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UFD001 Florian Hecker Quentin Meillassoux Robin Mackay

Speculative Solution: Quentin Meillassoux and Florian Hecker Talk Hyperchaos

This conversation took place during the development of Florian Hecker's piece Speculative Solution, an Urbanomic commission that explored Quentin Meillassoux's concept of 'Hyperchaos'

Chez Meillassoux, Paris, 22 July 2010



FLORIAN HECKER: I'm very interested in this notion of surprise and sudden change in sound; so that one state of something could change into something totally different at times during the piece, and there would be no apparent connection from the process that manifests one sonic structure to the next one. When Robin pointed out your book [*After Finitude*¹] to me, at the time I was working on *Acid in the Style of David Tudor*, which had this very direct, maybe literal, idea of a quasi-sonification of chaotic equations as the source of sound. However, many pieces I have been working on don't have such a literal relation of using nonlinear functions to synthesize

1. (London: Continuum, 2009).

certain sounds. And rather than the idea of making a sound directly 'out of' chaos, I was interested in how it could be used to explore this notion of surprise and abrupt change: to bring this extreme dynamic form into the piece.

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Then as I looked into the book more, this is something that to me seemed to have a certain feedback with what you're writing, when you talk about Hume's billiard table: that the absence of constant laws would change the conditions outside the table, and not only the actions happening between the billiard balls. And what Robin and I spoke about this morning was how something like this possibility of constant change could manifest itself in a piece that would not be merely a sonification of the idea, but rather some kind of 'toolbox'. Over the last few weeks it has begun to seem quite important to have sequences or parts of the piece that would manifest themselves outside of the sound altogether: maybe

a text that proceeds from a certain moment in the sound, creating a dynamic where this object or artifact we end up with will not represent something—it wouldn't be a recording of an installation, it wouldn't be a sonification or illustration of your concepts. We discussed the Duchampian *Boîte en Valise*, perfume and pharmaceutical packaging, cardboard boxes, but also the general idea of regarding things as being just what they are, and not as representing some other form. So maybe through the text, the piece on the CD, the package, the audience completes this linkage of sonic experience with your ideas about this change and incredible dynamics.

The difficulty in getting this across conceptually, visually, sonically, is that hyperchaos is something that is in adequation with every state of reality—order or disorder

QUENTIN MEILLASSOUX: Yes, very interesting. What is specific to hyperchaos is that it is not an extreme form of chaos; it is not more disorder than chaos, it is order or disorder. Hyperchaos can mean order and stability, as well as a complete destruction of what is. The difficulty in getting this across conceptually, visually, sonically, is that hyperchaos is something that is in adequation with every state of reality—order or disorder. In a paper I once gave about science fiction, I say that science fiction is fiction inside the space of science. Inside the space of science, you have to think disorder, hazard, as something which is a disorder inside an order, inside a continuity. But I try to imagine a world where we could survive, but science could not. What would this be, a world that would be phenomenally accessible for us—you can grasp it, you can live inside it, you can see it—but it is not scientific?

Science has perished, it is not possible in this world. What would this world be, where you could live but science would not survive? It would be a world where there is some order, but the scale of disorder is too large for science, too disconnected for science. For example, things are there, but sometimes they just go away, they disappear. You're in a Newtonian world, but then sometimes you are in an Einsteinian world. It's a world you can experience,

but where science could not survive, because the laboratory experiment would have a finite duration. Why do I speak about that? Because it is the only way of visualization—and maybe the same goes for an acoustic realisation—to render it sensible, inside a continuity. Because if it is going to be an experience, you need continuity for experience.²

But at the same time, you want the duration of this experience to be too large for the scientific conception of chance. For example, in this world, you could conduct an experiment whose duration was too long for quantum physics to survive inside it—the quantum conception of chance, concerning specific probabilities, wouldn't survive. But you would still have the possibility of what I call *accidents des choses*. It would be like when you drive, for example: there are other drivers, you can anticipate things, you can survive. But sometimes you are involved in a crash, and you might die. So, in a world where you could have experience, but science could not survive, could not exist, you would have the same behaviour towards the things that you have towards other drivers when you drive. Sometimes you can die, because things just crash. And I think what is important is that, if you have to have a phenomenal analogon for what I say about hyperchaos, you can imagine this sort of world. But the question is: How can I visualize a world where I can have an experience that would exceed the possibility of science? Of course, formally this is not possible: Leibniz said that any sequence, however disordered, can always be conceived as an example of a more elaborate law. So there are no miracles for Leibniz, because every miracle is just a law, but one that is more complicated than the one we already know.

And in the same way, in some sense there is never disorder, because disorder is just another order than the one you expect. In your room, it may seem that it is disordered when you work, but you know where to find every book, every disk, and so on. You know there is an order there.

So it is difficult to break with this formal possibility of order—you can always make these objections.

2. Since the same French word is used for experience and (scientific) experiment, a continuity is implied in these sentences between the world where scientific experiment is impossible and the world where one cannot create [in an artwork] an experience.

And you cannot effectively show the disorder, pure disorder, for these reasons, for these two reasons: firstly, the duration of the experiment; and secondly, that, formally, you can always say that a disorder is just a more complicated order. The problem is just that, as the painter has to show transcendence, but he can't show it, he can just make an analogon of transcendence, with light, and so on. Well, I think the best analogon is the world where you have this continuity, and inside it you have this pure break, a break that is too harsh for classical probability. And this break can be a break of pure order—what I say about hyperchaos, which is very important, is that hyperchaos is a theory of time, a theory to show that time is not becoming. Becoming is just a case of time. Because hyperchaos is not just disorder, it's also the production of little static worlds—worlds with absolutely no becoming, this too is a possibility consistent with hyperchaos. That's why, when I speak about hyperchaos, I say that chaos is a time that can destroy everything, even becoming. This is hyperchaos: you can destroy order, and you can destroy becoming; and it you can also erect a perfect classic order. What I call the *n'importe quoi*—the anything—is not a disorder, it is not becoming.

Hyperchaos is a theory of time, a theory to show that time is not becoming. Becoming is just a case of time

The anything is a disconnection of all this, and also the possibility of the succession of all this. As if you, Florian, would make some Mozart....

The difficulty is, when I imagine this world without science, I encounter exactly the sort of problem I think an artist would have: to figure it, to find an analogon—not perfect, because you cannot show it, but you have to show its direction.

ROBIN MACKAY: It's also important to mark your divergence from Kant's argument, which is that, if anything could change at any time, experience *per se* would be impossible. I think there is an important parallel here with trying to create this 'phenomenal analogon'. Because one's initial instinct would be to present hyperchaos as a white noise, as the least possible information: this would be the Kantian



decision, to say that there would be no information, no features, at all. Whereas if you make the decision against the Kantian argument, then the problem becomes: to present within the limited scope of what can be presented, something that initiates a rational access to the notion of hyperchaos. Which is why we're talking about extending the sound piece through the text, so it would become a toolbox for conceiving of hyperchaos, rather than trying to present it.

QM: This is why I talked about an analogon. But what is interesting is the idea of producing a phenomenal experience that is transcendently impossible—that's what's important. That's what I try to show about the transcendental deduction: Kant's transcendental deduction is that, if laws were contingent, there wouldn't have been the unified experience of the dancing of the billiard balls without the furniture also dancing; the stability of the furniture with a local dancing. This is the transcendental Kantian experience which is impossible—so if you refute Kant by producing it, this is very important. I think that the difficulty is that you have to avoid the possibility of miracles, the possibility of its just being special effects, of a *deus ex machina*. Because you could say it's just a return to miraculous conception of reality. A miracle, of course, is a local disorder within an order outside it; and inside the disorder there is another order at work.

That's what is difficult: conceptually I can affirm it, but what is difficult is to give this sensation that you are in a world where you cannot make a physics, but only a chronics, of things. You can just say, okay, now this physics goes for today—as if it was a fashion. The difficulty is to demonstrate that this world is consistent, that the world we know is one consistent

possibility of hyperchaos. Because if you show it, if you just suggest it, you show by contrast the facticity of all worlds, the facticity of all science, and so on. And you show that the facticity of laws and the facticity of things in laws, are essentially the same. Of course, the facticity of laws is virtual, and that of things is potentiality, but the two are connected: things can be destroyed, and laws can also be destroyed. If god doesn't exist, everything is fragile.

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In order to make this understood, I remark that thought cannot be richer than reality: The capacity of thought cannot be richer than the capacity of reality. If we can imagine so many things, this must be just the shadow of reality: imagination cannot exceed reality. So, anything that imagination can produce is just a little of what reality can produce. Imagination is not something that miraculously is larger than the possibility of reality, it is just a part of the craziness of reality—which is precisely hyperchaos. But what I try to think is that it is not craziness, it is just rationality, because it is just the definition of a logical world, a world which would just be logical: so, it's not the destruction of logics, but the understanding that, in reality, logics are very liberal.

RM: Logical reality liberated from the ideology of natural laws?

QM: No, the problem is with a certain conception of what 'natural' or 'lawful' means: Rationality, during the enlightenment, had to fight religion; and they fought religion with the most up-to-date science: physics. They fought it with the necessity of physical laws. The problem—Hume saw this, he saw it very well—is that the necessity of laws is not something you can demonstrate, but only something you can believe in: so it's a belief against another belief. And in fact I think the belief in the necessity of laws is necessarily a belief in God, because you believe in what you cannot demonstrate, you believe in an order that guarantees laws. In fact, you may not

believe in god any more, but you believe in the divine solidity of laws. And you can't see that there is no necessity in nature. That's what I want to show.

Now, people say, yes, but in that case, if someone says they saw a miracle, you can't refute them. But in fact, you couldn't refute them even if you believed in laws: a Popperian cannot refute someone who says they saw something extraordinary, because there is always a possibility that his theory might be falsified by a new fact. So even if you believe in the necessity of laws, you can't refute them. On the contrary, you just have your belief against his word; your attitude is no more rational than that of the believer. This is why I think that you must destroy the necessity of laws—because the real problem in belief is that belief wants something that is outside the possibility of understanding: they want something *tout autre*, absolutely outside the capacity of understanding. You create belief each time that you create something incomprehensible; you create belief when you create the necessity of laws.

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I say that nothing is incomprehensible. When you have one fact after another, you can maybe describe them by a law that will be constant for a certain duration; you could also say that they have no connection. But in fact, you can never prove, on the basis of one instant, what must be in the following instant. You cannot make a necessary relation between two moments of time. Because rationality is intimately connected to the disconnection of time, that's all. And that's why, when you are rational, you have an incredible imagination. Why are we rational creatures with imagination? Imagination is supposed to be the creation of fictions or of illusion, but why do we have imagination, what Malebranche called *la folle du logis*? For rationality, imagination is said to be craziness. But we are rational and we have imagination. Why? Because in fact they're the same thing: rationality is just the capacity to be directly connected to a hyperchaos which has absolutely no limits. So, the problem in understanding ultimate

reality is not to understand some ultimate reason of rationality; it is to understand that rationality is the understanding that there is no ultimate reason.

Rationality is just the capacity to be directly connected to a hyperchaos which has absolutely no limits

The real problem therefore is not why there is possible destruction and disconnection, but why there is duration. And the economy of my demonstration is that you just have to destroy Kant's probabilistic reasoning in order to resolve the problem. We think that if there was no necessity of laws, there would be destruction at any time of the world in which we live. It is this probabilist reasoning which has no legitimacy, because it is an application of probabilities to the law itself. That's why I use the transfinite, to show that it is illegitimate.

So what I want to do is to redefine the essence of reason: I think that rationality has been taken up in a dialectics, since the enlightenment, owing to our thinking rationality as synonymous with the physical sciences. But the physical sciences are only a description of our world, not a description of being itself. What we call explanation is a complex description of our world—of laws and the things they apply to. But ultimately it is experiential, it is an experiment, because it is a fact; physical laws treat about facts—they have to be experimental and not rational.

So, the problem is that the equation of this sort of science with rationality creates a lot of stupid beliefs—anthropism: Why are we in this world rather than another, physically it's impossible to understand, it is very improbable that our world was created and not another one, so there must be a god, and so on. It creates a lot of superstitions—not physics in itself, but when you think that physics treats about the necessity of laws and not just about facts without necessity. I propose that philosophy must again grasp the possibility of fighting religion, the new forms of religion, through this redefinition of rationality. I would say that rationality is really the possibility of being intelligently crazy. And what I try to do is to deduce the strange constraints of the absolutely

rational world—there are constraints, but only rational constraints. So, this is the general context.



RM: The task of a piece that tried to extend this thought into sensory experience may be to allow the audience an experience of sound outside the metaphysics of sound—if you understand the metaphysics of sound as a set of stratified laws in which the material of sound is formed into notes or particles, which are formed into melodies, which involve the protention and retention of sound—essentially a metaphysics of what it is to hear. If it were possible to present a situation where those laws were changing without any reason, and yet it was still an experience, one would be thrown back on those purely rational constraints, free from those supposed 'necessities'....

QM: Metaphysics now, generally, is the metaphysics of the random. Randomness is a way for metaphysics to exhibit itself as a thinking of the irrational, and so on. The problem is, how to make perceptible a contingency which would not be random. Now, randomness has been a big process in music, in painting.

But randomness means laws. There are laws of randomness, calculations of randomness. It's a way of calculating, that's all. And so it's just a particular mode of the existence of physical laws. It's a way of anticipating, it's absolutely regular, in fact. So, the problem is, if you break laws which are structurally random, you can't find yourself again in randomness, it is not the same phenomenon. But it's very difficult to show this. The problem is that maybe, by examining the way that artists try to show randomness, to make it felt, what did they do exactly? We have something that is 'random', how can we break this? How can I break into this lawful randomness in a way that is other than random? The difficulty is there.

FH: This is what I tried to depict when we were talking this morning, that this piece could have these phases of what you mentioned before, with absolutely static parts, super-dynamic parts, and ideally parts that are not in the sound, but would be in the text, or a mental exercise you would have to take on from a certain part in the piece. So maybe this would be one way to break a certain notion of randomness, and to escape this cliché of randomness as something fast-moving and very dynamic as such, and to maybe slow it down in certain parts of the different sections of the piece.

QM: Maybe, you know, you have to show that randomness is just a quotation of the possible, it's just another type of organization, it's just one possibility, but it needs to be enclosed in a case, rather than dominating everything. The random is there, okay, we know that, but determination and randomness, they are the same. So, at the beginning, for example, you could show it as an opposition, but progressively you see that it is just 'quoted' inside something else. The challenge would be to surprise a musician or an artist of randomness: he thought he was exploring the world of the random, but now he sees that random is just a quotation...but again, this has to seem not just like postmodernism, but something that is in the thing itself.

RM: The principle of your book is that of an 'absolute necessity without an absolutely necessary entity'—which means, in this context, that hyperchaos can never be an experientially-recognisable style or genre.

QM: You know, can philosophy have a special object, or is it just a reflection of other discourses? All the positive sciences, one after another domain of reality: physics, medicine, linguistics, metaphysics, have escaped from philosophy, and philosophers have retreated: we cannot make physics but we can reflect philosophically upon it... When I try to explain to myself what 'the thing itself', the object of philosophy, really means. The thing itself—I think it means the following: every positive science is a science about a fact, a primordial fact. So philosophy would just be a reflection about facticity in itself. And facticity in itself is not a possibility of a science, it is the possibility of science in general, because all sciences—except for mathematics, all natural sciences—are about facts.

So, you cannot illustrate this special object of philosophy, because any illustration will always fall within the domain of facts. And what is also difficult to illustrate, I don't know how it would be possible—is that there is a special discourse about facticity, facticity implies some consequences which are not trivial: so, it's just a deduction, a very precise deduction about facticity and consistency, logical consistency. And I work on a deduction of this sort in *After Finitude*.

So, what is difficult is that to show the logic of facticity in general—and in particular that facticity is not randomness, because randomness is still a fact. Of course, pure disconnection, this would be effectively the only way for me to illustrate it.

And of course you can't imagine a pure destruction, an absolute complete destruction, but only a local destruction—and, I would add, a local emergence also, because chaos is emergence just as much as it is destruction. But for emergence, in general, we have the model of creation, Deleuzian creation. But Deleuzian creation, like Bergsonian creation, implies a continuity of past and virtual and present: a creation that grows—whereas for me *surgissement* is pure.

RM: *Ex nihilo*.

QM: Yes. In fact, I am a heterodox Cartesian. What I love in Descartes is the reason why he was hated by the orthodoxy: because he said, between thinking and matter, at a certain stage there is no connection—between thought and diametrical materiality, there is no connection. But for Descartes this was a proof of the creation of God, because it means spirit is not created by matter. This is because Descartes thought, like Lucretius, that there is no *ex nihilo* creation. Lucretian materialism said there is no creation *ex nihilo*. But I think this is a problem, because of the question of qualities.

When physical sciences say there is no quality in matter, that it's entirely mathematically describable, this stems from a real crisis in modern materialism. Materialism was Galilean and Lucretian; but there's a clash between them, because if you're Lucretian, there's no *surgissement ex nihilo*, and if you are Galilean there are no qualities in matter, there are qualities only in psyche. So psyche must be created by some other thing: God, of course.

Now, materialism took the decision, not to allow *surgissement ex nihilo*, but to renounce the Galilean truth. So, they had to inject qualities into matter: they say, the real matter is not the matter of physicists, real matter has feelings—hylozoism, everything is alive, Diderot, Maupertuis. That's why materialism and spiritualism became, paradoxically, the same. Because if there is no *surgissement ex nihilo*, you have to say that qualities are inside the things before they are in the psyche. Or, like Dennett, you have to say, there are no qualities in the psyche, we are just materiality, and it seems we have phenomena in the psyche but it's just an illusion. But I think there is a third solution of materialism, which is to renounce the condemnation of *surgissement ex nihilo*. But this is not a religious way of thinking—that would be creation *ex deo*! For which you have to have a god. For me, these *surgissements ex nihilo* are what I call 'pure supplements'. There are some emerging *surgissements* of qualities which were absolutely not in matter: pain, pleasure, etc. So for me what is interesting in time are these pure ruptures of creation, just like pure ruptures of destruction.

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But we remain completely trapped by this old materialism, either—the more interesting choice—Deleuze, Bergson, everything is qualitative (but I think this is a monism, a pluralism which is a monism), or just bare materialism, Dennett et al—there are only mathematicities. For me, there are pure *surgissements*, pure rupture. And that is no mystery: the mystery is in the continuity, not in the discontinuity, that's what is important. And I think the mystery can be rationally resolved.

But the problem is that we don't trust reason. Reason is the capacity to be stupid—to not understand why it should be like that and not otherwise; to not understand why this philosophy is true rather than the other one. For me, all philosophies are the construction of one possible world, why this one

rather than that one, etc. You never really understand what you speak about when you think that to think is to posit necessity—there is no necessity.



Points (RM to FH, 30.6.2010)

1. *After Finitude* describes the scope of an imagination that is synonymous with reason, in so far as the founding act of reason is to affirm facticity—that all that is, has no reason to be as it is rather than otherwise.
2. There is no novelty in facticity being affirmed of *facts*. This we do whenever we accept that a certain chain of events is contingent rather than necessary. However, we usually posit, behind this contingency, a necessary set of rules which governs the conditions under which contingency is possible.
3. What we can call the 'metaphysical point of view'—whatever the specific metaphysics in question—is at its core a belief in the Principle of Sufficient Reason: that everything that is, has a reason to be as it is. Inevitably, this leads to a chain of reasons which can only terminate in a divine grounding for all things. The metaphysical point of view must rest on belief rather than reason, because it reserves facticity for the realm of things governed by laws, refusing to extend facticity to the laws themselves.
4. Meillassoux's aim is to revoke this refusal, and to investigate what consequences follow from accepting the rational insight that not just the action of things within laws, but the laws themselves, are contingent.
5. These observations should make it clear that randomness or stochastic methods, in so far as they still

deal with things operating under laws of probability constrained within a certain space of possibility, constitute no fundamental departure from the metaphysical point of view.

6. From this point of view, randomness, just like any other order, is only a possible 'quotation' from the scope of absolute contingency (1).

7. The classic objection (Kant) is that, if laws were really contingent, then they would change constantly, and therefore there would be no experience. Meillassoux rejects this as being based on probabilistic reasoning, and therefore as treating the universe as a finite set. If the universe is an transfinite set, under the conditions of absolute contingency, then the apparent constancy and stability of experience would be no 'less likely' than a complete chaos and disorder.

8. The problem is to create a work in which the sensible is employed to make felt the facticity, not just of things, but of laws; to drive through the realisation that the infinite space of imagination *is* reason: hyperchaos.

9. To create a 'portrait in sound' (or any other medium) of hyperchaos, seems doomed. For several reasons:

a. The argument that hyperchaos is consistent with coherent experience (7) can only be understood with reference to the transfinite nature of the universe (7). Since the duration of the piece would be finite, any 'depiction' of hyperchaos could not be differentiated from a depiction of order or randomness (which are synonymous).

b. Formally speaking, no matter how many sources or modes of synthesis are employed, the whole is theoretically describable using a 'higher', more complex law; the very fact that an apparatus (software/hardware) can produce the whole, is the final, banal evidence of this fact.

10. Nevertheless, a consideration of the particularities of the medium could help in approaching as closely as possible to such a portrait. The musical organisation of sound too can be understood as consisting in various objects existing under a set of laws.

Various definitions of these objects and the sets of laws governing them have been proposed and put into practice. Usually within any one paradigm one regards the laws (forming the framework of a piece by virtue of which it has duration) as unchanging, the selection of objects as contingent (forming the content of the piece). As remarked, this goes for 'aleatoric' sound pieces also.

11. The one exception that has been suggested is Xenakis's later work, when he uses various different sets of laws and definitions of sound objects in the same piece, and this diversity apparently takes place according to no fixed 'meta-law' (but according to Xenakis's 'artistic intuition' or whatever we choose to call it).

12. Needless to say (and with reference to (9) above) this leaves untouched the physical laws and biological facts that govern the constitution of sound itself....

13. Meillassoux argues that the contingency of facts and the contingency of laws are the same thing. It would be possible to create a piece in which 'control systems' (i.e. the laws which define and govern objects) are subject to the same dynamic, stochastic, etc. treatments as the 'facts' or 'objects' that take place within them. This would subject order to a higher order (or in the case of randomness, a higher disorder governed by a yet higher order).

14. However, it would be equally possible to simply sample a series of facts from any existing source whatsoever.

15. (13) would be no more or less 'representative' of hyperchaos than (14).

16. The most fruitful path to take may be not to worry about exemplifying hyperchaos, but to use the results of (13) and (14) to intentionally choose and edit a series of 'quotations' which most effectively brought to mind the notion (15).

17. Repeated abrupt change in itself evokes only a feeling of randomness or disorder. Certain exaggerations can be made in pursuit of (8) (i.e. to create an exaggerated sense of stacticness; to emphasise the impact of an order's abrupt end; to present the

same elements interacting under extremely different control regimes; to become accustomed to a subtle set of laws, only for those laws to then disappear into something obtusely obvious).

18. This may create a ‘phenomenal analogon’. However, the important point about Meillassoux’s argument is that it is a rational presentation of something that may never be experienceable (because even if physical laws as we know them are contingent, their duration may be longer than that of our lives, or of all human life)—we have to accede to a paradoxical conclusion of reason, against all of our experience, precisely in the same way that we have to accept that there is a real before, after, without our experience. Access to the former and to the latter is via the same notion, that of facticity.

19. Therefore the ‘phenomenal analogon’ must be supplemented and amplified with other material which makes it obvious that the audience’s task remains to ‘raise up’ the analogon to the rational level. The text and other contributions to the piece must prescribe precisely the usage of the sound element as a kind of ‘preparation’. The analogon is given qua inadequate, as a provocation.

20. In *The Art of Living*,³ John Sellars discusses the Stoic conception of philosophy as technical: ‘an art or craft (*techne*) concerned with one’s life (*Bios*) [...] central to this conception is the role played by some form of training or exercise [*ascesis*—training, exercise, practice]’. Note that the notion of ‘ascesis’ is often invoked by rationalists to denote the submission to the conclusions of reason against the spontaneous tendencies of the mind; however the notion of ‘spiritual exercises’ has to a large extent been lost, since the Stoic conception of philosophical thought as something that must not only be understood but brought into life is generally not upheld. Sellars reports that in Galen, there are two parts to this ascesis: ‘habituation’ and ‘digestion’. Habituation—for instance Epicurus’s phrase ‘accustom yourself to the belief that death is nothing to us’; or Marcus Aurelius’s ‘Contemplate continually all things coming to pass by change, and accustom yourself to think that Universal Nature loves nothing so much as to change what is and to create new things in their likeness’. Aurelius speaks thus of ‘accustoming’

through the use of repeated themes: ‘As are your repeated imaginations so will your mind be, for the soul is dyed by its imaginations. Dye it, then, in a succession of imaginations like these.’ Cf (17) above.

21. To aim at these ‘spiritual exercises’ or ‘transformation of the disposition of the soul’, using the resources at our disposal to dramatise, make vivid, and aid the ‘digestion’ of the concept of rational hyperchaos. Sound as part of the technical apparatus of philosophy.

3. (Aldershot: Ashgate, 2003).