

Where is the Concept?¹

(localization, ramification, navigation)

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The ecology of the space of the universal, in the sense of the formalism of the environment where the interactions between the universal and the particular, the global and the local take place, is governed by two properties: (1) continuity and (2) contingency. These two properties were taken up by Charles Sanders Peirce as the doctrine of synechism and the doctrine of tychism, the doctrines of continuity and contingency. In Peirce's philosophy, tychism is responsible for the instantiation of particularities or local contexts. It expresses the contingent instantiation or ramification of the universal into its own particular instances. For example, the Peircean free sign contingently constitutes its local and interpretable contexts. Synechism on the other hand is more complex, since continuity can exist both as a general continuity (the self-reflexivity of the space of the Universal in Peirce's work) and as local and intermediating modes of continuity between particularities. Accordingly, continuity is a protean concept since it can appear in different guises in different contexts, at one pole the self-reflexive continuity of the universal and at the other the local discontinuity of the particular which is still immersed in the continuity of the former, like a regional puncture – a local rupture – in a piece of white paper. Between these two poles lies a vast complex of mediating levels of continuity.

I would like to talk about how the ecology of universalism as the horizon where the universal and the particular, the global and the local interact is a complex interweaving of continuity and contingency, synechism and tychism. We can generally investigate the space of the universal through particular instances or local contexts. But once we carry out this investigation through the synthetic environment that the interweaving of continuity and contingency create, we can arrive at very interesting results. Looking at the space of the universal, through particular instances or local contexts is in this sense no longer a purely analytical procedure. It is like looking into an expansive space through a lens that does not produce zooming-in and zooming-out effects by simply scaling up and down the same image but instead it produces synthetic and wholly different images across different scales of magnification. It then becomes almost impossible to intuitively guess what kind of conceptual and topological transformations the local context—a window into the universal—undergoes as it expands its scope and becomes more true to the universal.

By approaching the space of the universal through local contexts in an environment where continuity and contingency are interwoven – that is, where different layers of mediation between universality and particularity, the global and the local exist – we can arrive at intriguing conclusions. For

¹ This is a transcription of a lecture given at 'When Site Lost the Plot', a conference organized by Robin Mackay at Goldsmiths, University of London, 2013.

example, we can tackle the question of synthesizing local contexts in order to broaden their scope without merely adding them to one another in a pluralistic and flat fashion. The transition from the local to the global requires something more than the juxtaposition or addition of local contexts. It requires a form of interknitting multiplication between localities that while it acknowledges their particular specifications (parameters and orientations), takes localities beyond their immediate and restricted ambits. It is in this sense that the passage from the local to the global is not simply a form of transit through which the local element preserves its constancy. It is instead a mode of production of new orientations, structures, dimensions and new intuitions of locality and globality. In this respect, universality becomes the operation of productive locality which is globally oriented. Universality – in line with Hermann Grassmann, Charles Sanders Peirce and William Lawvere – is now understood in terms of the analytico-synthetic passage from the local to the global and through the lenses of synechism and tychism.

The understanding of universality as a productive and constructive passage from the local to the global is against two dominant approaches in the dialectic of universality-particularity. One, a universalism in which a pre-established and given idea of universality is imposed as the term of unification. The other localism that insists on analyzing the problems at the level of the local without any recourse to non-local possibilities. But localism can only answer already established local problems, it has no room for the emergence of new local perspectives because it is the globally oriented plane of productivity that conditions the new local perspectives and is respectively capable of tackling with potential problems associated with new local domains. In other words, localism is precisely what does not see and engage with any future local orientation or problem. In short, localism is not the answer to problems at the level of the local precisely because it cannot adequately examine the situatedness of a local domain within a global structure, its points of liaison with other local domains and so forth.

Finally, by envisioning the space of the universal as the interweaving of continuity and contingency into a veritable protean synthetic environment, we are able to navigate from the local context or the particular instance to the global, with the idea that all roads to the universal are synthetic.

Before moving forward, first of all I would like to thank Matthew Watkins for offering a very lucid account of some of the most sophisticated fields in Mathematics developed since the second half of the twentieth century. There are a couple of things I would like to talk about with regard to Matthew's presentation, one is the question of generalization that he brought up, which is a very important one in mathematics, but also I think in epistemology. Mathematics is a discipline for the systematic navigation and stabilization of the concept. When I say stability, it is best to think about this stability as a structural stability and in terms of non-static stability, one that allows rigorous epistemic chaos-control of the concept and respectively, provides a community of concept-users with an optimal access to a sharable system of concepts. Without the stability of the concept as a space of qualitatively organized information the communal access to the inferential economy of the concept is impossible. Without this communal aspect, knowledge generation is unfeasible, formalism and the inferential tracking of the concept are but distant dreams.

In this respect, mathematics is a field that studies conceptual behavior of a specific set of concepts, that is, the class of ‘maximally stabilized concepts’. Fields of mathematics are very different from, for example, those of natural language. I think we can say—and this a controversial claim to some mathematicians—that mathematics is a subset of natural language, even though, mathematics is irreducible to natural language, because we trivialize some of the concepts of mathematics when we convert them back to natural language. So to repeat, both natural language and mathematics deal with conceptual behaviors, but the concepts of mathematics primarily deal with maximally stabilized concepts and invariants. It is this reliance on stabilized concepts that permits rigorous mathematization, formalization, systemic concept-navigation and both logical and constructivist approaches to mathematics. It simultaneously constitutes positive aspects of what mathematics can do and what it can’t do; it occasions what Italian mathematician and epistemologist Giuseppe Longo calls the “reasonable effectiveness of mathematics”.² This is reasonable effectiveness because the concepts of mathematics are determined by certain forms of stabilization and invariance, and invariance allows for thought to be established in mathematics.

Mathematics, from this perspective, is a discipline through which thought can be stabilized via a form of conceptual chaos-control. This stabilization or epistemic and conceptual chaos-control that finally conditions the most robust forms of communication and permits the navigation of the space of the formal concept over which man has no hold, is the constitutive gesture of modern knowledge. In its stability, the modern system of knowledge is established as a shared enterprise endowed with accumulative functions which like a memory remains stable upon being accessed by a community of concept-users. Since every time we access a memory, we introduce a form of instability into it, if the memory doesn’t have a stable structure it will undergo chaotic transitions and respectively, it won’t be able to retain the accumulated information. It is the stability of a memory that ensures shared access, the retaining of qualitatively organized information (epistemic inheritance) and functional generativity. In addition, the stability of the system of knowledge guarantees the procedural unfolding of theoretical reason through stabilization processes.

As I mentioned before, this stability is very different from fixity. However, exactly by virtue of maximizing this stability, mathematics is also rather limited. How so? Because concepts built on maximal stability cannot be overextended to phenomena which do not have this kind of invariant stability which is the characteristic of physical objects. For phenomena which cannot be defined by maximal stability or physical invariance, epistemic mediation requires concepts which are not strictly stabilized. For example, how do we deal with fields like biology, where basic phenomena are identified by their nested organizations, symmetry breakings and biological stability which is very different from physical invariance. The invariances of physical objects are associated with geodetic principles, the law of minimum action for a given trajectory, where the course of evolution for a given object follows a specific optimal trajectory. In biology however, there is no such a thing as optimal or specific trajectory. Evolution is possible only in virtue of generic and non-optimal trajectories. Darwinian natural selection is the expression of navigating compatible and compossible trajectories. The system evolves and adapts because it does not have a specific – the most optimal –

² See Francis Bailly, Giuseppe Longo, *Mathematics and the Natural Sciences: The Physical Singularity of Life* (London: Imperial College Press, 2011).

trajectory or evolutionary path. To put it differently, the invariances of physics which inform mathematical invariances through maximally stabilized concepts do not exist in biological systems. That's why the application of mathematics to life sciences invites certain forms of confusion. If we say that life cannot be mathematized we are espousing a Bergsonian confusion that ends up endorsing vitalistic ineffability of life. But if without any prior consideration we claim that we can mathematize biology with the mathematics we have, we are in principle overextending the conceptual stability of the modern mathematics as rooted in physics to biology which can't be trivially reduced to the principles of physics proper such as symmetry-preservation. Nevertheless advances are being made in mathematics, that, especially over the last twenty years, through different fields of geometry, topology and algebra, allow for a conceptual reorganization of mathematics and also possible renegotiation of the current epistemic organization in biology.

So, the problem of generalization in mathematics is not concerned with generalization in the sense that we say 'we are generalizing too much', it is not really a problem, it is a positive program. Rather than being a negative aspect, generalization here characterizes the generative structure of mathematics. Generalization allows the construction of a dialectical form of generativity between local and particular concepts and structures of mathematics and their generalized counterpoints. It is this dialectical generativity made possible by a program of generalization that expands the capacity of mathematics and enables the kind of conceptual reorganization that I was talking about with regard to mathematics and its renewed application to biology. The generalization program recalibrates mathematics within a long tradition of universalism by way of establishing a synthetic environment between the particular and the universal, the local and global structures, variations and invariants, quality and quantity, difference and integration. What French mathematician and philosopher Jean Petitot calls 'bimodalization' in mathematics is the unfolding of a generative synthetic environment between modal poles and for that purpose what is needed is a rigorous program to generalize concepts procedurally, or in other words, bimodalize them into their particular and general modes, local and global constructs.³ There is a long trajectory of historical conceptual and philosophical problems behind this generalizing program of today's mathematics. It is not as if mathematics has some kind of obsession with generalization—no, these are responses to certain historical problems of philosophy and, in a more particular sense, mathematical problems that have been arrived at and which now mathematicians are working on. The generalization aspect of mathematics and the idea of bimodalization that facilitates the generativity of mathematics brings us back to the subject of this topic which is the formalization of the space of the universal and a robust identification of a local site as immersed in this space.

I start the question of 'approaching the space of the universal' by discussing the problem of localization. Reductively speaking, in order to approach a space whose full scope is not given, we need to start somewhere, which is to say, we need to find and identify a site through which we can approach this space without ever overstretching the resources of the site or being restricted to the immediate resources of its local horizon. This is the question of localization, which I believe is one of the most classical problems of philosophy. In fact, the question of localization undergirds the kind

³ See Jean Petitot, Local/Global in *Enciclopedia Einaudi*, vol. 4 (Lisbon: Impresa Nacional, 1986).

of ontological and epistemological justification you make about yourself, the subject and the world. Precisely because it is the localization that permits a robust approach and it is the robust approach—in the sense of navigation of different pathways—that forms knowledge and makes sense of ontology. Localization is always an act of organization or configuration, it operates under the schema of ‘doing violence’ to a landscape as Gilles Chatelet suggests.⁴ A perturbation, the injection of disequilibrium, a designated alienation, a systematic distancing that brings about the possibility of qualitative organization of information from a homogenous information where nothing is given.

Suppose the space of the universal as a homogenous informational landscape in which everything is one and the same. It is a desert for which no map and no compass yet exist. In order to navigate in this desert, first we have to inject a designated instability into it so as to disturb or qualitatively excite the epistemologically opaque homogeneity of this space. This designated instability and local disturbance generates the first opportunity for organization and navigation in a space which is not there to tell us a story or guide us through its mysteries. The designated instability that agitates the homogenous informational landscape and opens up a qualitative rupture in an otherwise quantitative horizon is the first opportunity for the qualitative organization of information and subsequently, navigating this space. It plants an epistemic cue in the desert. This is the gesture that specifies the process of conception. What is conception? It is the qualitative organization of homogenous information into well-organized qualitatively-configured local spaces equipped with different modalities of access known as concepts which can point in different directions and are also endowed with alternative addresses. The space of the concept as a local site is an epistemic cue not a substantive map, it exercises a minimalist intervention to set in motion much larger and consequential epistemic approaches. Briefly speaking, the concept is the unit of knowledge.

This very idea of planting or organizing an epistemic cue in a landscape whose navigational map is not immediately given concludes the vulgar controversy about the nature-culture dichotomy which I think is at the heart of questions like universality and modernity: Just like the desert that is one and the same and precisely because of its homogeneity we don’t have access to its landscape, the monism of nature does not allow us to know nature without organizing an epistemic breakage. Ontologically, nature does not distinguish itself from itself. Monism is in this sense an ontological reality that demands a necessary epistemic strategy: Exactly because of this excess of informational homogeneity—a desert that is one and the same everywhere—we can’t immediately approach nature or navigate it. The nature-culture division is an epistemic division, not an ontological one. From the possibility of epistemic traction, this division is necessary and far from rigid. It provokes approaches to nature hitherto unimagined. To claim that everything is nature is at best an indulgence in the vulgarity of the obvious and at worst, a complete blindness to the epistemic conditions through which we are able to progressively make sense of nature.

The bimodalization of the universal to its global and local horizons is a navigational strategy which must be conceived through a local rupture, a regional discontinuity. To create or conceive this local rupture is the basic gesture behind the formation of the concept as a local site distinguished by its qualitatively differentiated information. It is the concept as a regional breakage or local disturbance in the qualitatively homogenous information that provokes approaches and pathways impossible in

⁴ See Gilles Châtelet, *Figuring Space: Philosophy, Mathematics, and Physics* (Dordrecht: Kluwer, 2000).

the absence of the epistemic rupture. Trying to understand nature without an epistemic division, solely through the ontological monism, is an appeal to mysticism. It results either in an ineffable conception of nature or an image of nature as a reservoir of meanings and stories about itself. Once we insist that the world is a repository of meanings, that it has stories to tell the subject without any demand for the subject to create a necessary epistemic condition, then we have already committed to conserve a stable relation between the knowing subject and the world. The world is always facing the subject as if it wants to tell a story, there is no need for the subject to destabilize its given status, to epistemically uproot itself so as to procedurally navigate the landscape. The subject of the world as a ready-made object of experience and a reservoir of meanings is quite stubbornly an anthropocentric and conservative form of subject even though it claims to be completely the opposite.

Localization should be understood in terms of bringing about an epistemic condition that once rigorously pursued cancels any conserved relation between the knowing subject and the world, rather than anchoring the subject in an specific place, it unmoors the subject within a navigational landscape. This is the deracinating effect that registers itself as a condition of enablement insofar as it liberates epistemic possibilities which until now had remained captives of the tyranny of here and now—that is, the knowing subject tethered to a local domain and a privileged frame of reference. Localization has obvious implications for thought not only because we ourselves are local instantiations within the terrestrial horizon, but also from an epistemological perspective: the concept as the space through which we gain traction on the world is a local horizon. As the most fundamental unit of knowledge, the concept, is a local horizon, a locally organized space of information within a vast inferential economy and immersed within the general structure of knowledge. So the question of localization allows us a form of systematic study of the local context, and in particular a systematic analysis of conceptual behavior. In this sense, we can say that localization is the ultimate procedural framework of thought. It's a procedure – even a gradualist and stepwise procedure – because, as I shall argue, the local is not rooted. Its analysis is not a matter of zooming in and out on a specific point. Instead the examination of the local requires a procedure to follow it in a navigational context, in relation with other local horizons, via different directions and addresses. No axiomatic commitment at the level of the local makes sense unless through this procedure, which is to say, only when we localize parameters and orientations or generally speaking identify what makes a local domain local. The local is not a fixed point in space, it is a mobile framework immersed within a generic environment. Its internal analysis is always coupled with an external synthesis.

From a different perspective, localization is a response to this problem that we don't have immediate access to the global horizon or the universal space, we don't know its full scope, nor do we have its map. The systematicity of modern knowledge originates precisely from the absence of such an access to the generic landscape, from the fact that it is not possible to know the universal space of nature without any mediation at the level of the particular or the local. In other words, since the scope of the global horizon is not given, since we have no prior information about the global structure in which we are working, then demands of knowledge will be directed toward procedures of local construction, organization and examination.

As I mentioned, the space of the universal is governed by two properties: continuity and contingency

characterized under the doctrines of synechism and tychism. The thesis is that the local context of continuity is that of the discrete, like a point; and if that's the case, if the concept is a discrete horizon from a certain perspective, because it's a local context, then what we deal with in thought, when we deal with the question of localization is a matter of procedural and gradual labor. Because if we have no prior information about the global structure in which we are working, then all the pressure of construction and demands of thinking are projected towards this local procedural construction.

But also we need to remember that, just as we do not have prior information about the global structure, we don't have a priori information about certain aspects of the local context either, and that's why the question of localization becomes important, both to bring into focus the local context of thought and also to procedurally determine the global structure within which it is immersed. As far as information regarding global and local characteristics is concerned, the lack of givenness is not an impediment. On the contrary, the absence of given information is a force that becomes the impetus of navigation, it fuels the labor of conception and conditions epistemic possibilities and pathways that could not be unlocked had we operated under maximum initial information.

Here when I mention procedurality, I'm not talking about some kind of subjectivist navigation: procedurality is a form of navigation. It is the change of perspective and behavior according to the logic of rules (rather than the rules of logic), according to the demands of the local context, according to the semantic context of a local domain within a broader horizon. So procedurality, in this sense, is a form of construction that allows for a step-by-step deployment of the rule-based armamentarium of reason in order for us to apply a specific methodology to different local contexts. Also it makes it possible to gradually understand the dialectic between the local and global contexts, on the assumption that we are working in a non-trivial environment, that the global integration of information is not merely the extension of the local integration.

This is very important. In procedurality, we should understand that faraway global behaviors are not simply the similar or homothetic variations of local behaviors. Procedurality or the shift of the perspective according to the shift of landscape of rules is a response to this asymmetry between the global and the local. For example, contingency differs at different levels. We cannot overextend the concept of contingency at the level of the individual gambler to the contingency at the level of a collection of games to the contingency at the level of casino. These have different levels of probability which cannot be over-stretched to one another. By calling this hierarchy of gambles within gambles 'contingency' without any regard to the specifications of each distinct level, we are making a flat universe. A flat universe is a trivial environment in which the content of a local domain is uniformly distributed across the entire horizon. It's another variation of what Mark Wilson calls "the classical picture of concepts".⁵ According to the classical picture, a concept fully and in one-to-one relationship covers the object. The speculative implications of such a universe are indeed appealing because everything can be applied all the way down, concepts can be overextended from one domain to another at will. But as Mark Wilson points out, this conceptual universe is precariously overloaded. It is akin to a house where the basement is leaking, in trying to fix the

⁵ See Mark Wilson, *Wandering Significance: An Essay on Conceptual Behavior* (New York: Oxford University Press, 2006).

basement, the kitchen floor sinks in, in repairing the floor, some of the pipes burst. Everything always needs to be patched up because ultimately in this universe nothing works, the entire edifice is a house of cards. It wouldn't be too hard to detect this pattern in certain speculative philosophies where either the object or contingency is the crazy glue – the big idea – that holds everything at the levels of local and global together. Flatness is another name for the condition of triviality where the global structure has the same properties and/or behaviors of its local fields. But when there is an asymmetry between the global and the local – a non-triviality – we cannot solely resort to analysis (locally oriented) to produce or examine a global structure. Conceptual mapping for a non-trivial universe requires various conceptual maps or navigational atlases distributed at different elevations according to their different a priori statuses.

All thoughts, all conceptual behaviors, start with the bare minimum skeletal modality of the local, they start with the condition of triviality. Non-triviality is not a given, it is a matter of construction, a matter of procedurality, rather than being something that is already accessible. Rather than being something given, non-triviality – that is, the complex and productive passage from the local to the global – is the ambition of thought: it's something that needs to be constructed and achieved. So our role here is to outline the passage from trivial local conditions of thought and concepts, from local horizons to their non-trivial global/local entanglements. This ambition is in fact emphasized in the whole trajectory of the ongoing Copernican revolution. From a very historical perspective, the Copernican revolution is nothing but the reorientation of the Ptolemaic local concepts—which, in that scenario, means the earth as local horizon. What Copernicus does is to reorient the earth as the local context of thought. What he does is not some sort of a rupture, like the hyperbolic understanding of a scientific event, a rupture from the Ptolemaic model. From the mathematical, physical perspective, Copernicus doesn't do that much to the Ptolemaic worldview: he simply reorients it, he nudges it a little bit further from its local context toward the environment it is 'situated' in. Rather than explaining the motion of the planet according to a geocentric frame of reference, he studies the restricted motion of the planet already available in the Ptolemaic system from a new frame of reference outside of the earth. By doing so, he discovers and unites different planetary motions, reconfigures celestial motions with different circles and thus brings the earth to a full mobility that paves the road for the Keplerian Revolution. In effect Copernicus manipulates and disturbs the Ptolemaic system by turning it inside out, effecting a transition from the geoastral to the helioastral frame.⁶ As I will argue, the way Copernicus studies the local horizon or the site is very important because it is a general model for an epistemological revolution.

In order for us to understand this kind of dialectic of global-local, of the concept and its environment,

⁶ “Ptolemy's theory of the planetary motions had a high truth content because, on the basis of past observations, he was able to predict, with very reasonable accuracy, how the heavens would appear at any time in the future as seen from the surface of the earth. The really dramatic advance that the Copernican revolution brought was that it extended the ability to predict the appearance of the heavens at any date in the future from the surface of the earth to any point in the solar system (in principle, in fact, to the entire universe). Thus, the astronauts knew what the universe would look like from the moon before they got there.” (The Discovery of Dynamics, 226). For further details regarding Copernicus's rectification of the Ptolemaic system, see Julian Barbour, *The Discovery of Dynamics* (New York: Oxford University Press, 2001).

we need to understand that the local context or the local field, in a very oblique manner, abolishes the myth of ambient space; As soon as we introduce a local context—for example an environment—we establish a form of transition, a transit of information, between that generic background and the localized foreground. So it's not as if, say, we just have a concept of point and we introduce it into a readymade generic environment that is already given. Once we introduce a local horizon into a global manifold, we create a form of synthesis between the global and the local and we also proliferate a certain range of modalities for that local context. In setting up a local field, we cannot treat it as a neutral point because it now has a space of its own, an intermediating form-space that fuses the local to its surrounding landscape.

For example, take the concept of a point introduced into a global environment; then the modalities of this point become vague, the exactness of the point becomes vague, because when we immerse a local context into a global manifold, its boundaries are melted, are fused with the plasticity of the global environment, its exact map becomes fuzzy. This rendering vague of modalities of the local context allows for construction of the point according to different possibilities. An intuitive way to understand this is through Peirce's example: A blot of ink on a white paper, the boundary of the mark with the white paper or its generic environment is fuzzy. This fuzziness is replete with the so-called *possibilia* or geometrical-modal addresses through which we can map the internal structure of the point, but also reconstruct it in completely different ways. One of the insights of category theory in mathematics is to grasp the *possibilia* geometrically, as different concatenations of pointers or morphisms. Each concatenation of pointers is a set of alternative/possible addresses for a given mathematical object.

The fuzzy understanding of concepts is, in this sense, a productive understanding of concepts, since fuzziness suggests the situatedness of the concept within a broader inferential environment, where it can be tracked differently, constructed or organized in alternative ways and approached by different modalities of access. This is a basis for a topological/geometrical understanding of the inferential economy of the concept, traceable back to Peirce, and Leibniz's *analysis situs* or the geometry of situation.

Once the local is understood as immersed within a general environment, a new set of information for the procedure of localization become available. Information regarding particularity (exactness) and universality (generality) are replaced by an intermediating set of information regarding vagueness (produced by the synthesis between exactness and generality). This intermediating set of information represent the concept of the field or neighborhood through which the local can be fully characterized both in terms of its own internal structure and external situatedness. Localization then becomes possible in two directions, further analysis (exact mapping of the local) and further synthesis (general mapping of the local). Without the tertiary field, a restricted view of the local or an ineffable and overgeneralized view of the global becomes almost inevitable. The situatedness of the local within the global sets off a generative dialectic. At one end, this dialectic suggests the free and unilaterized expression of the global within the local and at the other end, it expresses the procedural and piecewise traction of the local upon the global. The latter specifies the freedom of a local horizon, a freedom that consists in gradual construction toward the global along different alternative pathways. The concept describes precisely this kind of freedom since the freedom of the concept is a matter of

a normative construction that is procedural i.e. its structure evolves, its behavior changes in accordance with the change in the logic of rules and alternative paths that connect it to an inferential network. Modern knowledge is the full systematization of the freedom of the concept.

The immersion of the local within the global means that the global synthetic environment parameterizes the local context in the same vein that space and time parameterize each instance of experience associated with the local subject. Since the concept is a local field, its immersion within an inferential network or general informational landscape suggests its parameterization. Accordingly, both the internal structure of the concept and its position within an inferential network can be sufficiently identified through analyzing the parameters associated with the place – or more technically, the topos – of the concept. An adequate analytico-synthetic examination of these parameters gives us a precise picture of the concept. This recourse to parameters associated with the topos (as a tertiary set of information for localizing the concept) brings about a shift of emphasis from the question ‘What is a concept?’ to ‘Where is the concept?’. Respectively, the ontology of the concept is geometrically and topologically defined by its place, its immersed and diversely approachable local situation in the space of navigation or knowledge. *To know* is to conform to rules of navigation on concept-spaces. Correspondingly, translating the ontology of the concept from *What* to *Where* is equal to an in-depth study of the structure of space where the concept subsists.

The systematic study of the concept according to both its situatedness in a global environment and the internal structure of its local context entails the change from *What* to *Where*. This is also one of the revolutions of contemporary mathematics, the shift from ‘what’ towards ‘where’; it is this ‘where is a concept?’ that allows for generalization and particularization of maps either in direction of underlying principles or in the direction of new mathematical objects, universalities or particularities. In asking ‘where is a concept’, the whereness of the concept (i.e. its parameterized place, its address in a global space) ramifies into new pathways and addresses. Hence both the behavior of the concept and its internal structure can be decomposed, studied or reconstructed according to different alternative addresses.

Therefore instead of saying, ‘What is a concept?’ as if we already know all the information about the local context and pretending that it exists by itself against the backdrop of a neutral ambient space, we ask, ‘Where does the concept subsist?, Where is the site of the concept?, According to which modalities, pathways and alternative conditions of production is it characterized?’ Only by answering these questions can we embark upon a systematic study of the local context. This is also what Copernicus implicitly does to the Ptolemaic system: he understands the concept of earth no longer in terms of ‘What is the earth?’, as if the earth has some sort of fixed coordinates that would give him all of the information he needs to understand what the earth is. He asks, ‘Where is the earth?’. In other words, he attempts to examine the planet – the local site – not by a frame of reference that is anchored in it. This is the beginning of a process of deracination, the unmooring of the earth from its fixed place, the uprooting of man from the earth, and ultimately the unfastening of thought from what man once was. It is this deracination as a form of extended enablement that characterizes the function of this revolution. The unmooring of the local from its purported essentialist characteristics outlines the operation of localization. Any reference to the local without

this operation risks various forms of localist myopia. As an operation that perpetually reorients the local towards the global, localization is at once analysis/identification and synthesis/construction of the local.

But how does this shift from ‘what is a concept’ to ‘where is a concept’ work? Since we are working in a web of twisted dialectics between the global and the local, we always see a particular concept through a tertiary set of information, from various addresses that point to that concept, from its vague or fuzzy environment. Rather than approaching the concept itself as if we have all the information regarding its situatedness and internal structure, as if it has an intrinsic structure, we approach the concept from its adjacent environment. Localization of the concept according to its fixed coordinate in a global environment (as distilled in the question ‘what is a concept’) transforms to localization according to an expanding set of mobile perspectives or pointers aiming at the vague place of the concept. The previously mentioned ‘freedom of the concept’ then becomes tantamount to organization, proliferation and diversification of these operative perspectives that simultaneously unanchor the concept from its fixed coordinates and bring its limits and capacities into view.⁷

The approaching of the concept or the local site from its adjacent environment and alternative perspectives is the gesture of the Yoneda Lemma in category theory. Yoneda Lemma is a phenomenologically trivial tool, but it nevertheless possesses a formidable power to reverse-engineer local concepts by way of their neighbourhood, by way of their outside. A point is nothing but the pointer that points to it. The actual mark is a pointer endowed with a limit, just like the mark that the tip of a pencil leaves on a piece of paper. Once the point is understood as a pointer, the concept of point can be made via an infinite recursive descent: A point is a point is a point is a point ... *ad infinitum*.⁸ Each pointer can be decomposed to a concatenation of different sets of pointers or addresses. The concept of the point is nothing but an alternating collection of gestural/perspectival pointers (arrows or morphisms). There is indeed a functionalist underside to this definition of the concept qua a local site: If what makes a thing a thing is not what a thing is but what a thing does, then we can decompose this activity or behavior (the behavior of the concept) into operative perspectives or possible activities that make the behavior of the concept in an inferential network. The study of the concept and its construction overlap, as they become part of a controlled exploratory approach.

⁷ Here the concept of perspective or perspective operator does not simply suggest a form of transitive viewpoint as we understand in relation with the classical type of perspective associated with Euclidean space. As Chatelet points out in *Les enjeux du mobile*, the perspective is strongly coupled with intuitions of space, or more accurately, with how space is organized. In this sense, more than being just a neutral view, the perspective is an operation that reconfigures and reorganizes what it is aimed at. Algebraic and geometrical perspectives are among these organizational/productive tools.

⁸ “The point is a point is a point is a point, ad infinitum. The circularity of the concept is not a tautological impediment, nor is it a vicious circle. It warrants further extension of the concept, its universal re-orientation, its asymptotic structure and stability. Circularity is a guarantor of stability and mobile referentiality. It allows a complex structure to be encapsulated within a simple appearance; thereby, providing the concept with the capacity for further conceptual extension (unpacking) or if necessary further compactness. There are stable systems that are circular without being absurd or a vicious circle. In other words, they are constructive, compact and free of logical contradictions. We shall call this circularity that liberates the concept from the myth of an inherent foundation upon which it is constructed, the gyroscopic image of the concept.” (Mazzola and Negarestani)

The question ‘where is the concept?’ demands a methodology for approaching or seeing the concept from a perspective that is adjacent, rather than from a perspective that is fixed upon it. This is by way of a recursive procedure in which we say ‘where is the concept?’ and then we repeat this procedure. In other words, localization (*Where?*) is combined with recursion. Since localization is an analytico-synthetic procedure that unbinds new alternative addresses for a local site/concept, then repeating localization means that new paths branch from the existing paths. This diffusion of pathways or addresses for a local horizon is registered as a *ramified path structure* where new alternative addresses and opportunities for local-global synthesis are progressively unfolded. As I argued the concept as a local site is fringed with possibilities of alternative reorientations. The ramified path structure suggests a form of step-wise navigation via these possible reorientations through which the concept is simultaneously studied, traced, revised and constructed.

We ask ‘where is x?’ then we repeat the question over and over. Every time we localize x, we see or approach it from a new address in the environment in which x is immersed. In our example of a point, the point can be seen not only according to new variable coordinates but also according to different layers of organization. It can be conceived arithmetically, geometrically, algebraically, topologically, and so forth. Accordingly, the operation ‘localization ´ recursion’ yields new ramifying paths and in doing so broadens the scope of navigation—that is to say, the constructive passage from the local to the global.

An intuitive way to understand the procedure involved with recursive localization and it imports is as follows: Think of the planet Earth. When we are standing on the surface of the planet, we are occupying a location on its geodetic surface. From a local perspective, the geodetic surface appears to be flat and not curved. While occupying this point on the surface, if we ask ‘where is the earth?’, because of our immediate access to this local point where the global properties are perceived differently (i.e. locally), we would say the earth is a fixed sphere, we might even say it is just a flat surface. However, if we launch a perspective operator – a satellite – into the orbit and take pictures of the planet, upon compiling and integrating these pictures we will notice that the planet is fully mobile and it is spheroid. However, if we repeat this procedure from a broader neighborhood and take new orbital portraits or maps of the planet, then we will observe that not only is Earth spheroid, but also it is located within a celestial system held together by the gravitational force. This is a very intuitive and rather trivial understanding of how the product of localization and recursion works: By localizing the horizon and by way of reverse-engineering it from its orbit (i.e. possibilities of reorientation), rather than from its local fixed coordinates (i.e. information readily available by occupying a local section of it), recursive localization identifies the local horizon according to the site wherein it subsists. But from the perspective of recursive localization, the site is nothing but a cascade of ramifying paths and addresses. It is in the wake of these ramifying paths that the characterization of the local, its problems, imports and implications become a matter of navigation – that is to say, analysis and synthesis, remapping and reorientation, revision and construction.

It is important to note that the concept of recursivity presented here does not suggest a form of simple iteration. If it were simple iteration, we would already be working with a tautological environment, because once we repeat localization over and over, this procedure might produce the

same result. Recursive localization then might fall into the trap of tautology. But of course this is not the case here. Tautology is only produced when we repeat the results of a fixed ontological framework associated with ‘what is x?’, but insofar as localization decomposes the topos of x into ramifying variable paths, the recursion does not find x in the same location as it was before. So whereas iteration fetishizes finitude, recursion in a synthetic environment and coupled with the ramifying procedure of localization produces different results. Each time we repeat ‘Where is the concept?’, ‘Where is the earth?’, we arrive at a new coordinates, find ourselves at a new pathway that demands us make a decision, perform a judgment, make an inference and also if required develop new epistemic and inferential tools and technologies. The ramifying paths of the concept draw the inferential mapping of the concept. In a sense, the ramified path structure is the depth of the concept, but a depth that is open to inferential navigation and therefore, immune to ineffability. Navigating the space of the concept is a matter of unpacking these ramifying paths – the depth of the concept – in a controlled and stepwise manner.

The local can then be understood as an ‘encapsulated depth’, or more intuitively speaking, a complex structure endowed with a very simple appearance, a surface that is but a depth unbound by a ramified path structure. The classical antinomy between surface and depth, the superficial and the abyssal, the regional and the universal, the terrestrial and the cosmological, the local and the global finally comes to a resolution but only by virtue of rediscovering the local as an integral tension-space of alternative addresses whose navigation requires the perpetual reorientation, reorganization and reconstitution of the local. But the organization of the local, the identification of its internal exigencies and demands is by definition an operation that can only take place in the passage from the local to the global, with the understanding that the global is neither the aggregate of particular instances nor is endowed with the same orientation.

It is as a result of the ramified path structure that the images of the concept at various local levels / depths appear as different and even incommensurable. Zooming in and out of the concept does not yield similar or isomorphic images, it produces – contra the classical portrait of the concept elaborated by Wilson – different non-homothetic images of the concept. In the same fashion, localization of a local site does not preserve the address of the site or its essential parameters. It assigns the site new addresses and parameters at different levels. We can say that seeing the local from its surface and from its depth results in two entirely asymmetrical views or images. It is the dissimilarity of images of the local site that calls for a stereopsis, or a stereoscopic coherence between different depths of the concept or different addresses of the local site, between the synthetic and analytical views. Without this stereoscopic coherence, one risks either a restrictive localism or a universalism that is completely detached from concrete particularities.

The navigational significance of the ramified path structure – the passage from local to global – only makes sense in the context of an inferential rule-based space where the import of pathways are assessed in terms of transits and obstructions, various types of permissibility and the possibility of further navigation without producing internal contradictions or vicious circles. In this sense the inferential navigation of ramifying conceptual pathways constitute the formal space of conceptual rationality. The inferential navigation of the site of the concept, however, advances both on the basis of deriving new conclusions from previous positions or cases (classical forms of inference) and on

the basis of hypothesization or abducting possible pathways. For this reason, navigation is not simply a dead reckoning of the concept because its main vector for expanding its frontiers is non-monotonic and abductive inference which involves as much manipulation of logical parameters as it requires construction of new navigational tools.⁹ It is the abductive aspect of navigation that distances conceptual rationality from classical logic and attributes a complexity to it far more sophisticated, mobile, flexible and imaginative (yet commensurate with reality) than any other mode of thought.

⁹ Abductive inference, or abduction, was first expounded by Charles Sanders Peirce as a form of creative guessing or hypothetical inference which uses a multimodal and synthetic form of reasoning to dynamically expand its capacities. While abductive inference is divided into different types, all are non-monotonic, dynamic, and non-formal. They also involve construction and manipulation, the deployment of complex heuristic strategies, and non-explanatory forms of hypothesis generation. Abductive reasoning is an essential part of the logic of discovery, epistemic encounters with anomalies and dynamic systems, creative experimentation, and action and understanding in situations where both material resources and epistemic cues are limited or should be kept to a minimum. For a comprehensive examination of abduction and its practical and epistemic capacities, see Lorenzo Magnani, *Abductive Cognition: The Epistemological and Eco-Cognitive Dimensions of Hypothetical Reasoning* (Berlin: Springer, 2009).