Review of the Book: *Theory of the Object* (Nail, Thomas, 2021)

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"What makes possible the existence and persistence of a mundane object like the ketchup bottle I hold in my hand?" (2021, p. 3) As in his previous works, Thomas Nail finds a manner of writing that manages to elaborate a very different style of thought in ways accessible to laypeople. "We live in an age of objects", (ibid., p. 1) he opens, and the innovation he seeks to immediately introduce, the central problem he wants to tackle, is to think a kinetic object. That is an object as "a metastable formation of matter in motion." (ibid., p. 4) A world then, that is all matter as motion and difference, and what appears stable is so due to relative difference of movement. A central problematic that   emerges is how to explain that for much of Western history thought, the world or abstraction in general, whether as ideas in philosophy or numbers in mathematics, were anything but conceived as primary motion. To be successful, Nail's argument will explain how (the illusion of) stasis [the capacity to treat as if static] emerges out of constant motion. As such, Theory of the Object expands on the theory of motion established in his earlier magnum opus, Being and Motion (Nail, 2019). "We may find it useful sometimes to treat objects as if they were static, but when we do we tend to overlook what creates, sustains and changes them." (2021, p. 23)

A philosophy then, that can account for both change (as primary) and the appearance of stasis. Nail demonstrates in a few paragraphs how philosophies up to know, whatever their differences, have one thing in common: "... all four theories start with a division either between subject and object or between object and relation." (ibid., p. 10) The four theories are constructivism (any correspondence between an object and what a subject thinks of it is arbitrary), objectivism (or naive realism), but importantly

also relationalism (here in the example of Actor-Network Theory ANT) and object oriented ontologies OOO (here mostly thought through via Graham Harman). Much like the latter two, Nail's own project is enabled by the work of Gilles Deleuze, as is evident in the problematic itself, as well as the references such as Lucretius or Whitehead. The author however wants to create an alternative to the more dominant strands of relationalism, where he includes Deleuze's works themselves, as pure becoming happens outside of history, outside of materiality (ibid., p. 12), and OOO, where change happens in the hidden parts of objects that transcend the world. I would frame Nail's main innovation with regards to the subject/object or object/relation framing as residing in an approach where both of the pairs come to be formed out of one movement that comes to differentiate itself into these distinctions. Movement as material process in Nail's philosophy is indeed primary and all that comes to be formed in relative stasis is always already entangled. Meanwhile, the author states clearly that there are many objects that are outside of human worlds: "The universe creates all kinds of objects that have nothing to do with humans." (ibid., p. 284)

The objects Nail is most concerned with are numbers. And for good reason, as they are so central to what is considered science and are commonly treated as ahistorical. "The aim of my history of science is to show that there are four main kinds of objects. The first one I call 'ordinal' because it develops through linear sequences. The second I call 'cardinal' because it creates and organises wholes or units. The third kind of object I call 'intensive' because of its highly differentiated internal structure. The fourth I term 'potential' because of its unspecified or yet-to-be-determined range of possibilities." (ibid, p. 13 – 14) And then, there are the contemporary objects, co-existing with these past ones. This new kind is termed 'loop object', and its "main features are its hybridity, indeterminacy and relationality." (ibid., p. 14)   While these kinds of objects are increasingly abstract (and thus seemingly immaterial), they acknowledge "the priority of indeterminate movement" (ibid., p. 279), that is something as always outside of control and givenness. All the while a difference between indeterminate movements as nature and the ones modeled as mathematics remains, the latter remaining on some level always deterministic. Thus, there is always a difference between objects that come to be through matter in motion, and matter in motion as mingled with human technological activity. What remains to be explained

is to why when all objects come to be through motion, are many treated as if they were ideal, preexisting the world.

There is a material movement that generated the conditions for such retroactive projection to appear where at some point numbers begin to be treated as if they were primordially immaterial. All the while, as Nail strains to repeat, different kinds of objects persist – this is not a subsumptive teleological history. As a reader with an anthropological background, I find that the new practice of treating things as if , and the material infrastructure that upholds this ability, gets somewhat sidelined, which rather than being detrimental to the argument merely demonstrates how the book opens up pathways for new research. Here, importantly, even the abstract, the immaterial is still, unlike in dominant readings of Deleuze for example, partly material. Nail further clarifies that treating objects in certain ways, precludes other ways of engaging with them (ibid., p. 65). A reality then, that is local, horizontally constructed and splitting into different versions.

The project explicitly enters the most basic contemporary scientific discussions: "It begins from the historical discovery of quantum flux and then tries to explain the emergence of stable scientific knowledge." (ibid., p. 11) For a reader steeped in science technology studies STS, including especially post-ANT research (such as the work of John Law or Casper Bruun Jensen), media archaeology and media philosophy (especially that of the German variant), and certain strands of anthropology that engage topics such as mathematics (e.g. Helen Verran, Ron Eglash), this cross-pollination is not exactly new. What Nail does that is new, is to include pre-history in his story and, following a similar pattern found in his Being and Motion, to explain how different eras of history were conditioned by different types of numbers that emerged from material movements, in order to demonstrate that numbers among others, are not ideal entities, but rather objects among others. It is in the empirical parts, where some limitations emerge, as none of the above-mentioned literature is referenced. I will return to the limits and generative possibilities for future research this lack points to.

Another major point is Nail's productive (re)definition of science. As he attempts to draw "connections across history, philosophy and science, looking for a bigger picture

than each discipline usually offers on its own", (ibid., p. 3) without building a hierarchy between science and philosophy, he comes to be concerned with objects that come to be made through science. He develops "a process theory of science and knowledge as the creation and distribution of objects-in-motion." (ibid., p. 283) In other words, "[he] define[s] 'science' quite broadly as the creation and ordering of objects as quantities." (ibid., p. 65) This is a formal definition, and any (human or non-human) activity can make the cut, such as bringing sticks from the periphery to the center thereby establishing this very distinction. Thus there were "three major prehistoric sciences: tool-making, signs and tallies." (ibid., p. 75) Meanwhile, science differs from art and politics: "For better or worse, science is the human practice of focusing on the quantitative dimension of things to make and arrange objects in new ways. The arts tend to do something similar by concentrating intensely on the qualities of things, and politics by focusing on the relations between things." (ibid., p. 65) With quantity and quality being intertwined as materiality, the lines between science and art become uncertain, focusing presumably on what aspect comes to be dominantly folded than what an object is. Or, I dare say, how it comes to be treated as if (an object was primarily quantity or quality). A human is a mobile body (extensive and intensive) and never simply separate: "There is no absolute division between a user and a tool, but only a relative difference depending on one's position in the operational sequence." (ibid., p. 75) To put it in other words, text and context constantly fold and are to be conceived materially.

Nail's is truly a process philosophy of science, lucidly demonstrating how distinctions appear through different movements and don't simply preexist the world. In this way, anything creates. He muses: "Why is it that when a human draws a fern it is art, but when matter grows into a fern, it is not? When humans keep track of a solar day with a calendar, we call this science, but when plants do it, we call it mechanical response. Why?" (ibid., p. 47) What humans do is part of the same decentralized process of creation and cross-pollination, without hierarchy. How is this possible? "In brief, matter flows indeterminately, then folds up and cycles into metastable objects, and is then distributed with others into fields." (ibid., p. 13) What is considered knowledge then, as well as technology and infrastructure, is the metastable result of the same process always on the verge of dissipating and folding into something new. That is,

"knowledge does not represent the world but is part of the world. It is the way the world weaves and orders itself." (ibid., p. 49) Such definitions articulate what can be discerned in the entire conception of the book and the reason for why it is such a valuable entity and will certainly generate many effects far beyond specialist fields. The different simplifications and omissions Nail repeatedly refers to are without a doubt necessary for writing a book that performs a different type of thought for some of the most stubbornly held cultural conventions in science and the image of science.

It is however here, in what is purported to be a formal definition, that Nail's thought begins to short-circuit. Since his historical account of the emergence of new objects is based in one specific geo-locality, namely the line from speculation on Mediterranean-centric prehistory, through Ancient Mesopotamia, Greece, Euro-centric Middle Ages to Euro-Modernity, the content (the way Nail imagines how humans and objects come to be through the kinetic process) becomes the form. This is not a problem for the theory per se, as form and content emerge from the same movement, it is rather an issue because the lack of comparative materials (of other content/form emergence of human-adjacent realities) makes it impossible to become aware of the very specificity of the argument than Nail, however self-limiting, seems to be aware of. It leads to an overstatement of the centrifugal movement in relation to the centripetal, whether in terms of the center-periphery emergence thoroughly discussed in the first part of the book, or the movement between different centers and peripheries (what could commonly be called different techno-cultures), as well as their entanglements (what is center somewhere is periphery elsewhere). These are of course anthropological concerns, but Nail necessarily engages anthropological problems and offers a grand narrative to substitute how humans came about, where he shifts the focus toward the emergence of science and objects, through material motion, which still includes humans and the objects and other things that come to be through this formation. Importantly, the points I am about to expand and Nail's project do not exclude each other, far from it, they are mutually generative for further research, and Nail's book does propose a conceptual infrastructure to connect all these various strands and expand our understanding of what is possible in the world as far as science and the emergence of objects goes.

As Édouard Glissant, and Deleuze (in Islands) for that matter, make clear, there are radically different (incompossible) ways of thought in this world. And they come to be made through the environments that are folded into thought. As the German media archaeologist Siegfried Zielinski (2006, pp. 25 – 26) points out, for Glissant, Caribbean thought does not turn around a center, as the West and Near East with it's clear distinctions between land and sea, nature and culture, light and dark, destructive and creative, invisible and visible (2021, p. 93). This distinction is already contained in the word, Mediterranean: in the middle of the lands. This lineage of thought points toward the one from which the other is distinct, and between which, as in Nail's favored center-periphery distinction, movement occurs. Whereas the Caribbean features only one "… standardizing [,] factor […] an invisible trace running along the sea floor – the chains of the slave trade." (2006, p. 26) An entirely different constellation from which thought (qualitative and quantitative) emerges. The imagery Nail draws on, further comes from lands where the figure is easily separated from the ground. Deserts with space between cities, oases, humans. For me, as a researcher that engages more tropical areas, it becomes very evident that in Southeast Asia or say, the Amerikas, the emergence of center-periphery distinctions, quality and quantity, given we follow a materialist account where the environment folds into fields, must have been very different. As appears evident with the formation of a mathematics by the Maya on other grounds than what we are used to, amalgam of different histories that 'our' mathematics are (Goodman 2016).

Further, as already Mauss & Beuchat (1906) pointed out, there are societies that change their organization and moral conventions with the seasons, as they move around following changing conditions, thus making a simple center-periphery distinction impossible, implicitly demonstrating that it only holds for a very specific type of sedentary society under specific bio-environmental conditions. Nail, with his exclusive focus on agriculture, also misses that many indigenous people's were (or perhaps continue to be) horticulturalists (turning the entire American continent into a sort of a garden) or pisciculturalists, among others. All of these arrangements make entirely different forms of abstracting possible, if we take, as Nail does, that abstraction emerges as part of condition-specific problem solving inherent in material processes.

Further, when it comes to signs and later the abstraction of letters (discussed on Nail 2021, pp. 79 – 86), the Yellow river basin, the so-called cradle of Chinese tradition, while probably not being as different from Middle Eastern conditions as jungles (where it is generally difficult to visually discern where one thing ends and another begins and emerging empires face entirely different organizational challenges that would lead to other kinds of abstractions), still came to form a unique different way of doing science, numbers and thinking (Hui 2016). One that until rather recently, much like the tradition of the Indian subcontinent reaching into other pasts unconsidered here, such as Mohenjo-daro, was far more productive when it comes to scientific innovation than the European one (with it's lineage to Sumer and Egypt, as retro-fitted in modernity). While it is not a problem per se that Nail doesn't engage any of this problematic, it is one that is not external to his project, as his prehistoric accounts draw on an imaginary quite evidently drawn from the Mediterranean (and it is well known that many areas had a very different kind of vegetation, biosphere than we know today) when thinking through how a process came to be formed in what were apparently densely forested areas of today's Europe. This is what I mean by a formal process becoming entangled with its content, and unfortunately quite explicitly teleological in the account of how ritual, labor division and power emerged (2021, pp. 92ff.).

When it comes to mathematics specifically, the development of material infrastructure that makes new types of mathematics possible, as certain things come to be done by (cultural) techniques, creating new conditions for the human mind-bodies that enter these fields and changing what can be thought and done, has been treated extensively by media theoreticians (e.g. Krämer & Bredekamp 2013). And anthropologists, such as Helen Verran (2001) and Ron Eglash (1999) demonstrate entirely different and very material ways of counting, of using the body for counting, of cities built as fractals (unnoticed by the colonial European perception which only projects its own conventions on the world) in different parts of Africa. Anybody who has ever traveled or watches world cinemas will have noticed there are many ways to count (to pass from material quantity to ordinal numbers), and is possibly even aware of the Gaulic manner of counting with 20, instead of our common ten, still preserved in the French language. To be clear, none of this contradicts in even the slightest way

the overall arch of Nail's project. Such knowledge merely points to an important pitfall that necessarily occurs, due to the limitations each of us has in our own positionality, namely that we take, analogously to the tendency to mistake ordinal for cardinal numbers, or quantity for quality (two of the main examples Nail uses), content for form. It is precisely why anthropological and media archaeological research will remain important as it (re)constructs comparative empirical examples that make it possible to conceptualize ever further aspects of reality that are not simply given or evident. So we return to the question of practice indicated but never treated by this philosopher: "There is a growing divide between 'knowing how' and 'knowing that'; skill and knowledge are going their separate ways" (Krämer & Bredekamp, p. 26) The feedback loop between practices and material reshapings of the world have been thoroughly thought through by various media philosophers, and it is somewhat unfortunate that none of this appears in Nail's work.

However, he does explicitly acknowledge such limits: "the present work is limited to a particular geo-historical lineage from prehistory, to the Near East, and into Euro-Western modern scientific practice. In no way does this suggest that the West has the only or the best sciences." (Nail 2021, p. 285) But when working through the material in detail, he does not heed his own parameters and repeatedly makes 'just-so' generalizations that inadvertently betray his own standards.

Lastly, I can't shake the feeling that his method is deductive when it comes to the historical periodization. According to Nail, the "most abstract move in ancient logic" (ibid., p. 124), is one that presupposes some initially true statements and based on these arrives at logical conclusions that need not be tested against the material world. While Nail does 'test' statements, it still is as if the common way to delineate epochs was taken as a given and only then were developments that vaguely fit the periodization looked for. This is the generative power of the as if, but one cannot but wonder to how different results different periods and different sources would lead to. I suggested some lines of research above. Nevertheless, as repeatedly mentioned here, the theory can account for both its own emergence and varieties and possibilities outside of what is formed here, this never becomes a limit in general. After all, Nail clearly states how all of the different types of objects persist and as such make new

kinds of objects possible. "The objects we hold in our hands today are mixtures or hybrids of these four historical types." (ibid., p. 67) All of which relates to the question of cosmotechnics, as opened by Hui (2016), that is whether the technologies, in other words productions of objects, today could be otherwise. In thinking the possibilities of technodiversity, the question of what it means for the quantum 'loop objects' Nail writes about immediately appears. It is precisely because all kinds of objects persist next to each other, that my examples have an import on all of the objects in Nail's book.

I hope to have shown, through the extensive discussion and examples of other imaginaries that even with philosophies conceived based primarily on movement (regardless of how innovative they actually may be) begin to split differently when encountering slowed down and reshaped fragments of the world. In other words, a theory becomes good, when it can be adapted to new information, when it can develop through new encounters. And one thing is clear, after reading Thomas Nail's Theory of the Object, it is one such book that will lead to many productive encounters and maintain its relevance, precisely because the conceptual infrastructure is kinetic. Perhaps especially when it comes to readers coming from backgrounds other than continental philosophy and theory-heavy anthropology and media studies, such as the analytic philosophy Nail at times refers to, this book can act as a bridge that will create understanding between a wide variety of scientific practice, as all of us can connect to the material processes Nail describes. Something that, admittedly, most of the research I engage and compare his writing to, will not. Precision, much like the use of common words, comes at an inverse price. Nail here, as in his other works, manages to find that fine line where common English does not yet fall into conjecture and biased unbased assumptions.

Bibliography

Eglash, Ron (1999). *African Fractals: Modern Computing and Indigenous Design.* New Brunswick: Rutgers University Press.

Goodman, Michael K. J. (2016*). An Introduction to the Early Development of Mathematics.* Hoboken: Wiley.

Hui, Yuk (2016). T*he Question Concerning Technology in China: An Essay in Cosmotechnics.* Falmouth: Urbanomic.

Krämer, Sybille & Horst Bredekamp (2013). "Culture, Technology, Cultural Techniques: Moving beyond Text". *Theory, Culture & Society,* 30(6), pp. 20−29.

Mauss, Marcel & Henri Beuchat (1906). "Essai sur les variations saisonnières des sociétés eskimo. Étude de morphologie sociale". *L'Année sociologique IX* (1904-1905), pp. 39−132.

Nail, Thomas (2019). *Being and Motion*. Oxford: Oxford University Press.

Nail, Thomas (2021). *Theory of the Object.* Edinburgh: Edinburgh University Press.

Verran, Helen (2001). *Science and an African Logic.* Chicago: The University of Chicago Press.

Zielinski, Siegfried (2006). *Deep Time of the Media*. Cambridge: The MIT Press.