

Complexity and the non-positive

Abstract

Theories of complexity have developed from various strands of twentieth century scientific endeavour, including general systems theory, chaos theory, ecology, quantum mechanics, and economics. These disciplines, and their maturity into a set of theories around complexity, undoubtedly constitute one of the more fertile rhizomes of positive science.

Parallel to the sciences of the twentieth century, one fertile rhizome of non-positive thought has been that represented by continental philosophy, more or less indebted to Husserl's phenomenology and the opening of fundamental ontological questioning by Heidegger. This tradition of thought regards the sciences as regional, in the sense that they are characterised as dealing with a limited field of calculable positive knowledge, this being precisely their strength - and also their danger.

This paper will argue that because of the potential and actual interrelations between these two rhizomes, theories of complex social systems are perhaps uniquely placed within the social sciences to take on board the critique of the positive intrinsic to the tradition of continental philosophy. The argument will be made that this is necessary if key questions which these theories face are to be given the required depth of complexity - such questions as how organisations can be effective and give space for essential human creativity; how to characterise the interrelations between the micro and macro levels of organisations, in particular recognising a to-and-fro movement which goes beyond cause-and-effect; and the possibility of justice within organisational and social systems.

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Paper

Theodor Adorno writes, famously, in a section entitled "After Auschwitz" in *Negative Dialectics* (published in 1966):

we cannot say any more that the immutable is truth, and that the mobile, transitory is appearance (p361)

and

after Auschwitz, our feelings resist any claim of the positivity of existence as sanctimonious, as wronging the victims; they balk at squeezing any kind of sense, however bleached, out of the victims' fate. And these feelings do have an objective side after events that make a mockery of the construction of immanence as endowed with a meaning radiated by an affirmatively posited transcendence (ibid)

The name of this part of *Negative Dialectics* is "Meditations on Metaphysics". Metaphysics is the area of thought - which we might call philosophy "proper" - opened up by Plato's positing of, on the one hand, the immutable and unmoving realm of the "real"; that is, the realm of the Platonic ideas; and, on the other, the realm of appearance, of opinion, of movement: that place where we exist.

Positivity is this positing. Thus, philosophy "proper" (if there is such a thing) is positive. What Plato gives us, and what he gives the traditional of Western thought, is something like an initial pre-supposition. [For the sake of brevity, I am leaving out here any debate about the way in which Plato gives us this presupposition, an analysis of which would begin by highlighting the theatrical/fictional nature of that gift and its relaying via the figure of Socrates, and which would therefore open up the question as to whether Plato himself is "doing" philosophy properly so-called.] This pre-supposition is essentially positivistic; it is the assumption that, in the end and in total, existence relates back to a fixed point of *sense*. In Plato's case, this point being the realm of the immutable and immaterial ideas. This immobility, a sort of fulcrum from which or against which the whole lever of philosophy can operate, ensures and insures the existence of identity, sense, and meaning. At the same time, positivity presupposes that something - or everything - is capable of being conceptualised as a whole (ND p160); the movement and mutability of the world is, in the final analysis, capable of being related back to anchor points and an anchor point which guarantees, explains and underpins the whole of what exists.

For want of a better name, "Continental Philosophy" is that part of 20th century thought which questions positivity. This questioning involves and sometimes invokes a series of strange *aporia*. To question something is not necessarily to dismiss it out of hand - to the contrary - but, in the case of the questioning of positivity it is inevitable that such questioning would become, or be interpreted as, a dismissal. For as soon as one questions - if that questioning is in any way genuine - then that implies a placing-in-context, it implies a hesitation as to whether the argument will go one way or another, and that is of course what a positivism cannot, itself, put up with. Either a positivism remains sure of the pre-suppositions of totality, sense and identity which underpins it; or it cannot in all truth and sense be

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positive. This remains the case even when those who question positivist assumptions acknowledge – as they must – that identity, since and truth do of course *exist* – it is just that they exist because positivism – or some discipline or history more aware of its presuppositions – created them.

The stakes are high. Lines are sharply drawn between those who broadly accept such a critique and those who argue that to posit non-positively the essential non-existence of facts or sense *per se* is to collapse thinking into an amoral (if not immoral) and politically naïve (if not wilfully right-wing) relativity.

To make my prejudice and bias clear: the critique of the positive intrinsic to continental philosophy does not deny the existence of sense or, to put it in slightly different terms, the existence of order. To the contrary, it is fascinated by order. The dispute is rather about the origins of order. A positive interpretation of order is one which posits and assumes a simple and non-complex origin of it. This non-complex origin would be the fixed point in a chain of being and sense, a fixed point which would allow us to believe that there exists truth, absolute and in itself. The critique of this acknowledges truth and the necessity for it, and for the ordering within which it exists, but argues that this order has been *created*, has been given to us or has been given by us to ourselves through a series of more-or-less conscious, more-or-less ordered, histories.

Theories of complexity have developed during roughly the same time-scale as continental philosophy, that is, the 20th century. Complexity theory has derives from a nexus of various strands of rich scientific endeavour, including the general systems theory of von Bertalanffy; chaos theory and its concern with fractal geometries and non-linearity; theories about the constitution of ecosystems – their succession and climatic climax; quantum mechanics and the debates around uncertainty; and some of the more interesting branches of economics. Information technology has acted as an enabler, by allowing iteration to be modelled quickly and visually, allowing the emergence of emergence as a key theme of what are termed complex adaptive systems, which are models of physical existence. When complexity science extends its consideration to the social and managerial sciences, the concept of complex *evolving* systems is used in order to draw a distinction between systems which model the physical world and those which model the evolving social world.

Theories of complex adaptive systems and complex evolving systems concern themselves with the existence of *order*, and attempt to provide explanations of how order arises. But, from the point of view of a critique of the positive, what is remarkable about complexity science is the degree to which it appears to try to avoid any pre-positing of *where* or *how* order emerges. This is the case even where the emergence of order is made the explicit topic, as in Bill McKelvey's paper entitled "The '3rd' Law in Physical, Biological and Social Systems". This paper explores the existence of a third law of thermodynamics; *if*, given order, energy is always conserved; and *if* entropy always increases; then what of order *itself*; what is the law which will state why order emerges in the first place; or, as McKelvey following Gell-Mann puts it, what is it that sets the "coarse-graining" of the physical, biological and social worlds "into motion"?

What is interesting about McKelvey's paper is that the statement of the third law remains provisional, despite his extensive trawling of complexity science which, as he says, "aims to explain the emergence of order- the third law". The provisional statement of the law runs:

External constrains (to the system) in the form of Lorentz energy differentials, in the context of an entanglement pool in some state of corruption from prior emergence, act as the generative mechanisms (causes) of order – here "order is defined as the concurrent existence of both entities and environmentally constrained connections.

This provisional statement of the third law contains a definition of order ("the concurrent existence of both entities and environmentally constrained connections"), but acknowledges no true *cause* or origin of order, since the law turns back on itself in quite a distinctive movement. It is remarkable that the provisional statement of a law about the emergence of order invokes order *itself* as the cause or mechanism of order. For the entanglement pool from which order appears and to which McKelvey refers does *not* exhibit pure entanglement. Pure entanglement, in complexity terms and as the author makes clear earlier in the paper, is the state of absence of order. In order for a third law to be stated, this complete lack of order, the state of pure entanglement, cannot be pre-supposed; rather, the entanglement pool exists "in some state of prior corruption from prior emergence".

On the face of it, this characteristic of the provisional third law appears odd. A statement that order emerges from, is caused by, has a generative mechanism which is - precisely - order, seems to be saying, even provisionally, very little. But I would argue that far from being failing, the law as thus expressed

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remains faithful to the intrinsic characteristic of all the complexity sciences – namely, a respect for complexity. For what this third law does not posit is a *simple generative mechanism* for order. The entanglement pools are, as it were, always already corrupted. There exists (or existed) no “pure” state of entanglement which was already, even if only slightly, complex or emergent.

McKelvey’s provision statement of the third law of thermodynamics illustrates a structural law of all thought about the origin of order (and thus the origin of things; origin *per se*). This structural law is to do with a wager, a positing, one way or another. On the one hand:

there is the positive gesture of positing a simple origin to order and things. In other words, in tracing back the generative mechanism for the world, or for any ordered system, the end point of the analysis (even if it is acknowledged that this will not be reached) would be precisely that; an end *point*, at which the analysis and the generative movement could stop. This would be a point either of simplicity or in complexity terms (arguably amounting to the same thing) a pure entanglement pool where all that exists is something so fine-grained as to contain no prior ordering, no prior information

On the other hand:

the wager would be for complexity itself. In place of a simple point of origin, a pure entanglement pool, we would find or need to posit instead something non-simple, always already corrupted by prior emergence, some degree of prior coarse-graining. Which gives the uncomfortable characteristic to the analysis that any statement of the law of the origin of order will reveal a self-referentiality. In stating the origin of order (and of things) we are forced to include order itself as part of the cause (or generative mechanism of) order. This consigns the law to provisionality and/or, if not provisionality, then a sort of structural movement *en abym* (the name in heraldic terms of a figure which contains within itself the figure itself)

To recap: the meta-law or meta-structure of the explanation of origins of order and things has it that *either* there must be a positive positing of a simple non-complex or “purely” entangled state; *or* what is assumed is pre-existing complexity (however slight), which means that any statement about the origins of order will refer back to order itself. If “origin” *means* simplicity, unity, lack of complexity – for if there is origin, then surely it must have these characteristics – then the reference *en abym* from order back to order itself is effectively a statement that the origin does not exist.

Jacques Derrida, in his 1968 essay *Differance*, whilst surveying key aspects of the work of Ferdinand de Saussure, Freud and Heidegger, makes reference to Giles Deleuze’s 1962 book *Nietzsche and Philosophy* and his interpretation of Nietzsche’s work. Derrida quotes Deleuze interpreting Nietzsche thus:

Quantity itself therefore is not separable from the difference in quantity. The difference in quantity is the essence of force, the relation of force with force (p148)

and then himself states:

Is not the whole thought of Nietzsche a critique of philosophy as active indifference to difference, as a system of reduction or adiaphoristic repression? [a = lack; diaphoros = grk for different] (ibid)

Derrida’s argument here is that philosophy “proper” is a discipline which represses difference in the name of sameness and unity. Hence, the argument goes, the structural tendency of western thought – evinced in the classical sciences as elsewhere – of privileging the object, the present-at-hand thing, which represents and utilises most forcefully the priority of sameness, identity and unity.

Over against this sameness, Derrida will privilege difference and play, and this privileging of play, a to-and-fro movement irreducible to an original stasis, characterises all his work. Thus he can state earlier in the essay:

since language has not fallen from the sky, it is clear that the differences have been produced; they are the effects produced, but effects that do not have as their cause a subject or substance, a thing in general or a being that is somewhere present and itself escaping the play of difference

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In other words, there is an ordered system of language, which develops over time. In seeking the cause of this order, Derrida's argument is that we must avoid on the one hand viewing this order as somehow given by nature (or "fallen from the sky, as he has it), since this particular evolving system clearly depends on the more or less conscious decision of the agents which "use" it; and on the other, precisely because it is an intricate (perhaps hyper-intricate) system, we cannot argue that either the origin of the evolutionary changes are the result of a subject outside the play of differences, or, at the limit, that in tracing the system back to its origins we would reach a point where the play of difference ended in the revelation of an existent, unitary "thing".

This emphasis on play also characterises the work of another post-Heideggerian philosopher, Hans-Georg Gadamer. His *magnum opus*, *Truth and Method*, published in 1962, argues against the enlightenment prejudices of aesthetics and its presupposition of an artistic "object" set over against a pre-constituted "subject" (namely, us) linked by the "communication" of a sense or aesthetic meaning between the two. At the beginning of the chapter "Play as the Clue to Ontological Explanation", he puts the argument succinctly:

I select as my starting-point a notion that has played a major role in aesthetics: the concept of play. I wish to free this concept from the subjective meaning which it has in Kant and Schiller and which dominates the whole of modern aesthetics and philosophy of man. If, in connection with the experience of art, we speak of play, this refers neither to the attitude...of the creator or of those enjoying the work of art, or to the freedom of a subjectivity expressed in play, but to the mode of being of the work of art itself

That is, for Gadamer, the ontology of the work of art lies in play, in movement, in the mobile and intricate interweaving between the work and those who view it. This play, or interweaving, is for Gadamer the primary reality which we should observe and respect. To analysis this play into a static notion of the art "object" is to introduce an enlightenment prejudice inappropriate to the complexity of the situation.

In other words, an "object" for study is *only* the result of an analysis of a certain type. The notion of the object, identical to itself, cannot be held to have a reality in and of itself, since it is only derived by us from a more complex and playful reality.

If Gadamer emphasises that the ontology of the work of art lies in its movement within a complex situation, then Jean-Luc Nancy, in taking Derrida's notion of *differance* at and as the origin of things, applies a similar but more radical interplay of movement to the questions of freedom, the nature of evil and the nature of community. In the context of the explosion of forms of media and their effectiveness, their hyper-textualisation and worries about the non-materiality of the virtual sign, Nancy's ploy is to accept the movement that these phenomena imply and not to try to halt the movement by means of a static concept of the good, freedom or society.

Thus, for Nancy, the *Experience of freedom* [the title of one of his books] is the avoidance of evil, and evil is defined as that decision which leaves nothing more to be decided; ie, that decision which closes down future movement, future freedom. Freedom means nothing unless it is the freedom for both good and evil; but the clarity of evil is that it brings to a close the continual possibility for movement which freedom implies. In turn, Nancy's concept of what he calls an *Inoperative Community*, that is, a community which operates beyond classical notions of the selfish and utilitarian subject, speaks *not* of the identity of a community and those who belong to it – an identity which can be as much a force for evil as for good – but rather, as he says:

what is shared at the extreme... is not community, not the completed identity of all in one, nor any kind of completed identity. What is shared is.... sharing itself and consequently everyone's non-identity (p66)

Not the simplicity of a communal identity, then, but rather the complex movement of an ongoing sharing within which identity becomes an effect, not the cause or ground of the movement.

What, then, of the concept of "nature" in this context? In one tradition of thought, nature is the set of objects or situations from which we, as "artificial", derive. First nature, as point of origin; then artificiality, that which we as humans introduce into the world.

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For an alternative tradition of thought which emphasises play over stasis and which consequently is suspicious of the idea of a pure "origin" of human society, the concept of "nature" as an unproblematic field is, of course, questionable. Derrida, in his 1967 book *Of Grammatology*, interrogates amongst other things Rousseau's *Essay on the Origin of Language*, language being a primary locus for the artificial. Perhaps Derrida's most notorious statement is "There is nothing outside of the text" (p158-9) In the same paragraph as this much-quoted statement he expands upon its implications:

there have never been anything but supplements, substitution, signification, which could only come forth in a chain of differential references, the "real" supervening and being added only while taking on meaning from a trace... And this to infinity for we have read, *in the text* [of Rousseau, which is ostensibly claiming the existence of a simple origin to language] that the absolute present, Nature, that which words like "real mother" name, have always already escaped, have *never* existed

Derrida goes on to say in a later chapter:

The concept of... nature is nothing but the myth of addition, of supplementarity annulled by being purely additive. It is the myth of the effacement... of an originary difference that is neither absence nor presence. This originary difference is supplementarity as *structure*. Here, structure means the irreducible complexity within which one can only shape or shift the play of presence and absence; that within which metaphysics can be produced, but which metaphysics cannot think

The word *difference* in this paragraph is spelt in Derrida's neologising manner, which he explains in his essay of that title. De Saussure, in his early twentieth century *Course in General Linguistics* had analysed language (or any system of signs) into two axes: on the one hand, the horizontal axis of synchronic *structure*: what is the interaction between elements of a system at any one moment in time? and on the other hand the vertical, diachronic axis of development over time, where the particular history of any one sign is analysed. Any sign, or any element in a complex system, can be seen as positioned at the intersection of its particular diachronic and synchronic axes. It has a relationship with all the other elements in the system at that particular time; and it has a relationship through time with its past "evolutionary" states (and its possible future ones). The history of linguistics is one where genetic analysis and structural analysis vie with each other for primacy, and indeed the tension between these two modes of analysis – temporal/evolving and structural/synchronic – is observed in other fields of enquiry. Derrida's term *difference* takes this tension as a creative possibility, as a positive characteristic, and says or tries to say both *at the same time*. Derrida uses the word difference in order to recover the dual sense of the Latin term *differe*; he says that his neologism means *both* differing between things (ie the structural axis) and the deferring of things (ie the temporal axis). And in utilising this word which means both differing and deferring he allows his analysis of thought to question any strategy of privileging one of the axes above the other, in favour of an inherently complex and non-reducible interaction between them.

In Alex Garcia Duetman's early work *The Memory of Thought* we find an unexpected interplay of Adorno's work and that of Heidegger which culminates in an analysis of creativity inspired by Heidegger's essay *The Origin of the Work of Art* (1936). To answer the question "what does it mean to create?" Duetman following Heidegger contrasts the nature of fabricated equipment with a created work of art, and shows that the key characteristic of the latter is its structure of self-referentiality:

In contrast to equipment, the character of having been brought forth is inscribed as such within the work [of art itself] (p223)

That is, what distinguishes creativity from non-creativity is that those things which are created mark and show within themselves the fact that they are new, that they cannot simply be related back to what previously existed, in other words that they represent an opening up from a previous position.

createdness is distinguished from fabrication by virtue of its self-relation, which must be interpreted as an opening and cannot therefore be conflated with a totalising form of self-reflection (p225)

We return again to the distinction between a positive, totalising thought which would relate back, in the final analysis, to a point of stasis; and a type of thinking which, in place of a positive place of origin allow for this locus to be inherently *complex* and, in analysis, intrinsically self-referential and therefore unsimple.

The argument is that those types of thinking which remain faithful to the latter are going to:

- favour the complex over the simple

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- remain suspicious of any reduction of order to notions of static objects
- contain at the end-point of their analysis a sort of hyper-complexity of self-referentiality around which or out of which it is not possible to get, inherently

If it appears that complexity science has evolved, in complex fashion, during roughly the same time scale as the tradition of continental philosophy opened by Nietzsche and Heidegger's thought; and if there appear to be similarities in their respective emphasis on mutability, the complex, the non-simple, the complex interweaving of phenomena, and so forth; then it needs to be emphasised that, if there is some logic behind this similarity, then it is *not* necessarily the logic of analogy or metaphor; *nor* is it necessarily the outcome of actual interaction between these fields of endeavour. I do not even know if there is any evidence for this.

But neither, I think, is the similarity a pure co-incidence. Rather, it is a consequence not of analogy or interaction, but of a structural law which intervenes, with implacable force, wherever the origins of order are being seriously considered.

In calling for complexity science to take on board the critique of the positive which this paper argues is the central theme of continental philosophy, this is not to ask that science do anything other than remain true to its own structural characteristics. These characteristics we have summarised above, and are inherent in the very name "complexity", which as Eve Middleton-Kelly and Gell Mann remind us is associated with an "intricate inter-twining or inter-connectivity of elements within a system and between a system and its environment". If the aim of this branch of social science is to foster creativity, to discuss and inform questions relating to ethics and talk coherently and honestly about issues of social justice in the context of managerial science – and these are high aims – then what the tradition of post-Nietzschian thought will ask of it is for it to wager, always, for the openness of complexity and avoid the route of a positive positing of simple and totalising solutions.

The route of the non-positive is beautifully evoked and invoked at the end of Derrida's essay on Husserl's Theory of signs:

Everything has, no doubt, begun in the following way:

A name on being mentioned reminds us of the Dresden gallery.... We wander through the rooms... A painting by Teniers... represents a gallery of painting.... The paintings of this gallery would represent in their turn paintings, which on their part exhibit readable inscriptions and so forth [Husserl's *Ideas I*, #100; p293 in translation]

Certainly nothing has preceded this situation. Assuredly nothing will suspend it Of the broad daylight of presence, outside the gallery, no perception is given us or assuredly promised us.... The gallery is the labyrinth which includes in itself its own exits....

It remains then for us to *speak*, to make our voices *resonate* throughout the corridors in order to make up for the breakup of presence. And , contrary to what... our desire cannot fail to be tempted into believing, the thing itself always escapes. [*Speech and Phenomena* p104]

[ends]