

Scientific Models, Paradigms and Systems of Ecology: From Symbol Apparatuses to the Real

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ABSTRACT

An evolutionary framework of epistemology is presented where different paradigms offer different shadings of the ecological real. It is argued that better approximations will look cross-culturally and cross-temporally in order to increase the amount of scientifically fallible testing perspectives. General concepts are sought out, translating, for instance, a Homeric shield to a general human need for protection, and Mesopotamian agriculture to a need for sustenance. Once concepts are generalized, their recurrence becomes the best estimation of a human reality (protection, food) where the initial local abstractions (shield, agriculture) are more partial. Such inter-paradigmatic ideas are claimed to comprise a more sustainable view of science and interdisciplinary knowledge. (EZ)

KEYWORDS: ecology, realism, evolution, science, technology



Scientific models exemplify the toolsets we use to explore the world. In a rational sense, we can say that they provide a map for the current paradigm of knowledge apparatuses—whatever technology is available, and how it might be reflective of a greater context, how its logic is microcosmic for external questions. We need only survey current available devices, the constructed and known, to see what analogies and lab aids we have at hand to explore a given topic. Our labs, our workshops, our studies, our theatres—our yards, our kitchens, our playgrounds and jam spaces—any place we consider amenable to thought, a scene of toys that mirror something else: spurs and crutches for grounding and building theories.

The ecological maps the logic of *oikos*—the home we have made out of the environment, what portions we understood, what we were able to repurpose. Thus, like technology, it is a built space, albeit in a domestic mode, except it contains a pointer to the real. A logic of the home where that aforementioned thought space lives is possibly the most general one—the one with some minimal human presence, where survival's epistemic root enjoys a space of learning, growing, and discovering. This laboratory of

laboratories is finally always contingent on its adequacy in the greater environment, its existence depending on the successful understanding of a place over time and how it may or may not be able to feed and shelter a given community.

Our models and our homes evolve. Concurrent with biological evolution, a technological species at any moment can similarly grow and alter their gadgets and constructions over time. This restless ambience, dwelling multiplicity, never at home but always potentially in one, may be a characterizing feature of human niche carving. Extensive modification, a mutating aid set for thriving in any climate, is an operation of ordering that leads eventually to a point where the creations are transgenerational and their symbols mutually understood. Space and time shrink into a collective picture: while life cycle technology is fragmented into diversity, this archival technology consolidates into unity. Here we have two basic technical movements: the constructive, which renews with subsequent generations novel empirical knowledge and creativity; and the other, which simplifies and rationally unifies diverse systems into more encompassing wholes. One creates paradigms; the other defends and affirms them.

What is a paradigm? For Thomas S. Kuhn it is a defining foundation for a community, a thematic unifier, an idea that brings people together at the exclusion of other ideas (23). The most extreme version of this may be a complete societal displacement, the conquest or substitution of a people with a resulting new cultural context. But we can also think about subcultures, about revolutions, or as Kuhn does, prevailing cultural modes within a continuous social context, which we will revisit after further exploration. Michel Foucault uses the term “épistémè” to refer to an a priori condition, a kind of social rationalism that prefigures truth and is specific to an epoch (60). Once again, we can return to the paradigmatic idea for the similar definitional problem of the epoch and think about how such rationalism can arise. It is a collective expression of human and environmental bias, something embodied or innate that makes up our basic material presence, but one that is not manifest without culture.

Aristotle’s *Posterior Analytics* offers us one such manifestation—the root word for Foucault’s socially grounding knowledge is freed up into a theoretical space, and there Aristotle broaches how and what episteme conditions (Aristotle 39). It is a necessary one conceived in a geometric sense, much as axioms, assumptions, and definitions condition a formal theorem. The determinism of a mathematical system, given its acceptance, gives us a descriptive manner to conceive just what a rational a priori can

look like—it itself does not have to be rational, just communally committed to; rational truths can then be arrived at through it. Returning to our technological paradigm, assuming the apparatuses and formal starting points a given age has, we then map an ecological reality specific to that period. And for a more general ecology? We will need to accumulate different modes of seeing the world to begin approximating what a realist picture would grow into. Conversely, we can say we will continually compare constructive, renewing ideas with different social ideas that have calcified into paradigmatic dogma. Paradigmatic knowledge will inevitably confuse the socially legitimate and religiously observed with the recurrence of the real, the consensual data of the world. The bases of cultural authority bias, the incontestable blind spots needed to maintain the system, will look the same as general truths that have survived the trials of contestation. According to Aristotle, the truths of one axiomatic system may not hold in others, but if you do not shift the axioms, you will equate what holds true in the system with systemic bias. To avoid these pitfalls, we need inter-paradigmatic knowledge, concepts that work cross-epistemically to achieve Karl Popper's working ideal of conjectures that can be refuted we will want to maximize the perspectives from which we frame and test (312). Further, looking through Charles Peirce's fallibilist pragmatism, our logical structures should be available to fail in as many ways as possible (293). Knowledge between epistemes takes the cultural and temporal possibility space as grounds—the greater the empirical exploration across space and time, the more robust the rational potential.

To meet an essay-length exploration, a sampler will follow investigating an array of epistemic zeitgeists. As unifying technology's calcification of constructive views is of interest, they will follow from archival beginnings, roughly the Bronze Age onwards, which will include the grand constructive picture, arguably the great majority of human technology, as constant contesting critical contrast. This archival period gives us a unique view into the problematic for it is exactly this accumulating, communicative technology that is accelerating into ecological questions and crises. The approach will be an empirical, impressionistic exploration, to match more rational formalizations elsewhere. The problem is what is the real and the ecological granted different paradigmatic models and systems; how do they each arrive from their given toys and tools, cultural ideas and stories, to provoke a picture of the world? We are looking for recurrent concepts of the real, what the world is and what we are in it, and this will then be our tentative thinking apparatus. We will find

conceptual clusters of this reality in scientific ideas generated around agriculture, geometrical squares, transit and mobility, security and shields, and the light and heat of the sun.

Unlike their Platonic followers, Mesopotamian dialogues are at once discursive and environmental, planetary and personal—the problems that abstraction brings out heighten a civic, moral idea at the expense of a primarily ecological one. This undergirds the real and our chosen dialogic argument, that is, we must account for dialogue in general as well as in a particular social setting. The moral would splinter into the natural, psychological, descriptive, and environmental in the Mesopotamian mode, and what questions we had must be translated through that apparatus. What is settled is a partial truth that also speaks to the cognitive gadgets that were lacking previously; thus, the Greek *polis*, for what it is worth, is not included in the Mesopotamian reckoning, just as Greek political focusing loses aspects of the natural counterpart the Mesopotamian approach affords. But where they may find common concepts, at least in the Athenians' Iron Age precursors, is in the crop field. Hesiod's *Works and Days* is committed to this cause, and Mesopotamians invented the seed drill. And what about Mesopotamian dialogues? One example is the "Debate between Winter and Summer." Imagine the cosmic and layered view necessary to conceive of such interlocutors: this could be an example where subsequent overabundance of toys leads to an imaginative paucity we cannot equal again. First, for such speakers to be agents at all, they must have some discretion, that is, there must be summer and not-summer, a period labeled in line with the terrestrial-solar position, which then links to things like how to eat and other annual activities. A deeply cosmic event is personal on a survival level, an equation that we will find in archival technology lost as states develop. That personal element extends to apologies and opinions and entire personae—we might in certain modes be able to accord a non-human animal, maybe a childhood toy, certain fictional agencies while understanding the conceit, but a season would just seem a bit abstractly bizarre—we sacrifice the abstractions of astronomy for abstractions of archival toys, a common progressive pattern.

But why animate a personal relationship with seasons? A possibility is their meaningfulness in the face of food, fertility and agriculture. Winter wins the debate against his brother Summer. Enlil, their dad, says "Winter is controller of the life-giving waters of all the lands—the farmer of the gods produces everything. Summer, my son, how can you compare yourself to your brother Winter?" (304–09). The Platonic truth arrived at in this

dialogue is water—a logical result is equated with a survival necessity, something that would seem either naive or bizarre in Plato’s universe of moral and formal truths. In turn, Plato’s truths might seem meaninglessly abstract compared to some Mesopotamian truths—they lose a survival element and gain a moral generality, paradigms trading off their cognitive crutches. Another perspective that may differ from the Mesopotamian one is a society not so locally rooted and more nomadic in nature. Lacking Plato’s urban abundance, a nomad can always move where the food is. Going back further from Hesiod were his Bronze Age ancestors who, like the Vedic Baudhayana, were mobile fighters whose hearth and home had to be rebuilt from place to place (Plofker 385). Security becomes tantamount, which for Baudhayana results in a kind of blueprint for translatable soft architecture. Conversely, we might think of a figure like Achilles, whose prize possession is clearly for Homer the shield he gets built for him. Intensely described in every possible detail in a manner perhaps a bit boring or confusing for a contemporary, the deep importance of security, of giving life to what protects you, of deeply valuing what keeps you alive, is a general truth rarely encountered in civilizational settings. The Mesopotamians are more worried about a good crop yield than getting stabbed in their village, just as Socrates is more concerned with moral and legal values than getting attacked, although perhaps it was just this sort of blind spot which got him in the end.

Achilles’ truth is maximum protection, traded off for Mesopotamian food abundance, and again for Platonic moral rectitude. And what of Baudhayana? Here it is a ritual space, for communal activity, for social events—if Achilles stays alive, is it a life worth saving? Baudhayana’s real truth is the social life, meaningful activities and connection between people and their world. We have water, food, protection. Once Socrates has that social connection at each banquet, the moral challenge might arise. Different ecologies, built spaces lead to different realizations of the real. Each paradigm can stop to notice the other perspectives, but in their immediate world it is also clear what problems and realities recur, what *oikos* and home they have and how to make that sustainable. The need for water does not go away in classical Greece; Achilles will still need to reckon with the need for community as long as he survives, but for now it is the shield he needs. A human planetary problem is one that includes all the sub- and super-problems: water, morality, protection, and society are part of its full picture.

How does Baudhayana build his altars? With mathematics. His Shulba Sutras are treasure troves of mathematical ideas, particularly in regards to the square, which happens to be the basic altar shape. Warp to Han China and for Zhang Heng it is magic squares that are of interest (Needham 371–75). But what kind of reality is a geometric shape? What kind of truth, what kind of ecology? We might return again to Plato, not only to find some justification, but also to find that while abstraction loses touch with the basics of water and protection, it multiplies its uses once engaged with. Geometry is a kind of philosophical-logical perfection for Plato, something that quietly informs the maieutic searches of his dialogues, and is a kind of innate model for anamnestic learning. For Baudhayana it is the proper temple form. For Zhang, it is a convenient and elegant format for symmetries, puzzles, and a host of mathematical information. Plato's commitment may seem arbitrary, Baudhayana's is just one of many others, and in Zhang's case, it might simply not be apparent what is of value without inserting oneself into those puzzles and questions.

Omar Khayyam complicates the problem. He deals with cubes, solves their volumes, works with and uses them—if the real use that Zhang engages was mysterious, here it is literally exponentially so (Kasir 52). Except that here, through a constructive mathematical move, this apparently useful square has become something that at least has the dimensionality of the world. We cannot find many of these cubes in the world, but we can easily imagine one built, we can build it, and we suddenly have a tangible relation we previously lacked. We can stack it into walls, we can build some alternate version of Baudhayana's altar, we can maybe start to get some tactile sense of why this shape might be humanly convenient for our *oikos*. Khayyam adds tactility, but also complication.

Fast forward to Henri Becquerel and Joseph Nicéphore Niepce, and we start seeing these squares being built and used. To communicate. With what or who? None other than the sun of our Mesopotamian Summer. Niepce's heliograph is an early form of photography, recording sunlight's mapping patterns onto a square. Becquerel's square solar cell turns that same light information into electricity instead of a visual image. The abstract square has now been subsumed into a creation pattern that in turn informs new levels of abstraction. What is being discovered and done gets more convoluted, loses basic properties, but gains new levels of precision. This is not the Mesopotamian sun which is rated worse than water by Enlil in the desertified land he inhabits. Now the sun is subsumed into a utilitarian frame, like the square, and parsed into a subsidiary process that

either maps out the appearance of physical space, or, conversely, has certain translatable energy that can in turn power electrical products. Much like Zhang's square, living with similar technologies makes apparent their real value in our ecology, but for those outside of the paradigm the abstract layers mount and the value, the truth, the reality of their need becomes more complex. Just as the value of a magic square may be sufficiently outside of our paradigm, or our own subcultural paradigm, to see what it is worth.

Evolving from paradigm to paradigm, we see both how different perspectives highlight and obscure different qualities, and also how archival technologies are inherited and complexified, ultimately accelerating combinatorially in an exponential manner. Additionally, we see some recurrence in this short space-time network, one whose linked hubs can be described as agricultural, geometrical, transitory, secure, and solar. This empirical scattering complicates a local approach that looks at ecology and scientific truth and realism from our particular perspective only, but a complication that broadens the base for re-rationalizations. It reassesses axiomatics, enters an exploratory mode to potentially shift and question them, and welcomes the rebuilding into a new Peircean logical structure open to further fallibilist application and testing. Broader empirical probing reveals deeper rational forms in a search for what is sustainable in knowledge, what is recurrently mapped, and how our evolving laboratory toys and extensions can aid that search.

We have painted two pictures. The first is of evolving archival technology that builds on its past like a deathless population and serves as a mutating knowledge apparatus that highlights and obscures the best scientific ideas we can afford. The second is of the more common technological process, which oscillates around anthropic extensive problems and ideas having common ecological and survival concerns. What happens when this realism is combined with the archive, whose memories and fictions can bring it to new religious heights? We shall look at our shield, security or protection, as an example case for the question.

Protection is a general human technological idea; however, to see it we must look across paradigms. Achilles gives us its brute necessity, yet the privilege (agricultural development, moral discussion) afforded when it is not scarce is something we learn from other paradigms. A scientific truth is a recurrent constant that is basic to existence and a pillar for further ideas. It is the generalization of law which, when sought through different epistemes, separates religious law from general physical patterns. The

success of social being and effective food planning is built on consistent security. Later, inheriting paradigms will lose investigative interest in constant concepts, will consider them part of the religious legal architecture and merely a backdrop for more abstract and “pure” ideas. So a Platonist will view Homeric military pragmatism and inspirationally aping heroic motions will not get at any important behavioral ideas. Likewise, a Mesopotamian may need to assume the safety of their crops, but their science will focus on the plant’s life cycle, its pests, maximizing food yield, and so on. However, if security fails, they will either have to cultivate that knowledge to restore it, or the very basis of their super-science—and any hope of practicing it—will vanish. To get to the most contemporary problems of archival technology, success will depend on how well approaches are rooted in past problems that made the current ones possible.

Whereas general technology has a collection or non-directed network of common concerns, archival technology variously veils or overemphasizes those concerns while accumulating a host of more abstract ones on top. We are now equipped to look at our recurrent ideas and decide if they are indeed general, or if they simply happened to be cross-paradigmatic enough to be included in some or all of our analyzed paradigms. We can start with an apparent counterexample, agriculture, for while agriculture is certainly depended on from Mesopotamia through Greece, India, China and the Muslim world, it is not always needed. Indeed, mobility is an interesting alternative strategy apparent in any Iron Age nomadic culture. Of course, the core idea is sustenance, and any prehistoric group in, say, an abundant equatorial environment could do without both mobility and agriculture. Thus, these are what we could call post-archival, more abstract means to achieve more basic ends, eventually coming to construe a hierarchy of these. Contra Abraham Maslow, we do not call them needs (450), for the needs and basic required knowledge have not changed, but rather more abstract tools to match a technological level, problems we have in a very precise sense invented (which in turn means that socially, these do paradoxically become effectively needed).

So much for agriculture and mobility, what of the effects of the sun and the shields of security? The sun is likely one of the clearer examples of a concept with derivatives (light, heat) general for any earth life form. The shield, on the other hand, is a little more nuanced. We transformed this question earlier into one of protection and safety, which, while a common concern for a home, family and altricial development, can be achieved

through a wide array of means: fortifications, camouflage, strategy, or weapons and armor like the shield. Particular to the proto-Iron Age battle, Homer describes this arch accessory, which, for instance, today would be a joke in terms of actual security. The square is perhaps the most difficult, though we have all the tools for the problem. While the moon, the sun, the sky dome horizon, and such make some prehistoric cases for circles, the square is a harder sell. Clearly with the agricultural lots surveyed, with inscriptional planning interfaces, we have examples in addition to such phenomena as crystal structures; still, it seems we have again reiterated forms of food and labor accumulation, of scaled modes of communication, that will then translate into the more general issues of sustenance and dwelling. Yet a square is not agriculture. Thus, geometry takes us into the most common space of archival technologies, where a relatively clear hierarchical reduction is not possible, and abstract problems can translate to inevitable ones in multiple ways.

With this we can frame more received ideas of scientific constancy. Newtonian momentum conservation, which, via Emmy Noether, is translational symmetry, is a recurrent factor usefully taken as an axiomatic assumption in calculating force diagrams. Like the square, however, which of the many things the abstract diagram can refer to (and why it matters), is indeterminate. The power, we could say, of the square is its lack of ties to one recurrent problem, which allows a conceptual parsimony in addressing multiple issues with one idea. Archival technology proceeds by inheriting and black-boxing past concepts—the square and many other concepts must be assumed before a free body diagram becomes possible. That this inheritance has no limits is the great boon of such symbolic technology—their physical translations pose the great problem. We can translate this into a contemporary ecological data problem, such as the Mauna Loa rise in CO₂ (Keeling et al. 538–51). Our abstract model becomes a bio-spheric approximation, and like the shield, we argue, the abstract chain of effects will result in human inhabitability. The act of protection will be achieved by optimizing both the description and reversal techniques of our square shield. Where the agriculturalist might appreciate the mathematical tool of planetary and celestial prediction as an aid to getting fed, the homemaker might benefit from an environmental model that helps to build an environment suitable for humans.

Scientific truth then is built on recurrent roots (the sun, protection, sustenance) that expand into more abstract problems. A paradigm always considers the interesting and immediate abstract problem as more relevant

and scientific. Plato is not investigating morals to recover understanding of Achilles' wrath; indeed, it is seen as something to overcome to arrive at the more cultivated idea he proposes. Yet an inter-paradigmatic understanding will see understanding such a "battle-emotion" as the necessary logical root to arrive at a more general privileged idea of emotional containment through rational means. In the same way, Achilles the front-line warrior has a shield and his wits as his methods of protection, whereas dialoguing Athenians have the city-state apparatus taking care of this for them. They have not done away with armor; it has been abstracted to a city level, to a mercenary level, to a level that conceptually has it black-boxed so a meta-problem can be addressed. In one direction it may seem that science is improving as it is building up abstract layers, yet, simultaneously, it is fragmenting basic problems into abstract categories, complexifying problems while increasing the toolsets to describe them. The scientific process works to maximize fallible investigation within a paradigm to ultimately arrive at the inter-paradigmatic grander consensus of addressing general issues.

Debates again: examples, winter and summer. An object we have not analyzed deeper is water. Can we put it in the generality of the sun? What sort of idea or problem is water? As in Roman Polanski's *Chinatown*, the whole fuss (in Enlil's eyes) turns out to pivot around water. What is the core issue at stake here; what will make this problem a non-problem; what is the essence of the debate? It is water. Our conceptual reduction is also a material description, our best knowledge takes us to an embodied evolved space, a contained and physical one. The most successful ideas have this material quality which a rarefied illusion would be confused by until it can empirically prove causal reasoning. Causal priority for Enlil is that with water we have good agriculture; the sun is less foundational. So both are not equally dispensable or necessary even if we ultimately need both—basic ideas recur, are compared, come out more or less critical, and so we empirically repeat. In the end we just see that some things repeat more than others, and their subtraction becomes more destructive. We might transport away from Near Eastern deserts to a polar region where water abounds and the sun's warmth and light is scarce. More tension, more debate, more examples, more discourse.

On the one hand, we have a spectrum of concepts that approximate a true real, on the other, a variation from paradigm to paradigm on what their proximate real is. Each proximate real may be more locally important but enter into a subsidiary role globally. By revisiting the Mesopotamian

case in an independent way, we can see technological patterns, the closer to a general technology, the closer to a recurrent truth. More abstraction leads to more rational sophistication and translatability with a more complex empirical method. The settled hubs of realist tendency then are found with *Occam's razor* in the greatest simplicity, from which each local node arrives from their relative paradigm. Revisiting Achilles to Plato, we have seen a shift from an us–them idea of protecting our own, to a more universal idea of abstracting emotion into a rational generality or moral goal. But the warrior's fight or flight anger, which might save his skin, is not abandoned by Plato, but is de-subjectivized and analyzed from a more objective standpoint.

The Homeric bard's inspired and poetic retelling of the Trojan war reaches a point where its knowledge is more ancestral than contemporary, yet for Socrates, it is still a cultural binder and something not to be discarded entirely. That such a removed world needs an analytical mindset is without question in order to make space for a new empirical truth. Thus, the emotions and situated geographies of the gods and heroes of their Greek ancestors are important and continual objects of dissections and some of the many nodes by which to arrive at a multi-emotional generalization. Was that objective pivot for Homer the past epics he might have read and used as a model? Perhaps Mesopotamia's *Gilgamesh* whose concern for his city, documentation and divine kingship was seen as prestigious but outmoded over a more psychologically translatable tale of passions and drama. And *Gilgamesh* for Plato is quite simply not an object of inquiry at all, a king exiled or sacrificed, now too ancestral to be of referential use, though an indubitable building block of the past. Aside from defining the limits of the current Platonic paradigm, it is these excluded tales that will become fertile seed beds for future epistemic innovation. Could it be said that Vitruvius returns to a subjective valorization of *Gilgamesh's* concern for civic wellbeing, except now with an inherited objective universalism that follows from Platonic literature?

Whatever the path we choose, we will find there are many paths, and that proximate truths cycle between the subject, object, and abject, all the time oscillating around realist hubs. Mesopotamia's concern for food abundance, Baudhayana's interest in adequate social architecture, even Heng's quadratic or Khayyam's cubic methodologies, none of these cycling proximate questions are completely arbitrary but need some path however complex to more general truths. That is, while cycling subjectively, objectively and abjectively, we are uncovering the inter-paradigmatic truths

that different symbolic and technological contexts reveal over space and time, the very concerns that set us off. The subjective view will maximize empiricism, the objective rationalism and the abjective the paradigmatic. The more we cycle through their different ecologies and domestic epistemes, the closer we get towards a view of the ecological real.

In the dialogue, the Mesopotamian natural concern is echoed in the Pre-Socratics, yet for Plato this is a rational backdrop for shifting to a priority of civic moral questions. Platonic realism uses this realism as a pillar and is in accord with the naturalist skepticism of social science as embodied by the sophists. Conversely, we could say that Platonism takes a human scientific pole to then reinvent previous discarded naturalisms into a new realism. What changes is a framework's emphasis on Plato as a socialist real thinker or a realist social one, and how that serves to highlight questions being asked about the paradigm and bigger inter-paradigmatic pictures it can help paint. What is part of its inherited tradition and what is a cultural discard it takes to reinvent. In our previous example, we can say that Plato continues the moral literary tradition assuming a civic context, or contributes to civic literatures adding an integral moral element.

We ask what is the best path to get to Plato's realm and from there to a more general one. One way is that we might explore all descriptive accounts and find their commonalities. In our two past trajectories we might say that Plato is a thinker of morality in the polis, and a researcher on social science with a realist perspective. We can leave that divided into two paths or we could then say, well, Plato's *Republic* is at once realist and political, and that his moral questions are social ones. This could give us two more paradigmatic paths or we can then say ultimately he is a social behavioral thinker within an ideal polis and trace that to the general real. Here we have a descriptive account of paradigm formation: we have a space and time, but then we have the symbolic archival world where we find it.

Archival development links more and more disparate spaces and times in the very simple sense of what Plato could have read and used to build from. Simultaneously it has its own accumulating development, translatable and impersonal, that complexifies human knowledge apparatuses over time. But Plato's place in that accumulation is his time and space, but also all previous Bronze and Iron Age archival texts that he has access to, and in any order as the archive flattens chronology in a simultaneous echo chamber. The paradigm then is Plato's construction and the subsequent reader's construction on a platonic text.

Returning to Kuhn after we have more thoroughly fleshed the situation out, Kuhn's own subcultural examples depend on a citational community that recurrently identifies a moment starting with, say, Einstein, much as they might with Plato. So, although a war or revolution might exemplify paradigmatic extremities, in a scientific sense, they become of interest when revived through the citational archive. For all the possible levels of paradigms, what matters is a community that associates itself as followers of Einstein or Platonists, and in turn for Plato what Eleatic, Pythagorean, or whatever ideas might be self-identified into their episteme of subjective reality (and in turn what is objectified and abjectified).

An idea that brings people together and that gains a collective importance becomes a node to the real. Bringing together more nodes reveals the preferential attachment at the hubs which then become better approximations of the real. How many nodal perspectives, how many imaginary points and vectors of vision can we reveal to get the best idea of a general structure? This is the proposal of a skeptical and descriptive methodology. Speaking in terms of rationalization, a theory is best stated in the most translatable and condensed form. Speaking empirically, it is the examples, the experimental descriptions, the thought trials and frameworks that reveal the skeptical probing picture of the affair. Without skepticism and empirical robustness, logical frameworks can become castles in the air. Argumentation and exemplification are the salves for this, and the reasoning behind an artistic-scientific approach and merging scientific and cultural problems as one empirically lacks what the other in turn affords.

One might inquire on the impossibility in predicting the ecological outcome of these accelerating contexts and their underlying apparatuses that our very tools to understand the *oikos* may be our undoing in some form. However, if there is some intuition or prior evidence to inform such forecasting, it is believed that maximizing such pictures and evidence as to the nature of accumulating archival technology could contribute. How many past paradigms with similar questions can we compare having future knowledge in those cases, and how can that begin to separate hype from science, actual events from skewed estimations? How many past paradigms have the same technological drive that we cannot quite understand?

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