The Symmetry Theory of Verification

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O' how we wander away our lives,
seeking symmetries in distortions of light
comparing pictures in our minds
while absconding the darkness left behind
into the space ahead, yet to come
illuminated by a Sun,
though far darker,
we run,
never to stop again.

I. The ultimate goal of language is action.

II. Language does not seek to explain phenomena through reduplication, but through reference. For example, there is no word which can encompass the totality of its referent. This is obviously the case for categorical nouns such as "book" or "person", but it is also true for proper nouns such as "Thomas Aquinas" and "Plato". Proper nouns utilize a method of direct reference which can be extended to determiner phrases like "the third man from the left" and "that book". However, direct reference is still a method of reference, not reduplication.

To understand this point more fully, let us consider the book "1984" by George Orwell. Suppose a copy of this book was resting on the table in front of you. In order to call your friend's attention to the book, you might say "that book", "the book on the table", "that copy of 1984", etc. However, each of these methods does not extend beyond the following format: there is an object *x* such that *x* can be referenced by the term *y*. Therefore, *x* acts as a universal container for placing any object which can be signaled to through the use of *y*, a specific pointing *name*.

Say, then, we wanted to encapsulate the meaning of the object *y* fully, we would have to enumerate certain qualia, such as "that *y* which is white and blue", "that *y* which has 328 pages", "that *y* which is earmarked on page 101", etc. Of course, we could qualify the physical distinctions further, deconstructing the book down to its elemental distribution, or sensorily, down to its smallest color distinctions.

However, the meaning of the book is not merely limited to what can be sensed about it in any particular moment. For example, another quality of the book is that it was published by a company. It was also written, and read. Features of the book's language, and even the title itself, holds certain social significance. Therefore, if one were to attempt to refer to the book through reduplication, one would have to append each possible meaning of the book which can be represented linguistically into a kind of symbolic object which can then be referenced directly.

It is my argument that this is exactly how language is used. Language is a symbolic system which serves the purpose of condensing high volumes of information into a package of referential tools which can be communicated, then unpackaged. In order for these tools to be effective, we must infer *wholes* where only parts of wholes are discerned at any given moment. In this way, the phrase "that book" is pointing at something which can simultaneously be represented merely as its completeness *or* as the sum of its constituent parts *or* as a constituent of an even greater completeness (one book of many on a bookshelf).

The issue with reduplication is three-fold. First, the limitations on the bandwidth of our consciousness, which can only process roughly 16 bits of information per second.[1] Second, even if we did obtain the computational capacity necessary to consider the totality of an object in a single thought, what would be produced in the mind would still be a *representation* of the object. The qualia

of the object, in of itself, is forever out of bounds. And third, fully comprehending an object does not tell us *how* to understand it. I will argue that one *cannot understand anything* unless we make almost *everything* conceptually obsolete.

Therefore, we can view the landscape as one in which high (effectively infinite) volumes of information exist in each of our minds which must be condensed into low-resolution symbols. I will refer to the confluence of these high volumes of information and symbols as mental pictures, which are combinations of mental objects and relationships. Mental pictures can be viewed from within an internal mental screen. I argue that we *only* have access to the mental screen (as opposed to, for example, the physical world).

As a demonstration, find a nearby object (say, a pen) and focus on it. Without thinking any words, close your eyes and summon the object. Once you have it in mind, rotate it, tap it, run your sense of touch along it. Notice how you can manipulate the mental object without any words. Now open your eyes and call to mind the object's name. The purpose of a name is to index a mental picture for future reference.

III. My chain of reasoning thus far may strike one as idealistic, perhaps even solipsistic. I appear to be claiming that all that exists, exists within the mind, and even when referring to physical objects, we are truly only referring to an object hidden somewhere in the neural circuitry. However, my argument is meant to be agnostic to the problem of monism or dualism. I am not concerned with existence outside our ability to interact with it, nor would I argue that all that exists only exists in the mind. I am merely arguing for a specific frame through which we can interpret how existence presents itself *to us*.

In my frame, there are four types of objects: mental, physical, social, and symbolic, of which mental objects are basal and all other objects are categories of mental objects. As I will explain later, each type of object serves a different role, or in another way of thinking, each type of object has a separate verification status which transforms its use conditions. This interpretation is meant to elucidate a kind of ontology which is predicated on taking conceptualization (of which all linguistic systems are predicated) as fundamental.

IV. Mental objects arise naturally from the intersection of primitive senses, much like the mixing of red and blue to make purple. To illustrate this, take someone who only possessed sight. That person would be able to sense patterns in the distortion of light, but they would not be able to infer physical objects from those patterns alone, as inferring physical objects results in combining sight with touch experience.[2] By generalizing over our senses, we develop a systematic framework for generating mental objects which become the minimal necessary constituents for knowledge.

One might claim, as Russell does, that constituents are composed of individual sense datum, but I find this claim to be false.[3] The number "5" written on a blank page may contain 128 dots of ink, but

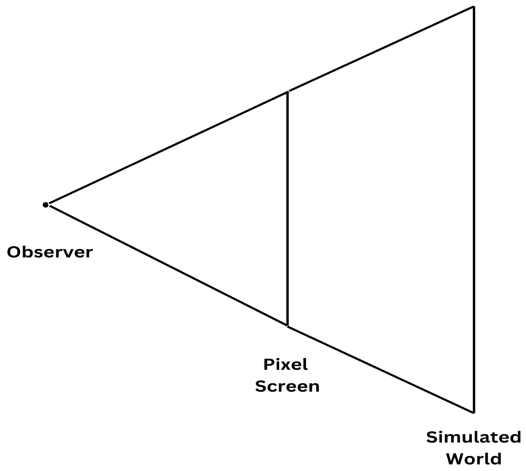
we do not process each dot individually, and they do not have a sense unless combined. An object, like a symbol, must contain more information than merely the sum of its parts, as is true in the case of "5" or "book".

V. Since the ultimate goal of language is action, the lowest realm within which knowledge can situate itself is *reflex*. The goal of higher realms is to move responses into the lowest realm.

One way of conceptualizing this realm is by considering the instant you feel a prick on the back of your neck. In that moment of stimulus, the mind generates an immediate representation of the source of the prick and responds. If the representation takes less than 0.5 seconds to create, the mind will not consciously apprehend the picture of a mosquito which is projected onto the mental screen before swatting at it.[4] However, after swatting, if one were to find that the prick was actually a pine needle falling from a nearby tree, this miscalculation will be updated by generating a new mental picture. Furthermore, while I describe the mosquito and pine needle as mental pictures projecting onto a mental screen, the experience of this metaphor may instead involve the auditory experience of the word "mosquito", or some other type of thought. In this way, one should take my framing of mental pictures as metaphorical as opposed to a literal, psychological phenomenon.

VI. The Symmetrical Theory of Verification which I will introduce is predicated on a different metaphor involving symmetry. I will define symmetry to mean "two pictures which act in such a way that one may be arrayed on top of the other without distorting their complimentary image". For example, If I were to print out two images of the same circle with the same printer set to the same settings and arranged the papers to be perfectly fitted atop one another, then I looked upon the image from a point perfectly centered above the arrayed papers, I would only be able to discern a single circle. In this way, I would call these two images *symmetrical* or *in symmetry* with one another.

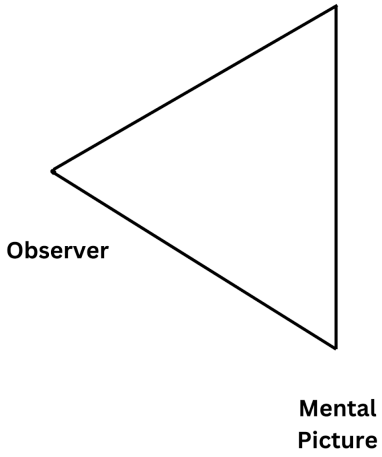
The degree to which mental pictures are in symmetry with outside projections are the degree to which the mental pictures are verified. Therefore, in order to determine verification statuses, we must design intermediary structures to be able to detect symmetries. The structures which I will propose are predicated on the blueprints for building 3D video game graphics.[5] The following diagram represents a model for understanding the process:



The "Observer" is strictly speaking the position of the eyes of the person who is playing the game. When the Observer looks at the rectangular computer screen, a triangle is formed from the Observer's eyes to the screen. A video game architect will then create a similar triangle, extending out from the original triangle, which expands behind and beyond the scope of the screen into a simulated space where the game's world is generated.

The Observer makes certain assumptions about the simulated world based on transformations in the intermediary space (the pixel screen) which is divided up into a plethora of triangles and transformed using a series of mathematical calculations which are linked to the movement of the in-game (pixelated) observer. The pixelated observer does not exist (it is an illusion) which simulates motion (action). The goal of this interface is to simulate reality, albeit imperfectly, and only through a single sense (sight). However, I will argue that this process mimics the way in which we perceive "true" reality by utilizing an internal screen and verifying external objects through the process of Symmetrical Verification.

Consider the **Base Triangle:**



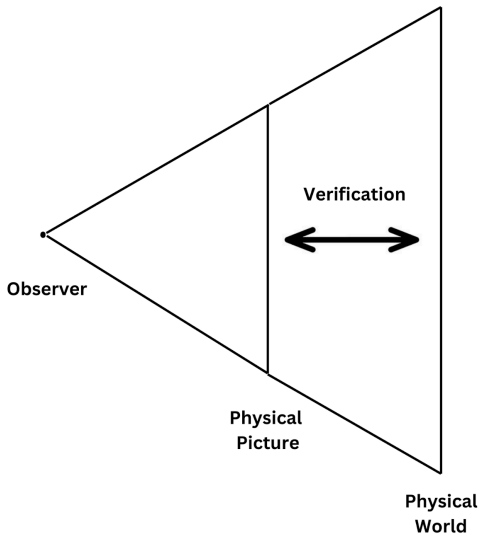
The Base Triangle is the only construction which does not include a method of verification (a similar triangle) since it merely represents the spontaneous creation of a mental image. All Verification Triangles are predicated on the Base Triangle, but most mental pictures are not solely relegated to instances of the Base Triangle. For example, returning to the scenario of picturing a mosquito in response to a pricking stimulus which led to the action of swatting. This instance would funnel into the Empirical Triangle since the mental image of a mosquito included an object (mosquito) *plus* a relational value (existence)--therefore verification becomes necessary. In this way, we can see that not all propositions are explicated, nor even consciously apprehended.

VII. If I were to say "picture a chair", one might call to mind any of an infinite number of mental objects, though we would all agree that there are conceptual constraints on what a "chair" can be, even though those constraints are notoriously difficult to pin down. However, a certain problem arises when I change the sentence to "picture *that* chair" while pointing at some object before me. In conventional thought, I am no longer pointing to an object of the mind (a mental object), but a physical one which exists solely outside the mind. However, this is not the case. I am *still* pointing to a mental object, because "chair" is a conceptual structure which *only exists in the mind*, but I am *verifying* my mental picture *against some projection*. To see the so-called "chair" without a mental object of the chair, one would only be seeing colors and contours of colors.[6] This returns us to the problem of logical atomism which I previously outlined in Section IV.

Therefore, to verify a physical object is to align our mental image with a physical projection. One might see how this would lead one to believe that we cannot but see through our perceptions, and I would agree if one were to take this to mean *we cannot explicate that which we do not perceive*, though we

can *sense* without perception, we just cannot explicate that "knowledge" because knowledge is predicated on conceptualizations.

Consider the **Empirical Triangle:**



Notice that the Empirical Triangle is only active when there is direct sensory input. Stimuli from the physical environment may trigger the proliferation of any number of mental pictures. Those pictures can then be arrayed against the environment to verify or dis-verify one's conceptualizations. Therefore, the Empirical Triangle should be viewed as a hard endpoint tool which serves solely the purpose of verifying symmetry between physical pictures and the physical world's projections.

As a final note on the distinction between mental and physical pictures, I wish to elucidate a concept which I will call *wandering*. Because we are constantly immersed in sensory stimuli from our environment, it becomes difficult for us to appreciate how perceptions shape our reality when from moment to moment we feel we are continually perceiving *what is actually there*. However, consider for a moment walking through a forest after nightfall and hearing a twig snap from somewhere nearby. In this instance, there is not enough sight information to verify the source of the sound, so our mind will latch onto any of a number of mental pictures, some which may even be fictitious, in order to make sense of the insufficient sensory information. While we can argue there *is* an underlying explanation for the sound, we cannot utilize the Empirical Triangle to verify our mental picture, so our mind is free to wander. This wandering is an expansion of underlying entropy created by indeterminance which leads to certain physiological experiences (such as anxiety).[7] I argue we are

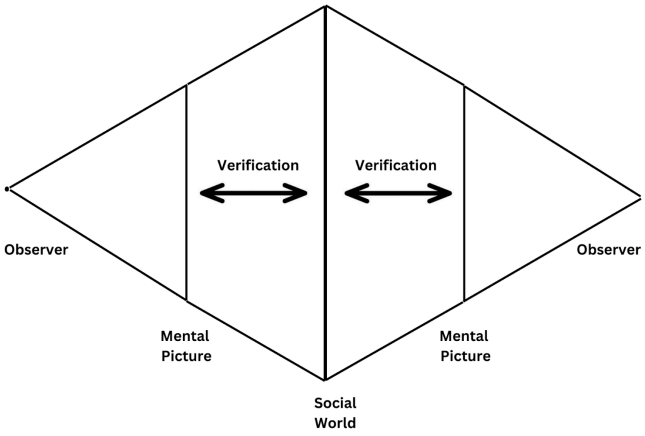
constantly wandering, but since we are usually provided with sufficient stimulus from our environment to verify our mental pictures, the symmetry created by our mental pictures and the physical projections we are observing reduces entropy and eliminates this sense of indeterminancy.

VIII. In the same way that we do not have direct access to the physical world, we also do not have direct access to other minds nor the mental pictures they create. Therefore, there must be a common space between individuals where information can be co-accessed. For continuity, I will call this space the "social world" which contains social objects and relationships.

Two people are sitting across from one another at a table. Person A is holding a book of images turned to a page with a very simple schema of a man throwing a frisbee to a dog with a yellow-circle sun and clouds swimming in the blue sky above. The responsibility of Person A is to communicate as effectively as possible the image on the page to Person B. In order to do this, Person A will scan the page and generate a series of mental pictures which he must encode as symbols (let us allow the exception of acting for a moment where one will attempt to embody the social world and become the social object). Person A will then push the symbols into the social world where Person B will decode the symbols back into mental pictures. In this case, since a physical picture was used, the mental images are actually physical images which can be verified with the Empirical Triangle, but this is not always the case, nor is it necessary for social verification.

Social images are verified by symmetry between the mental images of separate minds. This is easier to understand in the context of a conversation where information is being shared back-and-forth. If I were to communicate "Tommy ate his soup with a spoon" to someone who believed a spoon to actually be a fork, there would be an incongruity between our pictures which would result in a lack of symmetry, and therefore, verification. Based on this example, it may seem that social verification is merely agreement, but this is not so. People may assent to understanding one another's assertions without verifying them through social symmetries. In this way, individuals' actions are independent from the social verification process.

Consider the **Social Triangle:**



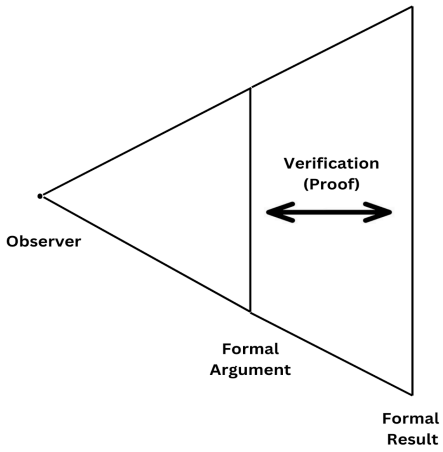
It is important to remember that social verification is symmetry, not empirical correctness. While physical objects may be communicated through the social world, they must ultimately be unpackaged and verified by an individual. Therefore, the social world allows for verification of non-existent (non-physical) objects as shared mental phenomena. One must also consider that emotions and other dispositional relationships can be verified through the Social Triangle.

IX. Formal systems consist of the most abstract form of objects and relationships. Formal systems are languages, but not all languages are formal systems. In order to qualify as a formal system, the structure must (i) be able to exist independently from all other systems, (ii) be governed by rules which limit the formal system's scope, and (iii) be deductive.[8] Mathematics and Logic are two formal systems.

Formal systems are composed of symbols and relationships which are arbitrarily defined. For example, take the successor function in mathematics. The reason the number "2" means "the x after 1" and not the number "3" is arbitrary. However, once the number "2" is defined as a formal object (symbol) in relation to other formal objects in mathematics, it must have only those qualities which are assigned to it as the number "2".

Even though formal objects are the most abstract, they still must arise from and be represented as mental pictures. To understand this, consider a child learning how to count. A teacher may place a number line in front of the child and show them how to navigate numbers using the analogy of physical displacement. Suppose the teacher has the child stop on the number "3". She then takes 3 cube-bits from a pouch and places them in front of the child to demonstrate how to picture the number "3" as: □ □ □ . Eventually, the dissolution of symbols into spatial-representations may become so automatic that the child no longer consciously perceives the dissolution, only the numerical representations.

Consider the **Formal Triangle:**



Formal objects and relationships combine to create arguments (formal pictures). Unlike physical pictures which have the result presented to us by way of direct sensory input, we must *calculate* the result (or projection) of a formal system by using the rules which govern it. It is by arraying the argument with the result that we determine the argument's verification status. For example, the sum of 3 and 3 make 6. The result of 3+3 gives us 6, where 6=6, resulting in a symmetry. However, these tautologies merely prove the deductive nature of the system: the truly interesting point is the transforming relationship "+" which tells us something fundamental about mathematics.

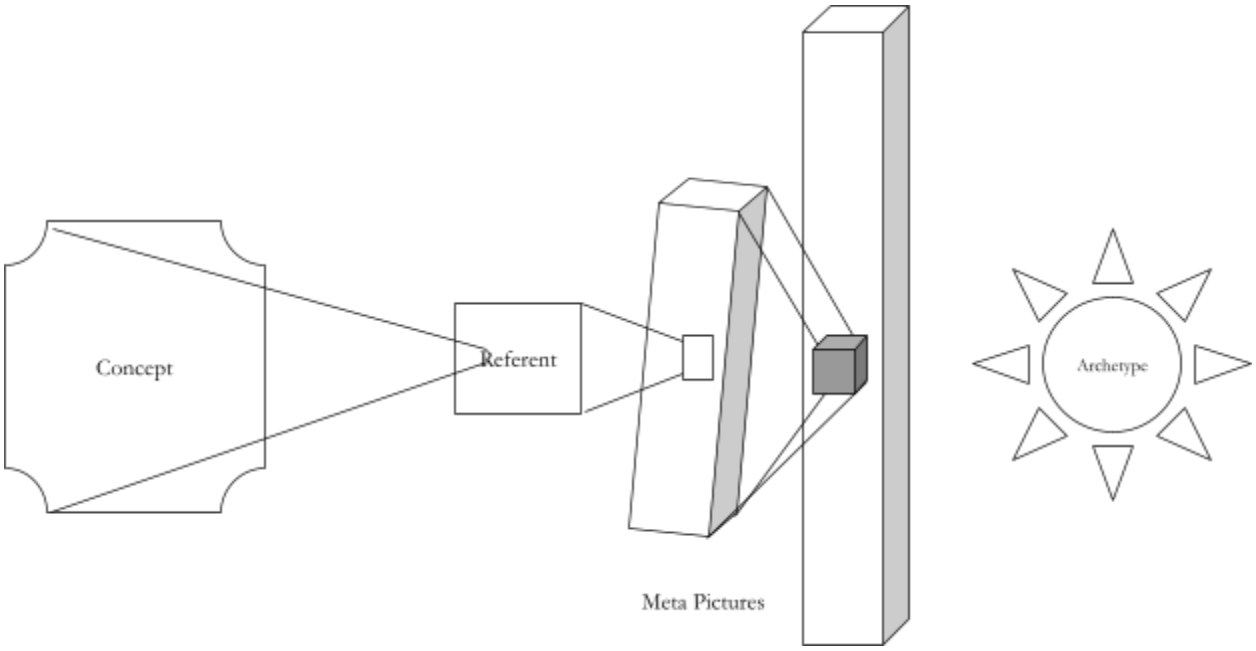
We must resist the urge to immediately extrapolate this claim of 3+3=6 into the physical world. We could think of any number of systems where 3+3=9, and through some deductively valid process, we find symmetries. While these other systems may provide much less practical value to us, it is not practical value which determines the verification of formal arguments, it's symmetry. Therefore, the Formal Triangle *only* tells us if an argument is verified against a particular result. If we wish to extrapolate the meaning beyond a mere deductive solution, we must use a Meta Model (see Section X).

There are elements of natural language which share properties with formal systems. Namely, languages are composed of arbitrarily defined symbols and are subject to rules of grammar and syntax. The degree to which language exists independent from any verifiable content is apparent when reviewing the literature on individuals who suffer from Wernicke Aphasia, who are capable of generating strings of grammatically valid sentences but which have no clearly definable semantic meaning.[9] In this way, language uses a kind of statistical regularity algorithm to organize the discrete symbols into a syntactical hierarchy; however, when one begins to use or analyze natural language from the lens of semantics, it is no longer a formal system, but one part of a Meta Model.

X. Instance Models, of which include the Physical, Social, and Formal Triangles, produce Instance Pictures, while Meta Models produce Meta Pictures. A Meta picture can be viewed as a *prediction* or *goal* which embeds Instance Pictures and provides a third point of symmetrical contact. Meta Pictures create expectancies in our Instance Pictures which then provide a basis for action based on their moment-to-moment verification statuses. The number of Meta Pictures that can be embedded in at any given moment is only limited by the degree to which our nervous system can adapt to assimilate them.

In order to demonstrate the Meta Model, I will return to two earlier premises, namely: (a) the ultimate goal of language is action, and (b) in order for one to understand anything, we must make almost everything conceptually obsolete. The reason for (b) is the bandwidth problem of consciousness. While we take in millions of bits of sensory data every second, we can only consciously process around 16 bits of information; therefore, we must decide very carefully what to focus our attention on. Whatever we alight on must in some way inform which action we should take, or whether we should stop acting altogether.

Consider **Meta Model 1:**



In this Meta Model, we begin with a concept or symbol which is a mental picture. The mental picture then transforms based on its verification status and collapses into the instance of a single referent. At this point, we may be consciously apprehending what we would consider a physical object. However, the referent in question is embedded in a larger structure of meaning called a Meta Picture which informs how we should be responding to the verification of a particular referent.

These Meta Pictures can stack with increasing resolution, adding to the complexity of a particular story. The light which filters through these Meta Pictures and all the way down to our conceptions I describe as "Archetypes" which over time selects for particular Meta Pictures over others.

I will now provide two examples which I feel will illustrate Meta Model 1. First, there appears to be an instinct in young chickens (too young to have developed any cognitive memory) to cower when a particular shade mimicking a hawk is projected onto a ceiling overhead, but does not respond when a slightly different shade mimicking a goose is projected in the same way.[10] The concept of hawk seems to be "built in" to the chickens, unlike the goose, and when a particular instance of the hawk comes into symmetry with that conception, a Meta Picture is activated (comes into alignment) which tells a story and illuminates an underlying reality. In a similar way, Snake Detection Theory is the belief that humans evolved sight in order to rapidly detect snakes.[11] Research has been conducted as well which shows we respond much quicker to blurry movement detected near to the ground, demonstrating a similar mechanism as the chickens. In both cases, Meta Pictures (explanatory stories) are developed as a result of a particular stimulus which frames our circumstance and informs our action. And in both cases, the Archetype for these Meta Pictures seems to be Death, which would align extremely well with the Theory of Evolution.

Before I move into a more complex but realistic example, I would like to relate the idea of "Meta Pictures" to the idea in Analytic Philosophy which has come to be known as "Possible Worlds". In "Meaning of Meaning", Hilary Putnam argues in his "Twin Earth" thought experiment that perhaps "water" can refer semantically to more objects than simply H2O, because there could be a different Earth where all else being equal, their water may be molecularly composed of different elements—this would insinuate that people who utter the same words and have the same brain states can refer to different physical objects.[12] In a different vein, philosophers like David Lewis use the concept of Possible Worlds to develop modal logic and counterfactual assessments based on the possibility of alternate versions of reality.[13] My only contention with these uses of Possible Worlds is that, in the case of Putnam, his Twin Earth theory is used to converge on a single, present point in time in order to show how similar brain states can correspond to different physical realities, and Lewis instead diverges into multiple different realities which can exist independent from our own. In either assessment, there appears to be a lack of focus on what I believe is the most important use of the concept of Possible Worlds, namely: *the next*.

It is my interpretation that we have an ability to generate Meta Pictures which act as a comprehensive experimental assessment of some future point. Supposing for a moment that we deem this Meta Picture desirable, we will then formalize our conception of the world into a series of steps with which we will move toward the Meta Picture. This Meta Picture is like a Possible World which either *will* or *will not* be verified.

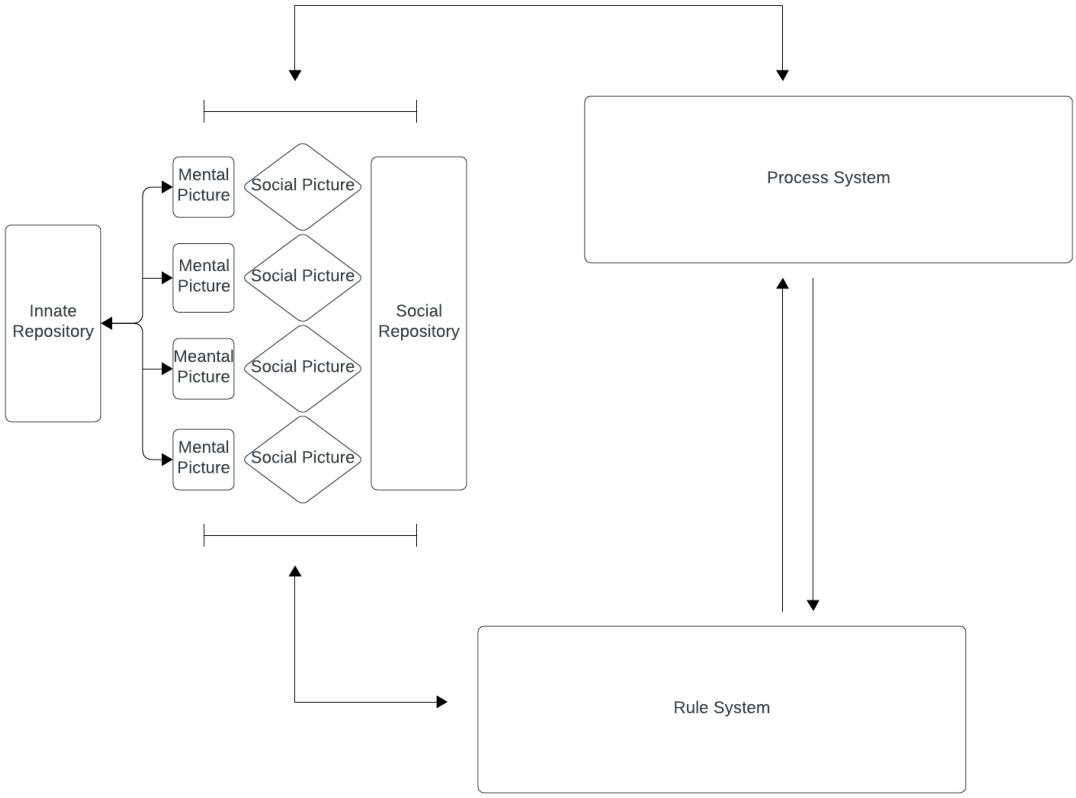
Suppose it comes to my attention that it is my friend's birthday and I have been delegated the task of picking up a cake. I develop a series of Meta Pictures, including but not limited to standing around a

table and singing Happy Birthday with smiles all around. For the sake of argument, let's say there is an Archetype of "Good Friend" which positively activates my Meta Picture. I am then able to break the Meta Picture into a series of Instance Pictures: starting my car's engine, driving to the bakery, picking up the cake from the baker, paying the baker, re-starting the engine, driving home, setting up the cake, singing Happy Birthday with my friends. We can think of these "steps" as an algorithm which exists as a *Process System* in the Meta Model. If each step is met, we will ultimately arrive at the Possible world evoked by the Meta Image and therefore be in greater alignment with the Archetype.

As we move through each step, there are two types of asymmetries which can occur: asymmetries at the level of *process*, and asymmetries at the level of *rule*. The former is guarded by *wandering*, wherein the mind scans for potential conflicts. Conflicts can occur at the level of the physical world: a car swerving into my lane, forgetting my wallet, or the social world: miscommunicating the name of my friend to be iced on the cake, or falsely conceiving that my friend likes chocolate cake. *Process* errors expand entropy insofar as the *path* of realizing the Meta Picture becomes more complex (perhaps impossibly so), and recalculation or redirection is necessary. On the other hand, *rule* errors involve the dissolution of the Meta Picture entirely. For example, if my friend were to suddenly text me he hates me and never wants to see me again, or if I suddenly believed that offering a cake would make me a bad friend. In other words, either the Meta Picture remains intact and the process is complexified, or the Meta Picture shifts and the entire process dissolves as a result.

Consider also that Meta Pictures are constantly in a state of flux (selection). At any moment, one Meta Picture may be subordinated by another. For example, if a loved one were suddenly to be hospitalized, my other Meta Pictures would have to subordinate to the new, more important one. However, there is always a bias toward stability. We can think of this through the lens of Charles Pierce's Fixation of Belief, specifically the method of tenacity, whereby one holds onto a belief merely because it is familiar or comfortable to do so.[14] While Pierce was referring to certain philosophical dispositions in his analysis, a neutral interpretation could be made that states simply we have a bias toward belief-fixing since it costs energy and an increase anxiety-provoking entropy to doubt.

Consider **Meta Model 2:**



In the above model, the *Innate Repository* includes our biological information (genetics) and Long Term Memory. The *Social Repository* is all the information stored external to your individual mind and body (other minds, social structures, information archives). Meta Pictures arise in the Rule System to explain the complex interactions of information occuring in the world, and the Process System creates a method (algorithm) to realize (verify) the Meta Pictures.

I have thus far framed the Meta Model as a tool to frame human action and motivation as opposed to focusing on Science. The reason for this is because I take human action to be fundamental. Insofar as Science *is* human action, Science may be assimilated into the motivational framework. Insofar as Science is a tool to develop more prolific representations of the physical world, those representations will only serve the purpose of developing Meta Pictures which will inform human action.

XI. I wish to conclude by discussing two other important phenomena: language *as* action, and *grouping*.

In Meta Model 1, I label the selection tool for Meta Pictures the "Archetype". The reason I did that was deliberate. I could have tried out any number of other devices such as "Natural Laws",

"Universals", "God", etc. However, I believe the best way of interpreting Meta Model 1 is as a story we tell ourselves. Moment to moment, we conceive of how the vast potential of the future can construct itself; certain paths seem more compelling than others for reasons we cannot often explain. When we attempt to apprehend the different paths from past to future, we generate stories of which we are a part. In every story there are recurring themes (or Archetypes) which play out in novel instances. Those Archetypes reflect our nature and our potential. When we act, we are therefore acting as in a play. Even our words become part of the performance. In JL Austin's paper "Pretending", he introduces an interesting question about the distinction between "acting angry" and truly being angry.[15] I would argue that we are always acting. The feelings produced by the nervous system are interpreted within the frame of our current conceptualizations, as seen from literature showing increased levels of arousal between two people who go on a date directly after exercising.[16] We can only guess at the motivations of others. Perhaps I am acting in a congenial way in the short-term because I desire the trust of others which is a part of a larger, darker plan to sew chaos and destruction. Such themes are the darlings of deceit which all people fear. Still, we can never *know* what Archetypes others are living out, we can only infer from action.

Alternatively, shared stories allow people to unite. *Grouping* is when people conceive of themselves as constituents of a greater whole. That whole may be a marriage, a State, a religion. When groups are formed, the individual members share a common social space and develop Meta Pictures which constitute the goal of the collective. This is easiest to describe in reference to love. When two people fall in love and begin a relationship, they develop a shared picture of what their future together could entail. They have a certain framework of understanding the relationship and the other person which transforms everyday occurrences into aspects of a specific type of love story. However, as time passes and obstacles intervene, that story may change. Falling out of love is much like falling into it. An "I love you" which once held a certain type of meaning may now hold a much different one. If the relationship dissolves, we will confront instances of the past story which now are no longer extant, and parts of ourselves which formerly existed that can never be recovered. In this way, it's the tension between past and present interpretations of our experiences which leads to a sense of loss and sadness.

In the end, the reality of our decisions is inescapable. Our frames will inform our action, but the light which enters through those frames is out of our control. In time, the story which we are living in will become apparent, even if we are asleep through much of it. We are a creature of limited conscious means. Our ability to calculate possible worlds and predict the future is extremely limited. We strive to build Meta Models which will last into the future—which will stand the test of time—but we are always one step away from dropping into the entropic abyss. Especially when we don't see it coming.

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