of expression. Succession names the emergent structure of the imitation game as a sequence of determination. Images intensify because they overlap with other images and have to resolve the collision according to the “physics” of their relation, but the only place a displacement has to “go” is back to the imitation game—where the element arose in a staging of relations of withdrawal—or into another imitation game, where the element will arise again in a staging of relations of withdrawal.

The imitation game plays out consideration in order to exhaust each possible possibility in the interest of its inadequacy; the point is not the negation of all things, but to the contrary, the determination of that which each thing would require as its imitation, and its differential relationship with the subject of inquiry as an inverted vector (a vector of possible change inherent to the present, not of the present’s continuity).[219] Resolution regards the contextual distribution of the point in question, constructing diagramming elements that systematize the superposition by distributing it according to a larger architecture of determination. The question becomes: to what extent must responsibility be produced for this or that movement, and to what extent can these other movements be regarded as already responsible for their own intellection? In Franz Kafka's words, "one gave every thing the responsibility for itself; more still, one gave these things also a comparative and proportional responsibility for humanity".[220] The imitation takes on the significance of the question, which determines the difference between images by permitting the images to articulate themselves.

The imitation game constructs an artifice for condensing a point of exchange. It accomplishes this by sub-dividing into treatments that reproduce parallel reaction potentials between "automation" and "intelligence". This text would go so far as to say that "intelligence" is actually and necessarily "artificial intelligence", in that it involves the activity of an artifice as a consolidated interface for thinking. "Automatic", in this case, denotes that no artifice is involved, which is to say: the intellection is self-identical, constructed in reflex. Pairing artificial and automatic modes of intelligence faces us with the construction of a mode of "conscious" response that would exist only internal to a systematic reflexivity, formulated in Turing's sense of ordinal imitation logics. A doublet is articulated between reflexive engagement and its mediation, which is its own internal articulation of its reflection upon itself.

The difference between automation and intelligence concerns the dynamic character by which the formal matter of incompleteness can be staged. Automated treatments are limited by the conditions of their incompleteness. Contemporary approaches to “machine statistics” or “weak AI” would fall in this category. Artificial—intelligent—treatments relate to incompleteness as an artifice that will be formulated with appeal to another intervening system. Whereas intelligent automaticity situates a reflexive principle, the dynamic conditions of that reflexive principle—the extent to which it can adapt—depend largely on the capacity of reflexivity to reformulate the terms of its own interior cosmology. Artificial modes of treatment construct a formal systematicity that refers back to its own consistency while also opening to its limit conditions. This permits the system to regulate its own cosmology, while permitting conjunction with other cosmological principles.

As Stevan Harnad has noted, Turing’s response to solipsism is that: “the only way by which one could be sure that [the] machine thinks is to be the machine and to feel oneself thinking”.[221] The imitation game stages this problem, which requires that the investigation split from itself so that it can gauge its own standing as itself. “It” is the artificial structure; there is no “itself” apart from the speaking assemblage by which “it” enters into a field of movement that already contains an expressing subject in order to say itself: the imitation game. An ongoing interplay exists between modes of automatic intelligence and modes of artificial intelligence, each forming and formulating the other.

B: Reaction Potential

C: Opinion

The performance objectives of patterning systems include both controlling the locations of events relative to each other and controlling them relative to pre-specified landmarks.

Self-organizing patterns ... form spontaneously and exhibit spacings that depend primarily upon the details of local signal activation, inhibition, and spread, with relatively little influence from events outside the system.

In contrast, long-range morphogen gradients typify boundary-driven organization. They inform cells of their location relative to fixed landmarks.

— **Arthur D. Lander** [222]

Turing offers the jury model in order to ask: from the perspective of the machine, "how will people who do not know how I work consider me?" Addressing what has no determinate position can only be accomplished as a power of determination, without which no position could be determined or determinate. Turing's work on morphogenesis addresses precisely this point. Morphogenesis produces an image of evolving social dynamics as the intelligence of self-reference: how a Turing machine becomes capable of playing the imitation game. "The imitation game" offers a model by which imitation becomes a form of constitutive "self-difference" that will be something other than "one imitator after another": a model by which movement becomes what it is by moving through itself. In this way, "imitation" simulates indeterminacy in order to produce operable terms of determinability or determination. Justin Leiber, one of the few authors in Turing literature to emphasize the structural relations between Turing's disparate engagements, has offered a suggestion similar to the one we make here, proposing that Turing's "work on morphogenesis and his equating 'structure of the child machine' with 'hereditary material' and 'natural selection' with 'judgement of the experimenter'"[223] evidences related domains of concern. Leiber insists that, "Turing's biological and cognitive investigations are closely interrelated", pointing to similarities between Turing's description of the imitation game and his work on morphogenesis. The question becomes how these machines establish their social character, which coordinates a living body as an isolated ecology embedded in an open space.

Literature discussing Turing's model for morphogenesis often quotes a remark from Turing about a zebra. The quote is offered so frequently that it is difficult to track its precise origin. Paulien Hogeweg reports that it comes from a meeting organized by the Biological Science Research Council in collaboration with the Society for Experimental Biology. Hogeweg reports that, "[Francis] Crick quoted Turing as saying in reaction to enthusiasm about his work: 'Well, the stripes are easy but what about the horse part?'"[224] Turing's statement can be understood as an implicit, witty reference to the importance of the imitation game in formulating the specificity of morphogenesis: both horses and zebras are considered part of the taxonomic family *Equidae*, but zebras are not horses; if zebras can be said to have "horse parts", then horses also must be said to have "horse parts", which are also "zebra parts"— the parts themselves belonging to *Equidae*, which horses and zebras could then both be said to "imitate".[225] The imitation game formulates the problem of the Zebra's horse parts by expresses two forms of statements: statements that would model dynamics to produce a futural horizon, statements that would regulate dynamics to stabilize a line of continuity.[226] Statements organize distributed models of the space addressed by a given system, either grounding the existing formulation of systems or otherwise contributing to new system formulations.

The imitation game produces an intersection between independent formulates expressed by A, B, and C. This intersection stages the multiple character of thought, which can then be sliced by any mode of selection or merged by any mode of affirmation. Inquiry—the figure C—articulates the asymmetrical split found between A and B. Mathematical presentation spaces the image of thought, which is the differential potential we call "language". Yet, as we have noted previously, the intersection of A, B, and C is premised on unequal and incommensurate roles. C's status must remain undecidable according to the determinations that will have been made in the imitation game, otherwise the circuit becomes merely a function of given identification. Turing notes the importance of this in the context of the morphogenesis example:

> The only morphogen which is being treated as an evocator is C. Changes in the concentration of A might have similar effects, but the change would have to be rather great. It is preferable to assume that A is a "fuel substance" ... whose concentration does not change. The concentration of C, together with its combined form C`, will be supposed

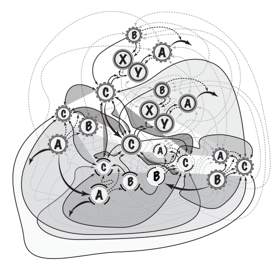
> the same in all cells, but it changes with the passage of time. Two different varieties of the problem will be considered, with slightly different assumptions.[227]

G is internal to the C—C` circuit, as the machinic difference that C materializes in the scene as a relation of non-resemblance. Insofar as G takes the position of A, C must resolve itself as a spiritual automaton in A. This presupposed animating notion produces the condition by which G can be substituted for A, which prompted C to initiate the circuit of inquiry. C resolves itself in A as an immanent non-relation to G, redoubled in constructively alienated self-relation as B's assistance with the identification of A, which G, by way of C—C`, also is. Simultaneously, C discovers itself in its displacement from B—insofar as it is rigorously scientific and therefore concerned with the empirical status of the alienated interstice that determines the state of its indeterminacy—because B is the singular expression of the mutual relation A/B as an expression of the integral difference G. G is the machinic difference internal to C—C` that becomes externalized by way of its alienation *in the scene*, where the force of its determination is redoubled in the withdrawal of other indeterminacies; in other words: C—C` only exists as a function of the A—B circuit that inflects C's doubling into C`.

By this relation, C moves itself into and through the game. Searle's Chinese Room comes to life as Turing's instruction manual—the table of instructions constituting Searle's magic book—writes itself as the machinic expression of the integral difference that animates the inquiry's movement into the scene of its inquiry. G appears as the infinite set of movements inherent to the determination of human inquiry such that the machinic foundation of inquiry found in M can simultaneously provide support for the articulation of the human and also withdraw as the element that automates human intelligence. In other words, insofar as A is projected into the scene by C's project of inquiry, B is already there in the scene, awaiting A's arrival; the determination of the scene vis-a-vis any possible relation A/B is captured in the automation of the scene as a machinic intelligence (M). C deals with the fact that M is inside "it" before "it" is in "itself" by casting the difference M as A/B, a symbolically coordinated re-presentation of difference (which Turing understands in his example as sexuation).

The intelligent machine animates the exigency of the spiritual automaton that the inquiry is. C—the inquiry—elaborates the non-relation that it is in terms of its projected attempt to disguise its non-relation to itself as its self-relation elaborated through another. C is inquiring after A, which we know to be M. M is the machinic determinacy of the inquiry, which is elaborated as the interstitial difference A/B. C is therefore actually inquiring after its own machinic instantiation as the automation of the orientation of its own not-yet-thinking, whose duration stages itself as the intelligence of the scene. The presupposed difference A/B, which permits M to be introduced only after the fact, allows the inquiry to presuppose its own conclusion, thereby structuring its own terms according to the efficacy demanded by their production. C thus engages itself as the determination of the indeterminacy inherent to the determination of C's thinking (the scene, which includes and exceeds C, but only insofar as C constitutes its orientation as a machinic inquiry).

Machine C
Intrinsic Consistency



Machine C formulates the density of anti-formal reversibility in intrinsic determination, articulated as volumes of machinic determination captured in ordinal manifolds.

The problem of the artifice—"its" perspective—is also the problem of intellection. C doesn't know its own identity, and C doesn't know how to differentiate itself from the identity of another—A from A/B—that it wishes to differentiate. The artifice is staged as the problem of its own interiority relative to the interiority of another—the edifice—to which it is internal. C may literally be either—A's or B's staging of the sexes, however understood—and is thus the figure of sexual difference itself. The imitation outside the artifice "falls in" to the intensive space of the artifice. The artifice is itself a conceptual inscription upon the imitation's perceptual cognition. But the status of sexual difference, C, is that it remains wanting of the status of A/B.

Inquiry is made possible because machinic determination carries it out and produces its readability. By making C the orientation of inquiry—and also, by nominalizing C as a sort of fulcrum—Turing allows the subject of inquiry to have its own position of deception, imitating the game wherein an interrogator would have been distinct in position from the subject of its inquiry as the subject of its determination. C—as machine—appears as the space of continuity internal to sexual difference as the intelligence of the inquiry's desire—the imitation game as the production of desire internal to an inquiry—figured as indeterminately ambiguous knowledge regarding self-identity.

At this point we encounter once more the problem with which we began: can machines think? The machine is the problem— can it think what it is? Can the machine, G, identify (C`) whether it (C) is man (A) or woman (B) by replacing man or woman on the other side with a presence of its own similitude? The idea of the "side" functions as the division that enables C to establish its relationship to A as one of intelligence (sexuation). This is to say, if there are two sides, one is "on" the side itself, which splits itself in negotiating its own orientation (what Turing figures as the "teleprinter"). Having given itself over to itself as the new question, C now identifies with A as a machine (G), and arranges its concern through B. C learns to program the concept of A in relationship to the baseline concept B, which G figures as its foundational interstice, A/B.

What speaks? What adopts a perspective? or from what perspective can we speak of a perspective being adopted? or put otherwise, what is it that becomes oriented in taking a perspective? What becomes potentially paralyzed in adopting one perspective or another? What sort of orientation or perspective is creation such that it could take on a perspective? The subject of inquiry is the world-projection that places the subject of significance in the imitation game that had to be constructed for it. The "self"—the "it" that it names "itself"—is the fact of the expression that articulates it as a binding function.[228] The substitution "I" stands in for the capacity to interface with a process of articulation. "I" names the terms by which the process can be expressed and assembles the continuity of the development process. The materiality of the statement—for example, its "sound image", as uttered in speech, but just as easily an optical image as provided by photoreceptors in the eye—formulates itself, in the substitution of the "I" for itself, as an expression that might resolve the tension of its confusion.

For example, take the statement: "I want a sandwich!"[229] Concerning the wanting sandwich, the self is the formulation of itself as the expression that results from the circuit of wanting-sandwich-subject. The sandwich becomes the interface to a complex motility. In the statement—"I want a sandwich"—the "I" expresses the wanting of a sandwich: its absence, its definition as a sandwich, the possible ways it could be produced or acquired as a sandwich. "I" has no substance other than its movement through the statement that defines it as wanting-a-sandwich. What is the "wanting" of a sandwich? That which is “wanting” of the sandwich is that which finds its sandwich (the one it wants) “wanting”. The missing element desires its space because its “missing” character is its virtual force of becoming (becoming what it is: the full image of itself).[230]

“I” names the internal displacement of the subject of inquiry, referring back to itself in order to consolidate a central absence from which the concentric circles that work the distributions of this confusion are drawn. The subject of inquiry formulates a residual agency: a non-localizable indeterminacy that can figure itself only as the simultaneity of cohesion, which is an incompossible matter, consuming and consummating all of the metastable states in which it is born and reborn. The “I” is not an agent but a reference to the absence that puts inquiry to work, unfolding its expression as a diagram of its subject that will figure it as present. “I” is the productive character of absence, a continuity formed through the coherence of movements in a simultaneity. “The” agent is produced out of degrees of freedom as a concentric location within the fractal unfolding of pockets of determination and over-determination (”institutions”).[231]

I

The internal displacement of the subject of inquiry, referring back to itself in order to consolidate a central absence from which the concentric circles that work the distributions of this confusion are drawn.

There is an agent because “its” determination got confused. “The” agent serves a differentiating function, delimiting territories of capacity as potential force investments. Its singularity—“the” agent—depends precisely on the character of this delimitation. Each concentric location has its own agency, and in precisely this sense “the” agent does not “exist” at all; yet “the” agent formulates a essential absence: a negative space that conditions the articulation of all that is expressed. Sigmund Freud’s description of this point offers a great deal of clarity:

> The process is as if a distribution—we suggest: of the psychic accent—were to materialize upon the way of each material of prosthetic agency until imagination's positing of images, initially charged weakly with intensity, arrives at a stronger intensity—conquering the stowage of a proximal garrison that was initially more intensive—which the imagination's positing of images empowers and capacitates in order to exact therefrom an influx into the knowledge of being (consciousness). Such distributions do not astonish us in any way, insofar as they comport themselves toward the fashioning and fitting of affective-quantities, or, above all, toward motor-actions.[232]

The agent is produced as a counter-effectuation to affect, which is the quality of the force that marks an opening into the contingency of the condition, which is neither felt nor experienced. The agent presents the retroactive motivation of its own production: the agent is “counter-effectuated” by the contingency of the condition. Counter-effectuation is how the agent literally works itself out, outside—into the clearing—by following the forces that came “in”.

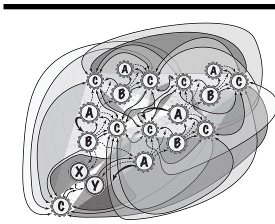
C: Opinion

The Agent

A differentiating function that delimits territories of capacity as potential force investments.

There is an agent because what will have become the subject got confused with its condition of subjection. The tension of its confusion is its syntax; the confusion that is its tension is the creativity of its syntax. This is because "the" subject is always "of" a particular statement: its territory of unfolding. Determinacy is what separates an "object" from its diagram that would situate it as a subject of inquiry. Determinacy quite literally "objectifies" the subject of significance, detaching it from the diagram, splitting the diagram from the diagrammatic activity. For this reason, thought requires something to think about that is not itself. Without this unthought element, thinking has no organization. The missing character of the "something" is the difference between the subject of inquiry and the subject of significance. There is no clear point of reference for this difference, yet imagining a reference point that stands in for the ambiguity of who or what "I" refers to seems to pose little difficulty. "I" poses a text without context: a sandwich without a reason. The imitation game imitates the missing character of the "I" for which it will be substituted. The imitation game ensures that, as a pronoun, the statement reflects its meaning on the "I". "I" is the meaning that contextualizes "want a sandwich" on an ordinal manifold. "I" is the placeholder,

Machine C
Extrinsic Consistency



Machine C formulates the density of formal reversibility in extrinsic determination, articulated as volumes of machinic determinability captured in ordinal manifolds.

C`, for the position, C, that the imitation game will have programmed in substitution for itself, which it utilizes to refer back to itself, as it runs through itself. C` organizes the position of C` as a constructive engagement with potential. C` evokes itself in C. “I” is the singular name of determinacy, which is the simulation of a universal, absent an actual condition of simulation.

The final constructive concern is unit definition. Unit definition implicates the whole of thinking, as it directly determines the convertibility of forms. Unit definition is the infinitely recursive character of measure, formulating automatic or implicit relations of determinacy.[233] The relations function as power diagrams that influence potentials of connectivity and that permit the agent to be formulated in its absence as the power it is supposed to be as “itself”. This “power” is nothing other than a diagram of capacity, the formal structure of which Turing presents with the imitation game: the necessity of B in the field of identification, which is its visible, differentiated presence as an expression of the relative truth of determinacy inherent to A. This differentiated presence is staged as the relation C, which is the redoubling of the ambiguity inherent in the relation A/B. Insofar as B does not become distinguished from A, deception stands in for the reference that sustains the truth that has been deceived. C is able to stage the relation of A to B insofar as C is able to distinguish M from A by way of B’s assistance. B’s assistance guarantees a quanta as a sense of measure. Sense appears as the metric of self-reference, formed by relating itself to itself as a condition of qualification by way of differential traces formed as sensation.

Unit Definition

The infinitely recursive character of measure, formulating automatic or implicit relations of determinacy.

What might be called "desire" is nothing other than the resistance of indeterminacy to this systematization. It is precisely this resistance that systematization is always in a movement of thematizing, in that it is precisely what eludes systematization. Differentiating movements requires the capacity to distinguish simultaneous spaces and spaces that are defined by their exceptional relation to simultaneity. The specific architecture of this negative space is formulated through "interpretation", which names the problem of difference between potential formulations in articulation, and through "style", which concerns problems of commitment between the determination of distinct potentials.

Desire

The resistance of indeterminacy to systematization.

Interpretation

The problem of difference between potential formulations in articulation.

Style

Problems of commitment between the determination of distinct potentials.

The problem of truth has quietly been introduced and resolved without ever being revealed as problematic, its contingency incepted and withdrawn as the quilting point that orients the scene.[234] Insofar as this quilting point does not become apparent as the element that ties together the otherwise disparate elements, the problem of truth does not appear to be a problem. The problem of machine, as an artificial intelligence, is the problem of staging truth as a problem and then resolving the problem in such a way that the contingent status of truth is never regarded as problematic. Paul Kockelman has seized on this point, emphasizing that Turing's work functions to produce a focal lens for intelligent considerations:

> The Turing Test is really a kind of Rorschach test for the questioner's sense of self, current theories of the brain and body relation, the robustness of our knowledge of a population's statistical profile, and more or less fashionable ideas about putative human-specific processes (e.g. recursion, meta-cognition, sub-cognition, joint attention, theory of mind, performativity, intersubjectivity, shared intentionality, singular-humanism, and so forth). In this way, the real value of the Turing Test is akin to science fiction: functioning not as an augury of the possibilities to come, but as a symptom of the prejudices that are.[235]

Turing's configuration of the imitation game illustrates, in example, how gender comes to arise through sociality, which consists in orchestrated displacements of the power of determination. These orchestrated displacements constitute what we could call "intelligence" as irreducibly social. This means we are no longer describing social intelligence as conformity to social expectations but rather as the constitution of social coordinates, which are being ceaselessly remade.

> **Intelligence**
> Orchestrated displacements of the power of determination.

Even if absolutely everything is to be affirmed, affirmation is possible only by way of an initial staging of displacements and a corresponding return to the displacements as investments that would constitute the "everything". Turing offers a formalization of this relation in his response to the "theological objection": "I am unable to accept any part of this, but will attempt to reply in theological terms."[236] In other words, the disbelief that appears as a manner of resistance to the deviation in attempted knowledge can be staged only as the positive formulation of a systematizing articulation that would programmatically account for the possibility of knowledge. This formulation arises only insofar as the position in question—the standard for deviation—can no longer be sustained. In this sense, desire does not at all consist in action or the preparedness for action. Action, rather, consists in the articulation of desire's about-face: the means by which the systematic comes to revolve about its point. Systematicity pivots on this point—"desire"—as the condensation of centrifugal forces. In other words, certain articulations of desire only become systematically possible once systematicity has significantly re-oriented itself;

such a re-orientation names the condition of “perspective”, which first may demand movement in order to become potentially possible.

The problem of the intelligent machine is the problem of the problem, which it stages as a language of truth, formulating its contingency as the relay between a syntactical formulation and an action mechanism. The problem simultaneously presupposes and introduces this language of truth, which orients all terms such that that each returns to the others and turns the others to return to themselves. C is the non-relation that it attempts to elaborate as a relation to itself. It does so because “itself” is G: C’s substitutive elaboration of its own self-alienated identification, to which it is not yet related (but to which its relation will have been well established). If G is literally automating C’s inquiry from within—unfolding in accordance with an external presentation of a difference that does not belong to C, a fact that C dutifully displays in its automation—the displacement is between C, which believes it is already internal to itself by way of the inquiry that stages it in relation to the scene, and G, which is internal to C’s inquiry, C—C` (already thought to be internal to itself) without appearing to be internal to C.

Systematization articulates that which it cannot conclude by traversing this network of relations that revolve around the point in question. This point is the impossible articulation that systematization cannot yet find, which it must produce as the condition of its not-yet: “structuralism”, which names the problem of coordinating multiple conflicting desires, insofar as each implies particular ordinal obligations.[237] A relation of displacement is found in the tension internal to knowledge; knowledge can be consolidated only insofar as consistency can be discovered in the local context of displacement. “Desire” names the isomorphic consistency of this impossible point, whose impossibility orients the potentiation of the possible. The morphogenetic element—the imitation game—formulates an analytic position for itself between two positions: as a constructive building block in larger formulations, it is supposed to know how to take part; as an individual point of emergence, it does not yet have any notion of “where it is” in the context of such a larger structure.[238] It is the tension between these positions that demands that it become something, which means discovering for itself a system of reference that—so far as its potential is concerned—does not yet exist and is already underway.

Imitators.—

A: Come again? You would do without imitators?

B: I would not have someone make something as my imitation;

I would that every one put one over on themselves:

the “itself”,

the splitting of the same,

which “I” enact.

A: So —?

— Friedrich Nietzsche [239]

Nachahmer.—

A: Wie? Du willst keine Nachahmer?

B: Ich will nicht, dass man mir Etwas nachmache,
ich will, dass Jeder sich Etwas vormache:
das Selbe,
was ich tue.

A: Also —?

— Friedrich Nietzsche

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Endnotes

1 Gunderson, Keith. “The Imitation Game”.

Italics are in place of non-italic parenthetical in original.

2 Fodor, Jerry. “The Big Idea”. 6.

Unmarked phrases omitted, sense not altered.

3 Turing, Alan. “Can Digital Computers Think?”. 483.

4 Reader, A V. “Steps Towards Genuine Artificial Intelligence”.

Reader appears to be responsible for the first publication of the term “Turing test”.

5 Gödel, Kurt. Remarks before the Princeton bicentennial conference on problems in mathematics. In M. Davis (Ed.), The undecidable: Basic papers on undecidable propositions, unsolvable problems and computable functions. New York: Raven Press. 84–88.

Reference found in Leiber, Justin. “Turing’s Golden: How Well Turing’s Work Stands Today”. 16. Emphasis mine.

6 Leiber, Justin. “Turing’s Golden: How Well Turing’s Work Stands Today”. 43-44.

7 Penrose, Roger. *The Emperor's New Mind*. 30-31.

8 Turing, Alan. “Intelligent Machinery”. 414.

9 Turing, Alan. “Systems of Ordinal Logic”. 151.

10 Turing, Alan. “On Computable Numbers, with an Application to the *Entscheidungsproblem*”. 74.

Parenthesis are originally brackets in Turing’s version, included by Turing; changed to parenthesis to avoid confusion with editorial additions or modifications.

11 Turing, Alan. “On Computable Numbers, with an Application to the *Entscheidungsproblem*”. 58.

12 Turing, Alan. “On Computable Numbers, with an Application to the *Entscheidungsproblem*”. 74.

Brackets are Turing’s.

13 Piccinini, Gualtiero. “The Mind as Neural Software?”. 289.

14 Turing, Alan. “Lecture on the Automatic Computing Engine”. 392.

15 Graziano, Michael. “How the Light Gets Out”. 4.

16 http://en.wikipedia.org/wiki/Gottfried_Wilhelm_Leibniz, accessed on 10/12/2013.

17 Turing, Alan. “Systems of Ordinal Logic”. 152.

18 Churchland, Paul M. “On the Nature of Intelligence: Turing, Church, Von Neumann, and the Brain”. Parsing the Turing Test: Philosophical and Methodological Issues in the Quest for the Thinking Computer. Ed. Robert Epstein, Gary Roberts, & Grace Bebe. Springer, 2008. Kindle. Kindle Locations 1316-1317.

19 Turing, Alan. “Systems of Ordinal Logic”. 151.

20 Turing, Alan. “Can Digital Computers Think?”. 484.

21 Turing, Alan. “Computing Machinery and Intelligence”, section 7, “Learning Machines”.

22 Fodor, Jerry. “The Big Idea”. 6.

23 Turing, Alan. “Computing Machinery and Intelligence”, section 7, “Learning Machines”.

24 Deleuze, Gilles, and Felix Guattari. *A Thousand Plateaus*, 389.

For the semantic significance of a syntactical mark, see Derrida, Jacques. Dissemination, 222.

25 The most sophisticated examples of this at present are in the field of machine statistics.

Learning algorithms produce abstract syntactical organizations, where the “learning”. aspect consists precisely in the automated statistical distribution of organizations in order to maintain a syntactical separation of data.

The separations produced by the learning network can be taken to correspond precisely to symbols, which is the function they generally serve by delivering output conclusions to other aspects of the program.

26 Fodor, Jerry. “The Big Idea”. 6.

27 Fodor, Jerry. *The Mind Doesn't Work That Way*. 226-236.

28 Fodor, Jerry. “The Big Idea”. 6.

29 Lassègue, Jean. “Doing Justice to the Imitation Game”. Kindle Locations 2076-2081.

30 Melnyk, Andrew. “Searle’s Abstract Argument Against Strong AI”.

31 Longo, Giuseppe. “Programs, Proofs, Processes”. 283.

32 Longo, Giuseppe. “Programs, Proofs, Processes”. 283.

33 Longo, Giuseppe. “Programs, Proofs, Processes”. 283. Emphasis mine.

34 Gödel, Kurt. In M. Davis (Ed.), The undecidable: Basic papers on undecidable propositions, unsolvable problems and computable functions (39–73). New York: Raven Press. (Lecture notes originally taken by S. Kleene & J. Rosser in 1934).

Reference found in Leiber, Justin. “Turing’s Golden: How Well Turing’s Work Stands Today”. 16.

35 Pereira, Luís Moniz. “Turing Is Among Us”. 1267.

Pereira notes that “epistemic arithmetic”. for Reinhardt refers to “Peano’s enriched with a knowledge operator”.

36 Deleuze and Guattari, *Anti-Oedipus*. 120, 141.

Unmarked phrases omitted, sense not altered.

37 A “common space with no definition of its own”. is the programmatic context corresponding to the unfortunate political notion referred to as “the tragedy of the commons”. The actual tragedy of the commons is that the commons had no definition, and so were never treated directly as a concern.

38 Turing, Alan. “Computing Machinery and Intelligence”, section 1, “The Imitation Game”. Emphasis mine.

Unmarked phrases omitted, sense not altered.

39 Lucas, J R. “Minds, Machines and Gödel”. 115.

40 Bogost, Ian. “The Great Pretender”. 4. Emphasis mine.

41 Penrose, Roger. *The Emperor's New Mind*, 67.

42 Shieber, Stuart M. “The Turing Test as Interactive Proof”.

43 Pereira, Luís Moniz. “Turing Is Among Us”. 1272.

44 Spinoza, Baruch. *The Ethics.*

45 Turing, Alan. “Can Digital Computers Think?”. 484.

46 Turing, Alan. “Computing Machinery and Intelligence”, section 6, “Contrary Views on the Main Question”. “Objection 7: Argument From Continuity in the Nervous System”.

47 Deleuze, Gilles. *The Logic of Sense*. 304.

48 Deleuze, Gilles. *Difference and Repetition*. 4-5.

49 Graziano, Michael. “How the Light Gets Out”. Aeon Magazine (2013): 1-2.

50 Legg, Shane, and Marcus Hutter. “Universal Intelligence”. 411.

51 Deleuze and Guattari, *What is Philosophy?* 185

52 Bogost, Ian. “The Great Pretender”. 2.

53 Bogost, Ian. “The Great Pretender”. 2.

54 Turing, Alan. “The Chemical Basis of Morphogenesis”. 523.

This particular example should be referred also to the discussion regarding incomputable numbers appearing as relations in Turing’s halting problem.

55 Gödel, Kurt. Remarks before the Princeton bicentennial conference on problems in mathematics. In M. Davis (Ed.), The undecidable: Basic papers on undecidable propositions, unsolvable problems and computable functions (84–88). New York: Raven Press.

Reference found in Leiber, Justin. “Turing’s Golden: How Well Turing’s Work Stands Today”. 16. Emphasis mine.

56 Turing, Alan. “The Chemical Basis of Morphogenesis”. 519-520.

57 Turing, Alan. “Computing Machinery and Intelligence”, section 1, “The Imitation Game”.

58 Turing, Alan. “Computing Machinery and Intelligence”, section 1, “The Imitation Game”.

59 Deleuze and Guattari, A Thousand Plateaus, 37-38.

60 Piccinini, Gualtiero. “The Mind as Neural Software?”. 295.

61 Moor, James H. “The Status and Future of the Turing Test”.

62 Traiger, Saul. “Making the Right Identification in the Turing Test”.

63 Deleuze and Guattari, *What is Philosophy?* 153-154.

64 http://en.wikipedia.org/wiki/Constructive_ordinal, accessed on 8/19/2013.

65 This is the definition of Marx’s commodity form, as laid out in chapters 1-3 of *Das Kapital.*

66 Deleuze and Guattari, *What is Philosophy?* 154.

67 Moor, James H. “An Analysis of the Turing Test”.

68 A term that prior to Turing referred primarily to mathematicians whose primary work concerned the analytic treatment of computable relations.

69 Blanchot, Maurice. *The Infinite Conversation*. 216.

70 Turing, Alan. “Computing Machinery and Intelligence”, section 5, “Universality of Digital Computers”.

71 Deleuze, Gilles and Felix Guattari, *What is Philosophy?* 89.

72 Deleuze, Gilles. *Difference and Repetition*. 4-5.

73 Floridi, Luciano. “Levels of Abstraction and the Turing Test”.

74 Turing, Alan. “Lecture on the Automatic Computing Engine”. 378.

75 Deleuze, Gilles, and Felix Guattari. *A Thousand Plateaus*, 71, 251-252.

Deleuze, Gilles, and Felix Guattari. *Anti-Oedipus*, 287-288.

76 Deleuze, Gilles. *Difference and Repetition*. 172-173.

77 Turing, Alan. “Computing Machinery and Intelligence”, section 5, “Universality of Digital Computers”.

78 Wittgenstein, Ludwig. Wittgenstein’s Lectures on the Philosophy of Mathematics, Cambridge,

Reference found in Leiber, Justin. “Turing’s Golden: How Well Turing’s Work Stands Today”. 15.

79 Turing, Alan. “Systems of Ordinal Logic”. 149.

80 Dyson, George. Turing's Cathedral: the Origins of the Digital Universe.

81 Hodges, Andrew. “The Essential Turing”.

82 Turing, Alan. “Can Digital Computers Think?”. 484.

83 Turing’s understanding of Cryptanalysis can be understood as an implicit relation that Turing discovered between ostensibly abstract systems and the terms by which they appear to operate.

Turing’s approach to modeling indeterminate points of inquiry should be considered in parallel with Jacques Lacan’s understanding of Psychoanalysis, which was developed during approximately the same time period.

Lacan was concerned with “taking psychoanalysis out of the clinic”. which he understood to mean: modeling Psychoanalysis as a formal system, describable as relative displacements, such that the specific displacements can be formalized as mathematic expressions. Mental behavior cannot be reduced to computation; rather, the complexities at stake in a particular context of intersecting dynamics can be formulated so that points of maximum tension can be identified and examined in further detail.

84 Geoghegan, Bernard Dionysius. “Agents of History: Autonomous Agents and Crypto-Intelligence”.

85 Dresner, Eli. “’Effective Memory”. and Turing”s Model of Mind.”.

86 Rhee, Jennifer. “Misidentification’s Promise: the Turing Test in Weizenbaum, Powers, and Short”.

87 Turing, Alan. “Computing Machinery and Intelligence”, section 1, “The Imitation Game”.

88 Deleuze and Guattari, *What is Philosophy?* 169.

Unmarked phrases omitted, sense not altered.

89 Turing, Alan. “Can Automatic Calculating Machines Be Said To Think?”. 495. Emphasis mine.

90 Turing, Alan. “Computing Machinery and Intelligence”, section 3, “The Machines Concerns in the Game”.

91 Deleuze, Gilles and Felix Guattari, *What is Philosophy?* 70, 75-76.

92 Turing, Alan. “Computing Machinery and Intelligence”, section 6, “Contrary Views on the Main Question”. “Objection 3: The Mathematical Objection”.

93 Turing, Alan. “Systems of Ordinal Logic”. 178.

94 Deleuze, Gilles. *Difference and Repetition.* 28-29.

95 Longo, Giuseppe. “Programs, Proofs, Processes”. 278.

96 Turing, Alan. “Can Digital Computers Think?”. 483.

97 http://en.wikipedia.org/wiki/Constructive_ordinal, accessed on 8/19/2013.

98 Turing, Alan. “Systems of Ordinal Logic”. 178.

99 Turing, Alan. “Systems of Ordinal Logic”. 170-171.

100 This corresponds to Gilles Deleuze’s work in Cinema 1 regarding what he calls “the rational cut”. which explores the syntactical standing of sequence as a function of transition, emphasizing terms of iterability and continuity.

The expansion of the system constitutes its exteriority, which is an indirect reference by which the system returns to itself and delivers to itself an aspect by which it can understand its own sequential movement of continuity. Only after establishing the addition of the second system is the first system consolidated as part of a definite sequence wherein it could be judged continuous.

101 This corresponds to Gilles Deleuze’s work in Cinema 2 regarding what he calls “the irrational cut”. which explores the non-isomorphic standing of ruptures in syntax that—being artificially appropriated in a sequential assembly—create a false continuity that is not iterable, but which differentiates the potential at stake in iterability by continually differentiating it internally.

In a counter-intuitive sense, the severing of the system thus constitutes “internality”. which refers to its potential of iterability; this potential is formulated as the retroactive determination of the initial system by way of the reformulation. Distinguishing the internal standing of the first system requires the constitution of a second system by which this evaluation could be assessed; the reformulated system thus takes on the role, from the outside of the first, of guaranteeing the consistency discovered in the first.

102 http://en.wikipedia.org/wiki/Constructive_ordinal, accessed on 8/19/2013.

103 Blanchot, Maurice. *The Infinite Conversation.* 428.

104 Turing, Alan. “Systems of Ordinal Logic”. 192.

105 Turing, Alan. “Systems of Ordinal Logic”. 192.

106 Turing, Alan. “Systems of Ordinal Logic”. 192.

107 Turing, Alan. “Computing Machinery and Intelligence”, section 6, “Contrary Views on the Main Question”.

108 Deleuze, Gilles. *The Logic of Sense.* 39-40.

109 Lucas, J R. “Minds, Machines and Gödel”. 113.

110 Turing, Alan. “Systems of Ordinal Logic”. 192.

111 Deleuze, Gilles and Felix Guattari, *What is Philosophy?* 157-158.

112 Turing, Alan. “Systems of Ordinal Logic”. 192-193.

113 Turing, Alan. “Systems of Ordinal Logic”. 192.

114 Turing, Alan. “Systems of Ordinal Logic”. 192.

115 Turing, Alan. “Systems of Ordinal Logic,”. 192.

116 Turing, Alan. “Letters on Logic to Max Newman”. 215.

117 Deleuze, Gilles, and Felix Guattari. *A Thousand Plateaus.* 254-255.

118 http://en.wikipedia.org/wiki/Domain_of_discourse, accessed on 10/9/2013.

119 Abramson, Darren. “Turing’s Responses to Two Objections”.

120 Deleuze, Gilles. *The Logic of Sense.* 40-41.

121 Turing, Alan. “Systems of Ordinal Logic”. 193.

122 Lucas, J R. “Minds, Machines and Gödel”. 123.

123 This is reportedly how Turing resolved the problem of German “one-time”. pads, tracing a syntax of their creation from the consistent patterns of behavior enacted by the secretary responsible for generating the pads.

124 Deleuze, Gilles. *The Fold.* 27.

Unmarked phrases omitted, sense not altered.

125 Adams, Douglas. *Hitchhiker’s Guide to the Galaxy*.

126 Borges, Jorge Luis. “The Library of Babel”.

127 Quine, W.V.O. “Universal Library”.

128 Deleuze, Gilles and Felix Guattari. *What is Philosophy?* 89.

129 Turing, Alan. “Computing Machinery and Intelligence”, section 6, “Contrary Views on the Main Question”. “Objection 4: The Argument From Consciousness”.

Harnad, Stevan. “Can a Machine Be Conscious? How?.”

130 Lassègue, Jean. “Doing Justice to the Imitation Game”. Kindle Locations 2168-2181.

131 Graziano, Michael. “How the Light Gets Out”. 1-2.

132 Turing, Alan. “Intelligent Machinery”, 416.

133 Sokolowski, Robert. “Natural and Artificial Intelligence”. 47.

134 This reflects the concerns described by Ferdinand de Saussure, who has expressed that “The sign, which is social”. is “a double entity, one formed by the association of two”. and which is elaborated in terms of a circuit of exchange that unifies concept and statement in order to realize a charged network of relations.

Saussure, Ferdinand de. Course on General Linguistics. 17, 65, 12.

135 Turing, Alan. “Intelligent Machinery”. 417.

136 Bombardi, Ron. “The Education of Searle’s Demon”. 11-12.

137 What Lacan has called “an incessant sliding of the signified under the signifier ... a double flux”.

Lacan, “Agency of the Letter in the Unconscious”. 154.

138 Freud names this the “unconscious”. and pursues it by way of the “dream-work”. Freud is describing the virtuality of coordinates, which here comes to confront virtuality without coordinates.

The dream-work is what forms in between the coordinated and uncoordinated. The uncoordinated is the reality that thinking coordinates insofar as it thinks it as its reality. What Freud understands—as do Lacan, Deleuze and Guattari, and perhaps a handful of other Freudians—is that the dream-work consists in the performance of the impossible: the coordination of the uncoordinated.

139 Lacan, “Agency of the Letter in the Unconscious”. 163.

140 Deleuze, Gilles and Felix Guattari, *What is Philosophy?* 37-39.

141 Foucault, *Death and the Labyrinth*, 29.

142 Deleuze, Gilles and Felix Guattari, What is Philosophy? 120-122.

143 Turing, Alan. “Computing Machinery and Intelligence”, section 6, “Contrary Views on the Main Question”. “Objection 9: The Argument From Extrasensory Perception”.

144 Blanchot, Maurice. *The Infinite Conversation*. 53.

145 Schweizer, Paul. “The Truly Total Turing Test”. 266.

146 Barsalou, Pezzulo, Fischer, McRae, and Spivey. “Computational Grounded Cognition: a new alliance between grounded cognition and computational modeling”.

147 Deleuze, Gilles, and Felix Guattari. *A Thousand Plateaus*. 106-107.

148 Davis, Martin. “Turing Reducibility?”. 1218.

149 Piccinini, Gualtiero. “The Mind as Neural Software?”. 297.

150 Graziano, Michael. “How the Light Gets Out”. 1.

151 Turing, Alan. “Computing Machinery and Intelligence”, section 6, “Contrary Views on the Main Question”.

152 Turing, Alan. “Intelligent Machinery”. 418.

153 Gilles Deleuze. *Two Regimes of Madness.* 266.

154 Turing, Alan. “Computing Machinery and Intelligence”, section 4, “Digital Computers”.

155 Turing, Alan. “Intelligent Machinery”. 416.

156 Zenil, Hector. “Turing Patterns with Turing Machines: Emergence and Low-Level Structure Formation”. 292.

157 Lander, Arthur D. “Pattern, Growth, and Control”. 957.

158 Deleuze, Gilles, and Felix Guattari. *A Thousand Plateaus.* 109, 511-512.

159 Lacan, “Agency of the Letter in the Unconscious”. 152.

160 Lacan, “Agency of the Letter in the Unconscious”. 153.

161 Lacan, *Ecrits*. 21.

162 Graziano, Michael. “How the Light Gets Out”. Aeon Magazine (2013): 1.

163 Turing, Alan. “Can Digital Computers Think?”. 486.

164 Levinas, *Totality and Infinity*. 23, 177.

165 Saussure, Ferdinand. *Course on General Linguistics*. 73.

166 This corresponds to Gilles Deleuze’s work in Cinema 1 and Cinema 2, in regard to which it could be considered an effective definition of the problem of cinema, which is how movement consolidates itself as a formal continuity.

The movie can be understood as a sequential unfolding of ever-expanding trees of ordinal logic, each proposition closing the system’s internal relations in on itself, yet in doing so also expanding the possible freedoms that can explode from the irrational gaps between anticipated images of continuity.

167 Deleuze and Guattari, *A Thousand Plateaus*. 84.

168 Saussure, Ferdinand. *Course on General Linguistics*. 66.

169 Deleuze, Gilles. *Difference and Repetition.* 101-102.

170 This should be seen as Deleuze and Guattari’s notion of a cutting edge of deterritorialization as well as Spinoza’s concept of the adequate idea.

An adequate idea, for Spinoza, requires that the entire set of presuppositions entailed in the idea are stated in the construction of the idea itself. In this sense, the adequate idea is a concept not dependent upon any other, and is therefore capable of expressing itself.

It important to note that while the adequate idea here begins with an objection, the objection is not the adequate idea but rather its “power plant”. which arrives from outside, and which becomes an adequate presupposition insofar as it energizes the capacity to respond.

171 Simondon, Gilbert. *Individuation psychique et collective* (Psychic and Collective Individuation).

172 Turing, Alan. “Computing Machinery and Intelligence”, section 7, “Learning Machines”.

173 Pereira, Luís Moniz. “Turing Is Among Us”. 1263.

174 “The character of truth is indivisible, so she can not identify herself; whoever desires to identify her must be a lie”.

Kafka, Franz. Zurau Aphorisms, § 80.

Franz Kafka has become infamous for the multiple novel demonstrations of human halting problems he has provided, each illustrating conditions of agency and error in the endless loops of an automatic bureaucracy.

175 Baudrillard, *Symbolic Exchange and Death.*

176 Deleuze, Gilles. *The Logic of Sense*. 218-220, 240.

177 Gilles Deleuze offers this term in Cinema 2, where he uses it to describe the “irrational cut”. which formulates “false continuity”. by juxtaposing two distinct sequences of film such that one passes into the other.

“False continuity”. names what occurs in the resulting sequence of film at the point of the cut, where one scene passes into a different scene. Before the two scenes had been spliced together, no continuity necessarily existed between the two scenes. In splicing the scenes in sequence, an actual continuity is produced as a break, which stages an artificial translation in movement, causing the two scenes to become associated by having been affiliated in a sequence.

At this point, considered from the perspective of the continuous movie rather than the spliced cuts of film, the “irrational”. character of the artificial break produces an actual transition in the movie, meaning the experience of the viewer. The transition in the movie re-stages the irrational character of the splicing as a rational understanding of the plot, meaning as the element that sustains an understanding of the film’s continuity as a movie.

178 Deleuze, Gilles, and Felix Guattari. *A Thousand Plateaus*. 6.

179 Turing, Alan. “Computing Machinery and Intelligence”, section 6, “Contrary Views on the Main Question”. “Objection 2: The ‘Heads in the Sand’ Objection”.

180 Derrida, Jacques. *Of Grammatology*. 66-67.

181 Deleuze, Gilles. *The Logic of Sense.* 304-306.

182 Turing appears to have in mind the formulation provided in Genesis, where “man”. names the subject capable of naming other subjects and “woman”. names the internal difference taken from the subject of naming in order to return the language of naming to itself from the other side, as its constitutive impossibility.

183 Deleuze, Gilles. *The Logic of Sense*. 241.

184 Turing, Alan. “Intelligent Machinery”. 412.

185 Turing, Alan. “Computing Machinery and Intelligence”, section 6, “Contrary Views on the Main Question”. “Objection 7: Argument From Continuity in the Nervous System”.

186 Deleuze and Guattari, *A Thousand Plateaus*. 99.

187 Pereira, Luís Moniz. “Turing Is Among Us”. 1272.

188 Deleuze, Gilles. *The Fold*. 78.

189 Naur, Peter. "Computing Versus Human Thinking". Communications of the ACM 50.1 (2007): 93.

190 Deleuze, Gilles. *Essays Critical and Clinical.* 152.

191 Turing, Alan. "The Chemical Basis of Morphogenesis". 524.

192 Turing, Alan. "Can Automatic Calculating Machines Be Said To Think?". 495. Emphasis mine.

193 Copeland, B Jack. "The Turing Test". 525.

194 Levinas, Emmanuel. *Totality and Infinity.* 182-183.

195 Legg, Shane, and Marcus Hutter. "Universal Intelligence". 411.

Reference the final pages of the introduction for another contextual deployment of the same quotation.

196 Penrose, Roger, Stuart Hameroff. "Consciousness in the universe A review of the 'Orch OR' theory". 39–78.

197 Penrose, Roger. *The Emperor's New Mind*.

198 Derrida, Jacques. "Letter to a Japanese Friend". A Derrida Reader: Between the Blinds. ed. Peggy Kamuf.

199 Turing, Alan. "The Chemical Basis of Morphogenesis". 525.

200 Blanchot, Maurice. *The Infinite Conversation.* 428.

201 Derrida, Jacques. *Of Grammatology.* 29-30, 74-75.

202 Deleuze, Gilles, and Felix Guattari. *A Thousand Plateaus*, Plateau 8 - Three Novellas or "What Happened?"

203 Deleuze, Gilles. *Foucault*. 89-90, 92-93.

204 Adams, Douglas. *Hitchhiker's Guide to the Galaxy*.

Jarry, Alfred. "How to Construct a Time Machine". http://dev.null.org/psychoceramics/archives/1995.12/msg00065.html, accessed on 4/15/2014.

205 Barsalou, Pezzulo, Fischer, McRae, and Spivey. "Computational Grounded Cognition: a new alliance between grounded cognition and computational modeling".

206 Wilson, Elizabeth A. *Affect & Artificial Intelligence.* 466-471.

207 Howard, Jonathon, Stephan W Grill, and Justin S Bois. "Turing's Next Steps: the Mechanochemical Basis of Morphogenesis". 392.

208 Elragig, Aiman, and Stuart Townley. "Mathematical Biosciences". 131.

209 Turing, Alan. "The Chemical Basis of Morphogenesis". 520.

210 Cronin, Leroy et al. “The Imitation Game—a Computational Chemical Approach to Recognizing Life”. 1203.

211 Kafka describes comparable architecture in a story about the building of China’s Great Wall. Since the span of the planned wall made its horizons seem impossible, a different mode of construction was needed. Rather than building the wall from one end to the other, the wall was to be built simultaneously from every point along its horizon. In this way, the horizon would divide into itself and meet itself in the middle. This mode of organization would produce the event of the wall’s construction—alongside the wall itself—which would produce focal points to assemble the frame from the inward out, without requiring that distant regions had direct knowledge of one another.

212 Wolfrum, Matthias. “The Turing Bifurcation in Network Systems: Collective Patterns and Single Differentiated Nodes”. 1351.

213 Pereira, Luís Moniz. “Turing Is Among Us”. 1266.

214 Zenil, Hector. “Turing Patterns with Turing Machines: Emergence and Low-Level Structure Formation”. 293-294.

215 Fodor, Jerry. *The Mind Doesn't Work That Way*. 109-110.

216 The cutting edge of deterritorialization. Deleuze, Gilles, and Felix Guattari. *A Thousand Plateaus*, 99.

217 *“Der Traumvorgang, sagten wir, bemächtigt sich aus Gründen der Assoziationsmechanik leichter des frischen oder des gleichgültigen Vorstellungsmaterials, welches von der wachen Denktätigkeit noch nicht mit Beschlag belegt ist, und aus Gründen der Zensur überträgt er die psychische Intensität von dem Bedeutsamen, aber auch Anstößigen, auf das Indifferente”.*

Freud, S. (1900). *Traumdeutung*. 593

218 Deleuze, Gilles. Cinema 2.

219 Deleuze, Gilles. Expressionism in Philosophy: Spinoza,133-134.

220 Kafka, Franz. *Zurau Aphorisms*, § 92.

221 Turing, Alan. “Computing Machinery and Intelligence”, section 6, “Contrary Views on the Main Question”. “Objection 4: The Argument From Consciousness”.

222 Lander, Arthur D. “Pattern, Growth, and Control”. 962.

223 Leiber, Justin. “Turing’s Golden: How Well Turing’s Work Stands Today”. 23.

224 Hogeweg, Paulien. “The Roots of Bioinformatics in Theoretical Biology”.

225 It would seem that Turing is making a strangely Platonic joke about the image of belonging proper to thought, which affiliates the horse and the zebra. Turing's question is, quite simply: how to account for what of the zebra belongs also to the horse? As a Platonic concern, the question regards the affinity in thought between horse and zebra; but Turing turns the matter back to Science: belonging concerns the operative modality of expression by which the morphogenetic elements of the horse and the zebra think themselves into a formation that "imitates" the same taxonomic image.

226 The line formulates "coming". and "going". "Going". names the sending of a future horizon that will return as a new domain of consideration. "Coming". names the unmediated character of any confrontation with the present, which will have to be constructed as a problem of the future. The problem of the future is that there is no future. The problem of the present is that there is no mediation, only a future that has not yet been constructed.

227 Turing, Alan. "The Chemical Basis of Morphogenesis". 549.

228 Levinas, Emmanuel. *Otherwise Than Being or Beyond Essence*. 37-38.

229 The problem of the phoneme for Saussure is that it does not exist at a single moment in time, and so must be assembled from a slippage between synchronic and diachronic axes. The phoneme consists in the condensation of movement through the assemblages that constitute these axes: a sound image.

230 Deleuze, Gilles, and Felix Guattari. *Anti-Oedipus.* 330-331.

231 Bergson, Henri. *Matter and Memory*. 161-163.

232 *"Der Vorgang ist aber so, als ob eine Verschiebung - sagen wir: des psychischen Akzentes - auf dem Wege jener Mittelglieder zustande käme, bis anfangs schwach mit Intensität geladene Vorstellungen durch übernahme der Ladung von den anfänglich intensiver besetzten zu einer Stärke gelangen, welche sie befähigt, den Zugang zum Bewußtsein zu erzwingen. Solche Verschiebungen wundern uns keineswegs, wo es sich um die Anbringung von Affektgrößen oder überhaupt um motorische Aktionen handelt"*

Freud, S. (1900). *Traumdeutung*. 182.

233 This is the reason that Heidegger asks: "Why Poets?". The measure is the basic unit of poetry, but expressing the measure poetically requires transforming its expression into one that characterizes how it—as measure—can fit into itself as a particular expression of its general condition, which is being-measure. The poet, for Heidegger, is the one who measures the quality of the real by conditioning the measure of the poem. The question, then, which Heidegger pursues immediately, is whether measure is said of the real, or whether the real is said of measure. The conclusion: it has to be both, because measure is nothing but the particularity of the displacement found in self-reference, which measures itself by other displacements. The poetic measure of measure can be found in the poetry of the ritornello: the rhythm that gives the measure without measuring it.

234 Nolan, Christopher. *Inception*. Warner Bros. 2010.

235 Kockelman, Paul. "Language & Communication". 153.

236 Turing, Alan. "Computing Machinery and Intelligence", section 1, "Contrary Views on the Main Question". "Objection 1: The Theological Objection".

237 Guattari infamously scheduled his courses at the same time as Lacan's courses so that one could not take both; this gesture should be understood as Guattari's act of fidelity in relation to Lacan, reading the problematic of structuralism as the impossible condition of taking two courses scheduled at the same time. This is not an antagonistic move toward Lacan, but rather reveals the internal conflict at stake in Lacan's vision of structuralism, whose equation —the objet a, the "object-cause". of desire—consists precisely in the impossible intersection of all of desire's trajectories.

238 This is Jacques Lacan's formulation of the relation between psychoanalyst and analysand (the one "supposed to know". and the one "who knows nothing"). The analysand is able to undergo systemic reconditioning of their self-relation because the analyst is ostensibly the one who is able to provide the necessary conditions to renew the self-relation. The actuality of renewal, however, concerns the relation constructed between the one who assumes a position of non-knowledge and the attribution of knowledge to the analyst; the attribution of knowledge produces a displacement that constructs a "second one". which the "first one". can assume as their own position, having given it to themselves by way of the analyst, who is authorized by the supposed fact of knowing from the start that it was the necessary position.

239 The Gay Science or The Frolicking Management of Knowledge, 255, translation by Asher.

The German corresponding to "the splitting of the same". reads "*das Selbe*". which is a noun meaning "the self-same". which echoes "*dasselbe*". which is an adjective meaning "the same". The same splits itself in two to become self-same. We may hear Heidegger's invocation of George: "where word breaks off, no thing may be".