If we conceived of codes as quasi-material infrastructures of logical inertial systems, how could we furnish our territories, in such a medial milieu? I would like to approach this question with some methodological considerations.

**Operationalizing the Operator - Magic Media from the Caribbean regions**

In the movie “The Pirates of the Caribbean”, Jack Sparrow has a very exquisite, nice little device – he has got a compass that leads him straight to where he will find what he is looking for.

Of course, making the Caribbean region the homelands of someone in particular is of emblematic power, for mytho-historically speaking, the Caribbean regions are a very peculiar area. They are located further West than West, so to speak. And this not only geographically but also symbolically, for it is even behind those regions standing for the early modern adventure of seafaring and conquest. Already during Shakespeare’s times, as the quest of Prospero for a few drops of dew from the Bermudian Islands reveals, this region has been all too well known for their magic as well as for their great danger – once attracted to that place, people mysteriously get lost there, swallowed, without ever being found again, so the story goes. No wonder, one might be tempted to interpret ironically if we think about Jack Sparrow’s little device, for even if we had such precious media for orientation, *self-referential compasses* leading us to wherever it may be that we can find what we are looking for - we would still *first* need to *know what it is*, that we are looking for. So one is tempted to think. And anybody having some experience in curving within one’s own regions in a systematically closed manner can easily imagine how people get lost that way.

Yet with Jack Sparrow it seems to be different. The compass allowing him to navigate is not a cybernetic medium, and the Caribbean regions are not promising the fulfillment of
our wishes in unmapped territories. They have not become famous for representing a white spot to be territorialized. What Jack Sparrow seems to be doing is making use of himself, very frivolously so, as a means for developing both, an idea of the promise that rises within himself as well as the respective coordinate system that would allow for realizing it. The magic from the Caribbean results from some sort of transcendental promise, from offering us what we cannot even think about. Thus, it is by means of self-transcendence that the pirate of the Caribbean navigates the seas.

**Minima Cosmetica**

The argument that I wish to develop in a condensed form within the next 20 Minutes is very much inspired by an essay entitled *Minima Cosmetica* by the German philosopher Peter Sloterdijk. The subtitle of this essay makes the authors’ intention explicit: *an attempt at Self-Aggrandizement*. Looking at oneself in the mirror helps keeping us in form; not more but also not less, as far as Sloterdijk is concerned. Human beings are auto-plastic animals, able to become almost anything they manage to imagine *in a sustainable way*, his argument goes. Far from celebrating in a cynical reading of the commonly experienced consequences of our postmodern condition, far from pointing out the disastrous superficiality of our also metaphorically far-reaching preoccupation with issues of cosmetics, with the changing of interfaces and multiple options ubiquitously available through the mediated standardization that has come to frame our diverse processes of the everyday, Sloterdijk introduces a discussion of the role of self-referentiality on a very large scale. The argument I would like to develop concerns the emerging culture of modeling, characterized by processes of virtualization as investigations and excursions into realms which can well be encoded - yet not imagined, which can well be differentiated and integrated – yet without providing us the stable grounds the claim of a representation would establish via some sort of evidence, that is, as having an actual referent to which the model refers.
In his above-mentioned essay, Peter Sloterdijk labels *frivolous* those people who take decisions without serious and well-balanced reasons to do so, decisions resting on weak grounds – *decisions under uncertainty*. We have come to live in a climate largely dominated by *calculations of probability*, a culture technique that, as Ian Hacking sketches for example in his book “The Emergence of Probability”, decisively influenced the scope for our cultural processes of *en-coding* as well as of *de-signing*, of coming up with *social habits, rituals, of encoding options, preferences, moods, of developing products and of offering them within a virtual marketplace of intentions*, where we are all concerned with *negotiating meaning*, with *dealing in signs*, with *figuring out contracts* that are to structure the rules of the game. And despite this fact, we may still find ourselves surprised of how easily and often we choose to do things one way and not another, without even thinking about the *possibilities that would be at our disposal – if we constructed our models only slightly different*.

The stocks in trade of aleatory probability are basically quantitative. Epistemic probability is not like that. But nevertheless did the latter, historically speaking, emerge as a significant concept for logics only when people started to think about *measuring* it. And in fact, Jack Sparrow, the pirate of the Caribbean, introduces nothing else: As a Pirate Captain of our times, he frivolously depends on the possibility not of *interpreting* his thoughts, but of *measuring* and operationalizing them, paradoxically, towards an open telos.

Alan Turings text *On Computable Numbers*, perhaps the founding text for the discipline of informatics, has laid out the crucial question for the dispositive of the digital: Where are the boundaries of what can be calculated? This question was not so much referring to the power of machinic processes of calculation, as to a question aiming at the crisis of foundations within the structural sciences, to the question of what can be formalized in principle. Turings findings are well-known: sometimes his Universal Computing Machine
never stops calculating, and so, without approaching an identifiable limes, no results will be available. Forever. This becomes even more striking if considered together with the famous result found by Kurt Goedel only shortly before Turing (but presumably unknown by him), that meta-mathematically speaking, there is such a boundary to what can be calculated, and that this boundary is independent of concrete procedures of formalization. One can never mathematically prove the complete consistency of any formalized system.

Virtualization – from Axiomatics to Problematics

There is a specific relation of these model-theoretical considerations to the philosophical preliminaries for a theory of the virtual as developed by Gilles Deleuze. “The virtualization of a given entity consists in determining the general question to which it responds, in mutating the entity in the direction of this question and redefining the initial actuality as the response to a specific question. [...]”¹, this is how Pierre Lévy defines the concept of virtualization as a creative management of the frame of reference within which “a something” takes up its specific meaning. The crucial “element” for analysis in processes of virtualization, therefore, is “code” not “sign” – for something that stands out as significant has always already become recognized as problematic, that is, as being a part of an already identified problem that waits to be solved. A philosophy of the virtual, in terms of Deleuze’s thinking, does not opt for explaining or solving identifiable “problems”, and thus it cannot follow a classical nomological-deductive mode of rationality. It involves the construction of concepts, and is inherently creative.

Instead of the axiomatic method of formalization made significant over the history of philosophy, Deleuze opts for a problematizing method which he translates from the realm of mathematics into that of philosophy: The fundamental difference between these two modes of formalization can be seen in their differing methods of deduction: in axiomatics, a deduction moves from axioms to the theorems that are derived from it, whereas in

problematiques a deduction moves from the problem to the ideal accidents and events that condition the problem and form the cases that resolve it, in the wording of Dan Smith. With this methodological transfer from applied mathematics to philosophy, Deleuze introduces a concept of “problem” that already contains its own solutions. Problems are within such a notion not logically anterior to solutions. When a problem is properly formulated, then this theory would suggest that the problem be already solved. Deleuze therefore refers to his philosophy as “transcendental empiricism.” His philosophical thought-image of virtuality is concerned with finding a coherent way of speaking also about the conditions for the genesis of formal structures, which in turn determine our empirical experience.

At least since Euclid, it has been a common habit to look for the foundations of knowledge in an axiomatic construction – in the 17th century, this approach was generalized into the scientific method per se. Kant’s great achievement can be seen in that he proposed a philosophical system which was able to account for the implied correspondence between the fundamental axioms and the structures of the world in a manner independent from any God-like causa ultima, that reveals Truth piecemeal to special people in special situations alone. It is in any case the knowing subject, on the grounds of an equally distributed common sense, which structures the object under investigation, and which thereby also constitutes it up to a certain degree at least: logical forms inform matter. Kant himself did not yet question the axiomatic thought-image per se – it was only later, with the advent of non-Euclidean geometries initially developed by Gauss, Boyai and Lobatschewski, that the axiomatic thought-image began to be approached in a relativistic way. Axiomatic systems bifurcate, and this goes not only for those within geometry. This changes radically the status and with that, our ways of conceiving of axiomatic systems – for they themselves

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are now being regarded as open to transformations, as long as their internal consistency can be maintained.

Yet truly stable grounds cannot be found anymore after these epistemic cesurae. Logical positivism would only be a secure option to found knowledge if the axiomatic system – even if in its complexity it may remain underdetermined for ever – could be proven to be in principle formalizable, that is, complete and coherent. This was David Hilbert’s interest with his program to secure the logical grounds for the 23 open problems within mathematics in the first third of the past century. One of the resting pillars promising new standards to this program was Frege’s formal definition of numbers based on set-theory: all sets can be precisely identified by numbers through differentiating them either as a set that can contain itself, or as a set that cannot contain itself. The problem here, subsequently identified by Bertrand Russell, is that the set of all sets itself cannot be captured within the same systematics that gave itself its definition. If the set containing all sets, also contains itself – which it ought to, according to that logics, then it fails to meet its constitutive definition, namely to be all encompassing. And on the other hand, if it does not contain itself, then it can just as well not meet its own definition – being defined as a set containing all the sets.

These paradoxes can be regarded as the core of a Deleuzean philosophy of virtuality. Historically speaking, the concept of virtuality goes back to the mediaeval Latin word virtualis, derived from the word virtus, which denotes strength, potential, capability and refers to what scholastic philosophy has been introducing as something that exists in potential rather than actuality. The concept of virtuality therefore stands in close proximity to concepts of possibility, while clearly distinguishing itself from the latter. For one of the central problems consists in how the concept of virtuality can help rethink that of possibility beyond purely stochastic means. By the same token, Deleuze suggests with his notion of a transcendental empiricism also a reconfiguration of the relationship between
the abstract and the concrete. For Deleuze, phenomena are founded on an ontological basis rather than an epistemological one. He thereby sketches a post-metaphysical phenomenology, while such being of phenomena cannot be equated with the phenomenon of being.

Creative Analysis - Experimentations Within the Abstract

This allows for experimentations within the abstract, and this seems to be at the core of the currently emerging institutionalization of the dispositive of the so-called Universal Code, the Digital. Semiotically speaking, central to the dispositives of the digital is not so much the available code for the purpose of archiving, transmission, duplication, or some other manipulation of a fully determined, analyzed original in series of copies or, to put it cybernetically, in maps which can be used to navigate unknown or murky waters. Rather, at the heart of the digital dispositives, there is, as Bernhard Siegert puts it poignantly, a rupture within the logics of representation. This breach marks the onset of electronic media, and since the beginning of the 18th century it has been opening up a digital “passage.” From this “passage” spring the transformational energies for a new kind of availability. For the semiotic working principles of electronic media, as well as for the mathematical novelties they are based on, it is typical that “signs” are dealt with that are significant in the absence of any link to any physically real and therefore external point of reference. Imaginary numbers, a class of numerical signs invented by Leonhard Euler,

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6 “An imaginary number is a complex number that has zero real part. An imaginary number can therefore be written as a real number multiplied by the ‘imaginary unit’ i (equal to the square root Error!)”.
facilitated the emergence of electronic media in a deterritorialized space of the analytical, as Siegert puts it:

“It is a crack within the order of scripture anchored in the concept of representation which liberated the passage of the digital and opened up the space of technological media. Electrical media are based on what a representative of the classical Leibniz-Wolff analysis would have termed the ‘non-analytical’, that is the non-predictable, the non-representable, that which exceeds the limits of calculus. Modern analysis, that is analysis after Euler, is a deterritorialized one.”

Deterritorialized means pre-symbolic, ante-significant, not yet meaningful and literally unthinkable – post-Eulerian analysis thus facilitates calculations not only in the element of probability, but also in that of the unimaginable.

Consequently, and in a seemingly paradoxical manner, a deterritorialized analysis is an open field for poetical mathematics or for analytical self-justifications as generic calculations. Here lies the close contact between digital principles and what in the context of media science is currently being thematized as virtualization – namely, to quote Manfred Fassler: “This ability of the brain to create and give birth to a kind of lasting self-reference, to hatch and nourish them, is what I call the capability of virtualization.” The digital code allows for a far-reaching standardization of the operative management of calculi with operable elements, which represent no references outside of themselves. The same goes for Fassler’s just mentioned mental offsprings. These are not empirically motivated, but emerge from a rupture within the inner systematics, from the breach of a

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rule, the slackening of an axiom, and facilitate the long-term resistance to persistent attacks by established habits of thought. Virtualized objects enter a life of their own and cannot be subsumed by the order they have emerged from. With the appearance of the digital apparatus over 150 years ago, an inversion of previously valid semiotic premises has actually come into effect. The significance of signs was no longer reflexively founded on an external reference. For formal operations, this meant that it is possible to do calculations with merely postulated functional relations, without requiring them to actually be representative. The possibility thus appeared that mathematics can find not only empirical applicability, but also actual viability as an “experimental” science of the abstract. Analysis that no longer has to reference an external object supplies its own ground of significance through a generative self-reference.

These mathematical fundamentals for the operative management of the pre-specific have already been used for some time in all kinds of scientific disciplines. What is rationally reasoned and demonstrated analytically is no longer represented or found, but calculated. This opens up the possibility for analyzing those epistemological regions which we usually refer to as in media res. Both, Michel Foucault and Gilles Deleuze are drawing the philosophical consequences of the probability paradigm together with statistical analyses of mathematically differentiated and integrated situations: Scale matters. There are always a Thousand Plateaus. Assemblages. Stratifications. There is an archaeology not only of the past, but also of the present, as Gilles Deleuze says about Michel Foucault’s book on

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10 From an epistemological perspective, Siegert observes the appearance of this rupture within a logics of representation, from which and through which a passage of the digital can emerge and eventually install itself as a dispositive, with the mathematical calculus after Leonard Euler (1707-1783), and especially also after Joseph Fourier (1768–1830) and Augustin Louis Cauchy (1789-1857). The first electro-technical media appear around 1820-50, as for example with the invention of electromagnetic telegraphy and the respective Morse alphabet. Morses’ and Vails’ first telegraph station was in use since 1844. Carl Friedrich Gauss and Wilhelm Weber have built and used electromagnetic telegraphy since 1833 in Göttingen, Germany. The first commercially successful transatlantic telegraph wire was put into operation on August 25th 1858. In our view, it only makes sense to speak of a “dispositive” once the epistemological premises start to spread on the level of infrastructures.

11 “Representability is no longer a transcendental, unchallengeable premise of analysis, but something whose existence must first of all be proved by analysis before it takes its actual course.” Siegert (p.16) (see footnote [5]). Originally in German: „Darstellbarkeit ist nun nicht mehr eine transcendente, unbefragbare Voraussetzung der Analyse, sondern etwas, dessen Existenz die Analyse allererst und bevor ihr eigentliches Geschäft beginnt beweisen muss.“
methods. Mathematical functions describe the relationships among *correlated* events – that is, they allow to calculate with *codified ambiguities*, with variables and functions, and facilitate, according to the *fundamental theorem of calculus*, an extensive *scaling* of the level of observation for the description of a dynamic system. In other words one can, to a certain extent, use differential calculations to “zoom in” when nothing can be perceived and, with the simulation of comprehensive systems that cannot be contained, to projectively “zoom out” through integral calculations on the tentative results, and then to verify them systematically. Analysis thereby facilitates an empirical vision within the abstract itself. The methodological move consists in a game that involves a changing and switching of the levels, on which something is to be observed and described. The *tertium non datur*, with a philosophical conception of the *differential* that operates between *series* emerging from between different strata, plateaus, dimensions, and that *specifies* the *correlations* between *events*, comes to be a *tertium comparationis*. Analysis must then be comprehended as a *comparatistics*, yet one that does presuppose neither “substantial” properties nor an “ideal” structure as frame of reference.

What allows for this is precisely the rigorous standardization through a codification that operates purely formal and non-representative. The elementary things in Michel Foucaults analytical method are “*statements*”, they constitute themselves through “existing” within a network, a milieu of relationalities. Foucault describes “statements” in terms of “abstract machines”, and with the machine paradigm he wants to accentuate that statements are to be considered foremost in purely formal terms, and not with regard to their truth value, and not with regard to their semantic meaning. Foucault draws extensively from mathematical

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12 Integral and differential calculus partly epitomizes the idea of the multiple in mathematics. In his remarks on the *Fundamental Theorem of Calculus*, Byers describes this as follows: “The theorem says that there is in fact one process in calculus that is integration when it is looked at it in one way, and differentiation when it is looked at in another.” He continues on a more trenchant note: “Another way of putting this is that without the Fundamental Theorem there would be two subjects: differential calculus and integral calculus. With it there is just the calculus, albeit with a multiple perspective.” William Byers. *How Mathematicians Think: Using Ambiguity, Contradiction, and Paradox to Create Mathematics*. Princeton University Press, New York 2007, (pp.50). Cf. also the contribution to this book entitled “Models” by the mathematician Ben Schweizer, especially with regard to the relation between analyzing models and crafting models within applied mathematics (p.NN).
analysis, in combination with what I have previously subsumed under the label of a “virtual-problematics”. For him, statements are to be regarded as quasi-mathematical functions, as purely formally codified “context” conceived of as quasi-material consistency, integrating complexly intertwined relationalities that can never be fully specified. Coming from such a philosophy of the differential, Foucault even comes up with the notion of the “Referential” of statements (in order to replace the common notion of their “reference”). The statement as a referential functions and is effective on the basis of probability, they are to be located within the realm of the potential. As Foucault says, as not entirely specified discursive formations, “statements” define and determine the possibility for the emergence and delimitation of that which supplies meaning in a grammatical unit of a sentence, the truth value in the logical unit of a proposition, and the action in the pragmatic unit of a speech act.\[^{13}\] Statements cannot be approached via either one of the constitutive levels, neither the logical one of proportions and truth values, not the grammatical one of sentences and meaning, nor the pragmatic one of speech acts. Rather, they are to be conceived as vectors maybe, traversing all of the levels of languageability at once. The statement is the onto-epistemico-logical existential function inherent to signs, not in itself a unity that could be “represented” or “recognized”, but a function that crosses a structural region of possible unities that might emerge, making discursive formations productive.

Such a notion of Analysis Situ corresponds of course to a problematic, which has, apparently so and with a widely effective authority, been “disguised“ by Martin Heideggers reflections on an Existential Analysis, on an Analysis of “Dasein” in the first half of the past century. Heidegger pointed to the impossibility of analyzing the Lichtung itself – for the Lichtung, being the very means for us to transcend our animality and become humans, cannot itself be transcended. In that view, we will always only be able to identify ontical circumstances, and never ever ontological ones.

\[^{13}\] Michel Foucault, footnote [Error! Bookmark not defined.] (p.133).
Be this as it may – looking at oneself in the mirror helps keeping us in form; not more but also not less. Human beings are auto-plastic animals, in the view of one of the most profound readers of Heidegger today, who attempts to open the horizon for thinking again in his “Essays after Heidegger. Human beings are able to become almost anything they manage to imagine in a sustainable way, Peter Sloterdijks’ argument goes. And for that, codification in the sense of purely formal integration and differentiation, allowing for a non-idealistic comparatics, is of crucial importance.

Let us now return to the beginning and think about Jack Sparrows funny little device, the self-referential compass, which only functions properly if the operator frivolously operationalizes his own mind. Making oneself the means for the technical instrument to function properly, for such a situational-analytical-synthesis of the media res we are constantly navigating, this may perhaps become programmatic for a future reconceptualization of our relationship to technics. Technics may come to be considered more and more as infrastructures than as instruments - yet as infrastructures that are not primarily valued for their function of making life comfortable, but for providing us with socio-historically grown stable grounds allowing us excursions into the virtualization-capacity of our minds - for the regions of medial milieus potentially to be inhabited in the future, they are interesting foremost for sign hunters and adventurers!