

Complexity theory and continental philosophy – part 1

A review of Letiche's Phenomenological Complexity Theory

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Stephen Sheard

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Abstract

Recent studies in Organizational theory have directed themselves towards poststructuralist interpretation. A variant of such interpretation is based on theorists derived from the traditions of phenomenology. Letiche's PCT is examined as a derivative case of this theorization. Complexity theory is also scrutinized, relative to arguments of the theorist Derrida (especially), but also Bergson. It is argued that complexity theory illustrates problems relative to the application of phenomenological theorization which relate in part to the difficulties of the analogical transfer of theories derived in the physical (or natural) sciences to the social world. A debate on the philosophical status of phenomenology (especially related to Derrida's *differance*) presents a new angle on the extensibility of complexity to the human realm. This aspect impinges on the issue of the value and implications of the 'linguistic' turn relative to the complexity theory enterprise.

Introduction

A marked feature of recent conceptual advances in the area of Complexity theory has been the incorporation of themes related to areas such as phenomenology (incorporating theorists such as Heidegger, and Derrida), and poststructuralism (especially incorporating the theories of Derrida). Particular theorists have evolved: for example Cilliers (1998), Letiche and Boje (2001), and Letiche (2000a). A particular integration has occurred around the thought of Henri Bergson.

This article describes key features of Hugo Letiche's theory of phenomenology, and then moves to an analysis of this theorization. It looks at its theoretical sources of inspiration and grounds the discussion with reference to the work of Derrida, especially his concept of *differance* and its status relative to what is known as the ontic-ontological divide (as defined by Heidegger). Derridean *differance*, as opposed to PCT proper, is then debated relative to the themes introduced in the discussion of the recent theoretical constructions of complexity theory and its variable forms – with emphasis on self-organization theory.

In this paper, the difficulty in the transference of an analogy from the physical to the human/social sciences is considered. Letiche's PCT serves as a touchstone to introduce that debate, and also the significance of the project of creating a theory of complexity which has a pre-epistemic or ontological emphasis.

The article is significant in that it points to the possible limits and nature of a complexity theory of human life and social organization, and shows how a synthetic theorization (PCT) introduces a variety of problems which are key to the understanding of the extension of complexity theories towards the human (individual) and social realm.

A synthetic approach to phenomenology and complexity: Hugo Letiche's phenomenal complexity theory

Letiche (2000a) links the concepts of phenomenology, with the ideas of Derrida (*differance*) and those of Bergson (specifically the concepts of *durée*, *Élan Vital* and *Intuition*). He adopts a position which disputes the subject/object divide as a cornerstone of management research methodology. This is termed "dualistic," reflective of a "one sidedly rationalist or subjectivist" perspective. A critical stance is engaged, which draws on Derrida, and represents "a process of *differance* thinking wherein complexity – the interactive dynamics of a multifaceted process leading to emergence – occurs..." (Letiche, 2000a: 547).

Letiche links this theorization to Bergson's distinction between analytic and intuitive consciousness; the former being argued to be closer to 'the object', whereas the latter is argued to be an experiential feature, which is "centred on the experience of the knower" (Letiche, 2000a: 548-549). Letiche equates the lived experience of self-organizing emergent systems with Bergson's concept of *durée*. He suggests that "emergence precedes consciousness, though consciousness – as meaning or language – remains constitutive of human understanding of the world..." (Letiche, 2000a: 550). Consciousness is thereby defined as having a correlation with antecedent emergent qualities of 'self-organization'. It is argued that Bergson's *durée* is characterized by a double-movement – of the experience of the present and the experience of continuity of identity – and that in a state of duration one enters into the object (Letiche, 2000b). Letiche argues that "the intentional structure of emergence is logically prior to *durée*

and to intuition. Intuition is the form of cognition able to grasp *durée*...”

Letiche also argues that “CAS (Complex Adaptive Systems) is not just a construction of a ‘knowing subject’, it is a principle of being...” which is to state the epistemology of CAS in ontological terms of significance. He asks whether emergence is atemporal or contextually bound by time:

“If emergence is emergent it must be historical, contextual and time bound. Thus, is emergence inside or outside of ‘time’ and process? If ‘outside’ (ontology), how could it emerge; if ‘inside’ (ontic), in what sense would it be knowable? How could the ‘subject’ gain enough distance from emergence to identify its ‘laws’?” (Letiche, 2000b).

Theorists such as Juarrero (1999) and Letiche have emphasized the potentially complex nature of causality[1]. A key aspect of that process is the aspect of bifurcation relative to the self-organizing system (e.g., Belousov-Zhabotinsky chemical clock)[2]. It is possible to construe the transformation which occurs in a self-organizing complex system in terms of an analogy with a shift of identity in the social/human realm. Letiche argues that Juarrero suggests a complex causality as an alternative to the efficient (Aristotelian) causality, and that this may result from a process of ‘entrainment’[3]. He seems to envisage Juarrero’s conception of entrainment as anterior to the self-organizing processes (which he argues can occur at all levels of existence including human consciousness). Hence, he argues that an alternative conception of complexity, built around an affiliation of these ideas with the concept of ‘*differance*’, is more suited to an account of the role of consciousness in the social sciences:

“...consciousness can also be understood – in so far as it is currently possible to understand it – as a product of the looseness of difference. Consciousness can be thought as a result of many slightly different weak signals that all voice in the mind. By bringing these differences into one another, ‘mind’ emerges. Tightly coordinated links of entrainment are but one sort of hypothesized relationship (for self-organizing systems). Much looser, paradoxical and polyvalent forms of order could be at least as important to the formation of consciousness...” (Letiche, 2000b: 35).

These looser forms of order are also the basis of his phenomenology of complexity:

“[T]he social activity of emergence goes on somewhere else (other than organizational studies) – in-between consciousness, circumstance and conceptualization. The in-between exists in the dialogic interactions that link the different aggregation levels of organizing and organization”[4].

Hence interaction between distinct levels of aggregation is defined as emergent, and the province of nonlinear links – organization and organizing, but a “phenomena of consciousness,” (Letiche & Boje, 2001: 19) not an economic fact.

PCT: Boje’s instantiation within Disney

Before moving towards further discussion of Letiche’s concept of PCT, it is worth asking: “how exactly might a practitioner (as opposed to a theorist) derive benefit from a study of PCT?”

Boje develops his instantiation of Letiche’s PCT in two papers (Boje, 2000, 2001); these collectively argue that Disney “dances on the edge of chaos” as diverse protest groups are having a collective strategic/financial impact. Boje notices that Disney is “a complex enough empire that it manages to offend almost every cultural group”[5]. Boje’s case is that Disney is a CAS which is subject to “emergent processes of protest, self-organizing networks of labor and family value monitor groups and operating, seemingly on the edge of chaos...” (Boje, 2000: 563).

It is difficult to exactly discern as to how Letiche’s PCT is specifically applicable to Disney, as opposed to a more generic theory of the CAS. Letiche (2000a) reviews Boje’s paper, noting that: “David Boje has in his research created an artefact, that is in opposition to the implicit norms of PCT’s, which stress the role of emergence, consciousness and ‘self’. ‘Nike’ is Boje’s organizational, anti-phenomenal, reification.” Boje has shown an organization (Nike), which displays principles that are contrary to PCT. This goes beyond Boje’s looser application of complexity theories to Disney; rather Letiche construes Disney as exhibiting a “false emergence” as “so many of the participants (are) not allowed to have any influence on the action (of Disney).” Clearly, these comments apply to external stakeholders also. These accounts of Nike as reification, and Disney as false emergence point to a treatment of organization in terms of “its ethical and social significance” (Boje, 2000, 563).

So, what is Letiche saying about Disney? I think he is supplementing PCT’s credentials by interpreting these firms in terms of PCT and emphasizing the consciousness of individuals rather than a company orientated or corporatist view. On these accounts Disney exhibits a “false emergence”; that this is “anti-phenomenal”. This is actually unlike Boje’s Disney – “dancing on the edge of chaos” or anticipating destruction because it is a complex system. Letiche rather emphasizes that Disney does not embody PCT as it constitutes a “false emergence”. Boje is clearly drawing on the distinct idea of chaos theory to represent his ethical disapproval of Disney’s policies. It can be argued that Letiche’s view of Boje’s instantiation of his ideas, stresses an aspect of moral and ethical significance relative to emergence within PCT. Emergence is not about remarkable transformation in

terms of engaging profits or company success, but from a human perspective in terms of engaging our hearts and minds, according to Letiche. This is a radical contrast to what is suggested (often implied) in many corporatist accounts of complexity theory (e.g., Kelly & Allison, 1998). Disney are (like all firms) attempting to emerge in competitive terms. This can mean accounts of complexity which emphasize competition and the theory of competitive advantage, the evolution of “plateaus of competence over time” for instance. Letiche’s definition of complexity sits uneasily with these kinds of definitions in that they may imply, as a feature of the desire for efficiency, a lack of ethicality or concern for individual consciousness.

By examining Boje and Letiche on the example of Disney, it is notable that Letiche adopts a view of complexity theory which is indirectly capable of antagonism to the ideology of profit maximization or efficiency. PCT is therefore, albeit discretely, a form of critique of modern capitalism, in that it espouses humanitarian values quite alien to those which may be a necessary feature of competitive progression of a firm. PCT may be radically opposed to more corporatist views of complexity also, in terms of its links to more radical influences on a phenomenological perspective, containing the seeds of radical critique of orthodoxy – harnessed towards a scientific analogy which is more usually conceived of as a means of promoting organizational (rather than individual) transformation.

Ought reflective practitioners to examine the often dubious extension of a commercially orientated ideology to the detriment of the individual consciousnesses of their employees and related stakeholder groups? Discussion of PCT reveals its radical potential relative to practitioners but more needs to be said about the status of PCT in terms of its philosophical credentials. What are the phenomenological sources that so emphasize the individual in PCT? We have mentioned complex causality and Derrida’s *differance* (above). These themes will now be discussed.

PCT: How does it relate to Derrida’s concept of *differance*?

What may be noted is that PCT dwells on the cusp of the social sciences and the sciences; it extends a theory of phenomenology to the close comparison between Complexity theory and human life. PCT extends a particular interpretation of phenomenology, of which a vast array is possible. It also emphasizes a theory (Derrida’s *differance*) which has affiliations with areas of radical critique of phenomenology as it was envisaged by Husserl; a founder of phenomenological enterprise, which itself emphasized a non-empirical, transcendent view of phenomenology[6].

We can see an immediate problem with Letiche’s PCT; in that he is concerned with creating an interpretation which has the promise of linking with empirical cases in organizational studies (see above, the case of Disney). However, Husserl establishes an initial but not exclusive claim towards phenomenological theory. Schroeder describes phenomenology in terms of a distinction between transcendental and existential phenomenologists. A transcendental phenomenologist – such as Husserl, would ‘bracket’ perceptions of the world[7], However, it is possible to emphasize the existential – the ‘lived experience’ – rather than the transcendent[8]. On these accounts, phenomenology (which to Husserl had a Platonic aspect) as “an a priori science of the essences of all possible objects and experiences” (Moran & Mooney, 2002)[9] is anything but unitary. Letiche reflects a more existential view, when he notes that such research is a form of embodied practice wherein the inability to side entirely with the ‘subject’ or the ‘object’ (the observed) applies[10]. This becomes meaningful in the light of the equation of ‘subject’-orientated perspectives with phenomenal experience and those which emphasize the ‘object’ with a more realist inclined perspective. Letiche follows Merleau Ponty in terms of his perception that phenomenology follows the middle-ground between empiricism and cognitivism (in this latter context we can read ‘subject’-orientated experiences as related to idealism). It is also possible elsewhere to see shades of Husserl’s own theorizations (transcendental phenomenology) within Letiche’s PCT. For instance, when Letiche (and Boje) describe the phenomena of intentional emergent coherence, this has resonance with Husserl’s ‘intentionality’, but also the ‘rhizome’ (Deleuze):

“Intentional emergent coherence links the experiential to the complex. Identity is achieved on the intentional level. It is on this level that the self determines activity ... The intentional is never coherent, it is desire, rhizome and inchoate” (Letiche & Boje, 2001: 23).

Already we can see that these observations are indicating that it is not purely Derrida, and his *differance*, which is emphasized in PCT, but a variety of theorists of continental origin are drawn into a form of synthetic theorization. Nevertheless, despite the sense of a melange or variety of influences, Bergson and Derrida are the predominant theorists unified in this theoretical construct[11].

As Letiche cites Derrida, and especially his concept of *differance*, it would be especially relevant to look at the intersection of Derrida and the phenomenological tradition, relative to Letiche’s PCT. Derrida follows, in part in the wake of Levinas, who emphasized the ethical aspect within phenomenology; that it was more important to “respect other people over the urge to know or objectify them” (Schroeder, 2005: 177). One can see the hand of Levinas in the ethical conception of Disney as a ‘false emergence’ due to its ignoring the individual views of its workers. Schroeder also notes, apart from its distinction between transcendental and existential phenomenologies (above), that “Levinas constitutes a pivot within phenomenology, anticipating key claims of poststructuralism” (Schroeder, 2005: 178). We might tentatively note these influences, that PCT seems closer, generally speaking, to the existential account of phenomenology. However, these points can take us only so far in

understanding PCT – which dwells, as Letiche notes, on the issue of a unity of the idea of *differance* with a view of complexity theory.

A view of lived experience as an ‘awakening’ is common to all phenomenologists, Schroeder notes, and it is the construal of that theme of phenomenology or ‘awakening’ in terms of the complexity theory state of emergence, which is the novel move of Letiche (2000b). Whether emphasizing emergence as within or outside time (a central concern of phenomenology being the evaluation of perception relative to time states and the status of ‘transcendence’), Letiche draws heavily on Derrida; his complex notion of *differance*. This tends to act as a satellite concept which links the disparate origins of Letiche’s conceptions of phenomenology with his views on another continental theorist – Bergson. What exactly is *differance* according to Derrida?

“In a conceptuality adhering to classical strictures ‘*differance*’ would be said to designate a constitutive, productive and originary causality, the process of scission which would produce or constitute different things or differences...” (Derrida, 1982: 9).

Hence, *differance* is ‘the possibility of conceptuality’; it is the “non-full, non-simple, structured and differentiating origin of differences. Thus the name ‘origin’ no longer suits it” (Derrida, 1982: 11). Contemporary theorists have diverse interpretations. Only a few cases can be examined in the space available and particular attention is paid to the interpretation of Lawlor, as being clearer than most. For instance, Lawlor describes *differance* in terms of a construction/interpretation of the evolution of the present in terms of its continued passage; because of this he terms “subjective presence” as something which is continually passing and in relation to which “I must bring myself over and over again” as the “power of representation in its general form.” This return of a memory of presence is the ‘trace’. As the sense of the present must survive, a need for survival exists; “the sense must survive and that means it must be no longer finite but infinite, no longer immanent but transcendent...” This second aspect of difference is a “graphic possibility (which) can make the sense be different from me as a singularity.” The re-evocation of the trace – its being made immanent again – is as it were envisaged as a recreation of what is dead (Lawlor, 2002: 232-233). In contrast, Stellardi notes (when discussing the inter-relationship of *differance* and metaphor) that *differance* is an example of an indecidable – “negatively defined by their inability to tolerate any definition”[12]. *differance* in its play in and out of reality, can be conceived in terms of a kind of feature expressed as episteme (typified in terms of language), which is seeking to express an insight into the heart of the nature of the ontological inter-relationship of thought, including the aspect of the inter-relationship of self and interior monologue, with both conceptualization in its evocative and re-evocative states. Hence, it is concerned with an interpretation of the relationship between memory and thought, and the aspect of language articulation as a feature of thought, including the intervention of memory[13].

Differance thereby obliquely addresses the psychological aspect of the nature of interplay of language, and the sphere of formulation of mental acts expressed in terms of word-structures (the temporal dimension). However, it closely engages this insight (in terms of its emphasis on the transcendental nature of experience) by suggesting that it locates in the present, differences between the construction of words within the immanent – or here and now. As language (a metaphoric entailment in certain senses) is engaged in this project, *differance* is described in terms of its lack of confinement, that reinforces a view of language which is scarcely chained by metaphysically subordinated conceptions of the role of metaphor in language formulation (for example the Aristotelian)[14]. These aspects transfer the concern with causality, or origins, of thought to an analysis vitally related to language (and hence socially implicated). The persistence of the trace (of language) may in a certain sense be construed as writing. Hence, in a macro-sense, the issue of the text as a feature of indeterminacy due to an infinite reiteration of its articulation, from the perspective of the separate reader(s)[15].

Differance therefore permits a wide scope of discussion, because the originary process of the thought-memory relationship infers the universality of the ‘conception’ of difference, as a feature which stands instead of a less dynamically conceived theory of perception. In this sense, *differance* allows a mode of discussion as to the relationship between immanence and transcendence in human thought; related to the issue of past – present and future articulation of language (as thought reflected in the iterability of the ‘trace’). This emphasis on language as a feature of intervention between knowledge and Being, dwells on the area explored by Heidegger – the onto-ontological divide[16].

As Lawlor notes, whereas Derrida initially envisaged *differance* as a form of dialectic, the fully-fledged conception contained a marked deviation from the idea that *differance* was a dialectical conception akin to Hegelian dialectics. This is worth dwelling on, because it lies at the heart of the Derridean conception of *differance* (see Lawlor, 1992). Lawlor further notes that difference is based on the displacement of univocity by equivocity (terming this ‘supplementarity’). He also notes that: “dissemination is a genesis based not on temporalization and imagination, but rather on spacing and the aleatory” (of difference). This alludes to the conception of Stellardi, that *differance* can be spatially and temporally conceived – as a neographism – capable of acting as a kind of notional substitute for a word which could act as the basis for metaphorization. Difference in these senses, does not offer closure, because its function is not to seal or hermetically isolate the process of mediation, unlike as Lawlor suggests, in the case of Ricoeur[17]. This aspect of lack of closedness, of splitting itself (if it can be so described as an ‘it’) at every point including that of origin or causality; inscribes the character of *differance*. This lack of closure, or process of infinitization (iterability of the process of formation of the ‘trace’), prevents the sense of dialectical completeness (à la Hegel). It also points to the sense of resemblance between the flow of *differance* and the sense of an open system (CAS), because on this account

language is not permitted a completeness in terms of the certainties of an abstract (or philosophical) resolution of the play of determinacy of meaning. These features give the sensation of a possible allegiance with a complexity view of science.

However, such sensed resonances, between the CAS and *differance*, do not necessarily underpin the case represented for PCT. They may well relate to a case for a Derridean view of complexity, however. As said, a theory which entertains a relationship between thought and memory (*differance*, put simply), encompassing within language both transcendence and immanence, would accomplish Letiche's purpose of representing a kind of theoretical basis for a phenomenological view of complexity. Following Lawlor's construction of Derrida's theoretical construct of *differance* (for instance), and the trace coming in and out of being as thought – expressed in terms of a shift between immanence and transcendence (almost but not quite a dialectic of the moment of perception) – would enable one to define emergence in terms of a co-relationship of these features. On that account each moment of each psyche would be emergent. Emergence would not be a remarkable or unusual idea – or a marvellous transformation of a collective (as in the case of most corporatist views) for instance – but the universal presence of perception and thought in humanity.

A problem exists in that Letiche does not specifically argue the case I have made for a Derridean phenomenology. He does not fully elaborate a connection between Derrida's thought and his own theory of organizational phenomenology as represented in PCT. Rather, he infers the constitutive nature of difference as an organizational phenomenon, through talk of 'weak signals' and the like (Letiche, 2000b). In short, he assumes the validity of Derrida's conception as a feature, which can fulfil the role of a phenomenological account of human ontology. In that respect, he borrows from Derrida's own universalizing tendency in relation to his claims for the concept of *differance*.

A further problem also relates to the definition of emergence. This concept has a more technical meaning as related to complexity theory and the emergence of self-organizing effects that Letiche often uses – especially those represented in the ordering aspects of dissipative systems (e.g., Prigogine & Stengers, 1984). There is a second more obvious sense in which the term can be used and that is in its vernacular or common usage. A term such as 'emergence' tends to sit easily as a pre-theoretical term which may align with a conception like 'difference'; both are connected with origins and the process of becoming. That does not necessarily mean that because a link between Derrida's thought (in the loosest sense) and the term 'emergence' exists, that a theoretical link can be firmly established between the sciences of complexity theory and phenomenology.

Letiche then tends to build on this pre-theoretical affiliation between emergence and *differance*, but does so without fully articulating the theoretical link or scrutinizing the conception of *differance* (which I have tried to do). This means that the account is more interpretative than it ought to be. Clearly the goal is to underpin a (felt) notion of allegiance between complexity theory (generally conceived) and (currently) fashionable continental theorizations[18]. This tends to open Letiche to the charge of exploiting the credentials of vaguely poststructuralist notions, without a full sense of argument as to their extensibility relative to another domain (complexity).

However, before passing early judgement on Letiche's PCT it is important to examine other features of this theorization – firstly, the link he makes between PCT and Bergson, and second, the implications of correlating a 'phenomenological' theory with aspects of complexity theory science. These features will be dealt with in the following sections.

PCT: The significance of Bergson

Letiche adopts Bergson's *durée*, and follows Bergson in terms of emphasizing the non-identity of successive moments of perception[19]:

“Experiential durée is not a succession of states resembling a collection of objects. One instant doesn't replace another – consciousness isn't a drawer wherein moments of time are put and taken out. In duration the one instant does not simply replace the other – as if 'time' was merely a succession of present moments” (Letiche, 2000a: 522).

Whereas Derrida's *differance* can support a form of psychological theorization as to the nature of memory and its interaction with thought, this dimension is underplayed by Letiche. Letiche rather synthesizes mention of *differance* with *durée*. There are distinctions between the concepts – the death of the trace within Derrida's theory is not about the death of identity of the subject, but an important feature of the temporalization of the trace which Derrida evolves to intimate the transition between transcendental aspects of the trace and the current perception (at the present moment) of the same:

“...this aspect of differance is crucial, since the form of sense (or something of me, some intuition or action) survives only in writing or in the trace of memory; it is really dead; it is merely a body with a subjectless transcendental field. Here we return to differance's first necessity: the trace must be made present, must be immanent, must be made mundane, must be made close once more, and must be made close once more and must be made the same as me; it must be made to live again. When this return happens, presence that is both objective and subjective is constituted...”

Death here is the hinge of the micro-process of the qualitative process of iteration of the function of the mechanism of consciousness. Conversely, in Bergson's quotation (immediately above) the concern is the identity of being relative to the nature of the moment. If the moment is a uniform feature it is a quantifiable feature (and hence Bergson argues – such a conception is a feature of consciousness at a level of reflection which evades the lived experience of the moment).

The difference is that Bergson's thought tends to emphasize the relationship with the external or extrinsic aspect of time as a function of consciousness. Homogenous time overlays our perception of duration in Bergson's theories. Both Bergson and Derrida were concerned with the phenomena of consciousness, relative to reflexive internal epiphenomena, expressed in the terms of the influence of Levinas, as 'the other'. Derrida being keener on phrasing the issue in terms of the issues related to the origination of thought and its evanescence – followed by its recrudescence. In contrast, Bergson takes a slice on this process and depicts it as a duality, or tension, as between the reality of the process (*durée*) and its veiling through our cultural accretions of consciousness (especially the tendency to seize time in terms of spatial forms).

Phenomenology and the issue of temporality

Bergson's views are concerned with the contrast between the interior and exterior of the psyche relative to the passage of time; this becomes a concern with identity relative to the perception of time. Identity is a discrete feature of a problematic within Letiche's theorization, as Letiche notes that if emergence is an ontic phenomena, (inside time) then, it is not possible to get a fix or 'eagle's eye' perspective on this activity (Letiche, 2000a). In this he follows the metaphysical presumption suggested by Derrida, that ontic phenomena do not permit law-like utterances (Derrida conceives in terms of the term '*Arche*'). However, it has been noted that *differance* fulfils many of the features of an axiological principle or *Arche*, albeit without such explicit claim. If we consider that the physical sciences are realized in an epistemic (or ontic) realm, the only possibility for their alternative definition (within the scope of the ontic/ontological distinction) is if they are described within the frame of an ontological vantage point.

It is fair to make the point that, this idea of a contrast between ontic and ontological realms is one which Heidegger inherits from Kantian discourse, and which Letiche works with also. Derrida's views are tending towards a form of disarrangement of the conceptual underpinnings which constitute Western metaphysics, including these types of distinction which are (despite their axiological primacy in Western thought) nevertheless a form of categorical opposition giving rise to an 'indecidable'; perhaps the ontic-ontological distinction is the root 'indecidable'. This aspect therefore within Derrida, might be treated differently to that outlined in Letiche's adoption of his ideas.

However, to work within the structure of PCT which encompasses both views of Bergson, and Derrida – one can note that Letiche builds on the binary structure of the ontic-ontological divide to make his case. Letiche links emergence (the state – of a scientific extrinsic nature in complexity) to the inner psyche; hence the view that the self can attain a creative realization of emergence in terms of *durée*. Consciousness constitutes an outcome of emergence, which forms a "pre-structure" of the outlay of consciousness (Letiche, 2000a: 550). Emergence, on this account, straddles both ontic and ontological dimensions of the framing of identity and experience:

"The result of self-organizing emergence is perceived in itself and is thus, absolute. Perception is direct, perspectivism or symbolic process/es of representation do not intervene between the observer and the observed. Bergson calls such a cognition 'intuition'. In it consciousness abandons the usual reflexive attitude, wherein the givens of consciousness are treated as if they were objects in space. Consciousness as durée, or pure emergence 'retains what is just no longer there, and anticipates what isn't just present...'" (Letiche, 2000a: 553).

In this context, Letiche's PCT argues that Bergsonian intuition or *durée* becomes synonymous with the pre-ontic state of emergence. It is suggested that emergence becomes synonymous with Bergson's process metaphysics at the level of individual identity. That is, a description of a psychological ego, in which the inference of the ontic states of complexity science are analogously suggested as transposed. Derridean theory (expressed by '*differance*') is analogously suggested as resembling this operation, in that the process of indeterminacy (which *differance* implies) is a feature which avoids direct identification with either absence or presence, and therefore equates well with the feature of *coming into being*, inferred by the position of Bergson. Thereby, on this reading of PCT, *differance* is argued to hover on the ontico-ontological divide at the level of articulation, expressing a phenomenological state discerned by Bergsonian *durée*.

However, one might take critical issue with this amalgam of the separate theories of Bergson and Derrida. To Bergson, the distinction between duration and extensity is the basis for his view that duration is the form of intuition which acts as a focal point for present experience (Evans, 2003). Bergson believes that these two aspects (of perception) are two sides of an absolute. *Durée* in this sense is akin to the primordial perception which Heidegger's process of destruction is set to realize. In my view, it is still a metaphysical conception; albeit conceptualized as the end-point or resolution of metaphysics (as conceived

by Derrida in terms of Heidegger's onto-theology). From this perspective, *durée* is a creature of presence – albeit pure presence – revealingly we note Letiche's mention of 'pure' emergence as opposed to simply 'emergence' (above).

Hence, unifying *durée* and *differance* on the issue of conception within the processes which approximate to perception, shifts *differance* towards a consolidated point of psychological life, as exhibited in the experiential crystallization of the moment which is *durée*. *Differance* points in Derrida's formulation towards a moment of essence which is older than Being; a process of scission around a point – not focused towards a point (*durée*). So, although both theories are orientated towards the transient nature of experiential life, *durée* does not so much emphasize the passing of the 'trace' (its ephemerality), but rather its uniqueness within time. On this account *durée* might lend itself to a theorization with a bias towards a clear distinction between the ontic and ontological; but if *durée* is akin to *differance* – as suggested in PCT – then it ought to stand on the cusp of these categorizations. Rather, *durée* represents the ontological defined and lozenged clearly within the ontic (which *differance* proper – as envisaged by Derrida – resists). *Durée's* point of intensity – its coming into being (albeit continual) – rests in the ongoing present, and the emphasis is not on the process of declension of the seizure of the moment (Derrida). This obliteration of the distinctions of these theorists therefore creates a problem for the synthetic construction of PCT.

Comparative implications of 'emergence' in PCT and complexity sciences

In summary, we have seen that the disparate views melded in PCT are only loosely a particular philosophical position; rather different views are interpreted into commonality to create an anchor conception for a novel theory of complexity. This is a theory of complexity which emphasizes emergence *per se*, and not strictly the other sciences of complexity. Hence rather than a theory of emergence derived from complexity sciences in any strict sense, we have a translated, or generalized, conception of 'emergence' as a mark of a quasi-phenomenological account.

What do I mean by 'translated' in this context? I think that the term 'emergence' has become a kind of arch-metaphor in complexity theory accounts. It partly owes its success to its being able to hook towards a complex or a simple meaning. The concepts of complexity can be used in strictly scientific senses, implying different axiological prerequisites. When unified with collateral concepts such as *durée* or *differance*, the concept of emergence gains new credentials from the arena of continental philosophy. It might be argued that in this context, the PCT theory was a kind of basis for suggesting the viability of the analogy between complex sciences in the physical and human realms (see Figure 1). By implication PCT is a knowledge claim for the extensibility of the complex sciences outside the epistemic area of the sciences.

However, it would help us to understand these inter-related categories if we could see more clearly the features of emergence as they relate to the physical sciences which categorize complexity sciences[20]. The link between non-equilibrium thermodynamics and nonlinear dynamic systems theory ties chaos and self-organization theory. Dissipative structures in far-from-equilibrium states are subject to nonlinearity (Prigogine & Stengers, 1984). Nonlinear equations may be used to model these states – hence such equations may be used to chart the emergence of complex (order), within a thermodynamic environment that is subject to bifurcations, (the 'phase transition'). Within the science of chemistry this phenomena is exemplified by the Belusov-Zhabotinsky reaction. However, drawing this model as an exemplar of emergence is to read the relationship of the physical sciences in a particular way (and with the accent on self-organizing theory). However, links with the phenomena of nonlinearity should not be underestimated as a feature of the aspect of the drawing out of a complex order in the transformation[21].

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Fig. 1: The aspirations of Phenomenal Complexity Theory

The inclination is towards an extension of the self-organizing principle as a feature of universal tendency, towards the extension of epistemology from physical to social science[22]. The project of the Santa Fe Institute underpins this endeavor. However, the attempt to extend the (primarily) epistemic foundations of complexity towards the ontological, meets the issues of philosophical complexity attached to recent controversies as implicated in the 'linguistic' turn (especially Derrida's reactions to Husserl and Heidegger). Also, the seemingly reductionist aspects of some of the sciences (Letiche notes Holland in these terms, for instance) may lead to the notion of an epistemic strait-jacket approach to human sciences (and hence derivative social sciences).

Hence, the fear of an imperialism of complexity, which 'dumbs down' not only the richness of human experience, but also the advances of a philosophical nature which incline to challenge the hegemony of particular philosophical axiologies (such as Derrida's view of western metaphysics). Of course, alternative theorizations attempting to utilize these approaches do exist, and some element will be introduced towards the close of this paper (c.f., Cilliers, 2005).

On this account PCT becomes rather an idiosyncrasy; but what exactly would a post-structural theory of complexity be like

given the definition of the same? PCT clearly does act as a kind of indirect validation of complexity sciences relative to their applicability towards the social sphere. Is then the match of his emergence and the emergence of the complexity sciences *per se* an aporia – or form of enigmatic ‘blind-spot’ – at the heart of Letiche’s theorization? I think that whatever else, PCT tends to be self-validating on the axis of the (assumed) analogical veracity of the epistemology of the complexity theory of the physical sciences to the human sciences.

If one considers Derrida’s theory on this matter one can see that he dwells on the relations of thought and memory in terms of the continued inter-relationship of these terms, relative to the coming into being of the trace; its ‘subjective presence’ and its tendency towards infinitude (as a principle of its nature, incipient yet iterative, within the human psyche). At the micro-level of perception, this activity alludes towards the cusp of the ontic-ontological divide. These processes, and their allusion to the synthesis of diverse theorists by Letiche, are represented as showing emergence at an impasse – whether ontic or ontological is not resolved. Letiche rather problematizes emergence as Derrida problematized the ontic-ontological ‘question’ posed by Heidegger. However, Letiche does not seem to realize that he has transposed the enigma of ontology and being[23] to that of emergence.

The promise of the project of phenomenology and complexity

A further question remains to consider: whereas we have spoken of the nature of Derrida’s *differance*, and alluded to the differences between the conception and its use in PCT, might *differance* nevertheless prove the ideal project for a phenomenological view of emergence, and hence complexity. In other words, is PCT pointing in the right direction in spirit if not to the letter?

Fink (a theorist of Husserl, influencing Derrida) describes the “phenomenological reduction” as “radically unmotivated.” It is not about “the human possibility of knowledge” (expressed as an epistemological feature); that phenomenology may be distinguished from speculative philosophy’s concern with origins. Rather (for Fink) it is about “(a) transcendental subjectivity which originally achieved the possession of the world” (Lawlor, 2002: 21)[24]. In this type of view “the world does not present itself as an object over and against a human subject, because the human subject finds itself within the world” (Lawlor, 2002: 15). This aspect of immersion, or existential dimension, is a feature which forms a part of Derrida’s case, it could be argued that Derrida’s position is to inter-relate both transcendental and psychological egos (Schroeder, 2005: 280-287). In this context identity suffers from a radical impermanence, due to the continuous process of dispersion he terms *differance* (Schroeder, 2005). That instability is a feature which may be described in both temporal and spatial terms. Derrida – with *differance*, is hunting for a relationship between the transcendental and psychological egos at each passing moment. Hence, Derrida’s concern with the process, which the underlying network of associations that sustain the process of difference(s) are just as important to the constitution of experience as the subset of features that derive this ‘present’ moment.

Next we turn to complexity theory and consider the aspects of identity and the transcendental as opposed to psychological egos. If one considers a particular case of the phenomena of complexity-based emergence, namely, the Bérnard equation, this self-organizing phenomena may also be expressed as a form of attractor (the Lorenz attractor) (Mainzer, 1994: 58-59). The Lorenz attractor contains fractal forms. The ‘phase-space’ within which such attractors exist is an abstract mathematical space for visualizing time-space data[25]. Nonlinear differential equations express the self-organizing phenomena, which give rise to complex forms of emergent phenomena. Hence, the notion of ‘phase-space’ permits a mode of understanding, or depicting, of self-organizing phenomena (in a certain respect, it might be termed a mode of ‘bracketing’ of conceptual phenomena). Returning to the preceding argument related to the nature of Derrida’s ideas, with the phenomenology of the kind which Derrida and Fink follow, the sense is to get beyond that process of ‘bracketing’ (a feature of Husserl’s concept of intentionality) and to enter an existential sense in which we are not knowing beings or observers.

For instance I might argue that the point in phase-space was a continued *becoming* – an analogical case of the shift between the transcendent and the immanent (the Derridean theory of *differance*). The common feature is a temporal context but that is extrinsic to both the point in phase-space and the human ‘subjective consciousness’. Unlike the human entity, the point in phase-space lacks no element of absorption at the subjective level in the life-world. The phase-space point charts the coming into being of the self-organizing phenomena; in sum it may be said to characterize its form – like the map of a maze charts the distinct paths around the same. In this sense, the phase-space denotes the identity of the self-organizing phenomena, but it does not connote the validity of an analogy with an individual mind (for example) simply by virtue of our interpretation of its shifting from immanence to transcendence with each passing moment.

Can we thereby argue that phase-space (an instance of an epistemic form of complexity theory) comes a step too late for the kind of theorization that Derrida suggests? On this account, a claim for truth within complexity as a science may link less with the existential than the 'transcendent' account of the ego. So, if we look again, and view our conception of the phase-space movement, that construction is capable of resolution in terms of the models of *differance* (or any other phenomenological construction). The issue then becomes, is Derrida's *differance* (for instance) a true insight which at the level of social construction (of the actor) permits a validation of the epistemic insights of a complexity theory model (such as phase-space)? But, here, at least with Derrida, we enter the problematic issue of Derrida's argument being a case which suggests itself as inclining towards the margins of a rationality that can strictly accord a 'yes' or 'no' to a claim for truth status.

On this issue, Cilliers has noted that our knowledge of complexity theory means that "we cannot have perfect knowledge of complex systems" (Cilliers, 2005; see also Cilliers, 1998). But this aspect of the incompleteness of our categorization of the features of a complex system – including predictabilities – is quite distinct from our knowledge of complexity theory as an issue of principle being indistinct. We can therefore submit complexity theory to an evaluation in terms of its reconciliation relative to 'truth' at an abstract level, one of principle, if not expecting to find complete knowledge at an empirical level. This is somewhat akin, at a basic level of analysis, to one's expectancy that one cannot know the long term parameters of a weather system operating in terms of chaos theory.

Another aspect of argument is that somehow complexity theories have left behind the Newtonian scientific order, and that the sciences are not subject to the same theoretical basis as in prior cases. However, the issue of a potential shift in the theoretic correlates linked to epistemic structures of knowledge traditionally associated with sciences (like the Kantian with the Newtonian) at a philosophical level, does not evade the accountability of complexity theories at a fundamental level of philosophical discourse. It is at this feature which an orientation towards Derrida's *differance* – of complexity – might press against. If the insights of complexity cannot be resolved in contrasting argument relative to fundamental metaphysical structures, features of debate such as the 'performative contradiction' in post-structural theories also arise within the analogous deployment of complexity. Somewhere one gets the sense in all this – as with PCT – that complexity theory *per se* (the science) is the Cinderella at her own ball.

Even if we argue that Derrida operates within the contours of Western metaphysics (or its 'rationality')[26], we still have the problematic issue of whether the ontic-ontological divide does not carry a burden of philosophical irresolution as to the nature of certainty relative to the epistemic aspect of the sciences. Does the adoption of a mix of continental philosophies allow us to do away with the distinction of the epistemic and the ontological? Along the lines perhaps that the ontic (real) and ontological are blurred, or contradictories, that can be set aside and hence so the distinction of ontological and epistemic? I think that maybe this is partly behind PCT, but not stated explicitly. Clearly the physical sciences by traditional standards are perspectival. The frame of interpretation of a complexity theory model, which is suggested as the individual phenomenological case, is distinct to the abstract model which arguably presents a kind of ideal insight. In this respect the critique of Derrida relative to Husserl would operate to argue a case to the effect that complexity sciences had a problematic seizure on 'truth' revealed in any singular sense, once disseminated as texts within 'discourse'[27]. Such models are clearly removed from an experiential phenomenological case in terms of their truth, whatever else. The problem then extrapolates from PCT's dwelling on the cogency of emergence as a feature of phenomenology, to that of the 'truth' claims of complexity theory relative to ontology, once placed under the lens of philosophy. However, this can be skirted, if we evade the notion of relevant 'truth-claims'. This is partial in Letiche as he does adopt the ontic/ontological divide as a stated problematic. This said, Derrida's resolution is partly to incorporate difference as indecidable and so to situate the onto-ontological divide as a problematic which also obliquely represents an entailment of the influences of Western metaphysics.

Conclusion

In this paper I have critically assessed the admixture of theories which is represented by PCT, and shown some problems with this theorization but also the sense of its promise relative to the field. It is, I suggest, a worthy area of theorization, and Letiche has developed a novel hybrid of ideas. However, I do not think he has done this thoroughly or with full consideration of the implications. I think that these include the difficulty of phrasing an epistemic theory of complexity in terms of theories of philosophy which sit uneasily with the notion of veracity or 'truth', especially Derrida's *differance*. Theorizations of this nature are ineluctably ontologizing the sciences from their own perspectives, and this colonization thereby passes the enclave of complexity sciences and extends to the nature of 'truth claims' of the sciences in more generalizable terms.

A radical phenomenology of human organizations as represented by Letiche's PCT[28], or indeed any such radical phenomenology drawing on theorists such as Derrida/Heidegger – meets certain problems. One is the tendency of phenomenology to concern itself with the nature of the hidden life world of the individual and to erect sophisticated theorization. Second is the issue of the social (and individual) construction of the world and its allegedly subjectivist nature, as opposed to the prior assumptions of objective knowledge being a prerequisite of scientific insight.

More generally, if a phenomenological or related approach were construed to be valid as a feature of human life it would hardly be a science of human life, on our accustomed view. Its nature is to get beyond the epistemologies which equip us and look for a foundational pre-epistemic base. This, I think, is distinct from the complexity science aspiration to seek a global epistemic

basis of knowledge which infers the extension of a demonstrable scientific principle as the regulating feature of human life.

Indeed, a danger – though some might say a promise – is present in theorization such as PCT, in that it is tending to leave both phenomenology and complexity theory derived from the physical sciences behind in an aspiration to synthesize these disparate features. A unifying discourse occurs in PCT without the full evolution of a stringent argument as to the nature of the disparate theorists, and this is perhaps a further danger aslant this enterprise, which is that in seeking to break the divisions of sciences and philosophical conceptions, insights are drawn which rely on presuppositions of the applicability of the cases of novel theorists, as between areas of analogical transfer.

In the next paper I examine further these ideas, and also look more fully at the role of metaphor in analogical transfer. This will bring into consideration an evaluation of hermeneutics as opposed to Derrida's approaches in relation to the construction of complexity theory issues in the social sciences.

Notes

[1] As Letiche notes, a construction of causality which is primarily that of a crudified cause-effect billiard ball style causation, has dominated Western epistemology since Newton. This has tended to overlay the interpretation of the nature of emergent phenomena. It has led to the prevalence of a view of causation which is atemporal and non-recursive.

[2] See Wheatley (1994) for a popular account which discusses the role of this experiment and self-organization theory.

[3] Letiche (2000b) of Juarrero (1999).

[4] This splits the aggregation levels into three: at the top – coherence/reification/organizational – in the middle – 'emergence' – and below these – 'self-intentional'. See Letiche and Boje (2001: 15).

[5] Cultural groups so noted include American Red Indians, pro-family groups, anti-homosexual groups, and workers collectives/unions. See Boje (2000: 562).

[6] Husserl (1913) notes that: "Pure phenomenology is accordingly the theory of the essences of 'pure phenomena', the phenomena of 'pure consciousness' or of a 'pure ego': it does not build on the ground, given by transcendent apperception, of physical and animal, and so of psychophysical nature, it makes no empirical assertions, it propounds no judgements which relate to subjects transcending consciousness: it establishes no truths concerning natural realities, whether physical or psychic..."

[7] Husserl (1913) notes that phenomenology: "takes all apperceptions and judgemental assertions which point beyond what is given in adequate, purely immanent intuition, which point beyond the pure stream of consciousness and treats them as purely the experiences they are in themselves: it subjects them to a purely immanent, purely descriptive examination of essence..."

[8] Schroeder (2005: 174) indicating that: "Existential phenomenologists embrace the complexity of lived experience, believing that such bracketing is artificial and inimical to clarifying experience as lived. In addition, phenomenologist attitudes, assumptions, and goals all influence the type of phenomenology they pursue."

[9] Contains extracted writings of Husserl (including Logical Investigations) and Heidegger (including Being and Time, pp. 1-26).

[10] Letiche (2000a) citing Merleau-Ponty (1962).

[11] The creative aspect of synthetic theorization is a feature of Letiche's PCT but the admixture of phenomenologists tends to mask differences in their individual perspectives. That might then imply a unity between distinct theorists which was only partial. To some extent this aspect will be examined in the second paper in this series (Sheard, 2006).

[12] Stellardi (2000: 108-109) gives an example of an indecidable in terms of binary oppositions, for instance as a "bundle of signified's disposed within the space of an opposition (e.g., signifier/signified) that has been barred", wherein "A notion (une marque) is systematically kept out of a symbolic space it is supposed to indicate."

[13] See for instance the emphasis on the role of what is not present in alterity, i.e., the past and present – as a feature of difference – which is a feature of the re-evocation of the trace which constitutes the basis of a semiotic conditioning of alterity as a feature of identity (Smith, 2005: 36-37).

[14] The inter-relationship of Derrida's views of metaphor and difference are discussed in the next paper (Sheard, 2006). Stellardi (2000: 108-109) indicating difference as having a notional value for a metaphor (or catachresis), which can be conceived in terms of spacing and temporization.

[15] Derrida (1982: 12) notes that: "Retaining at least the framework, if not the content, of this requirement formulated by Saussure, we will designate as difference the movement according to which language, or any code, any system of referral in general, is constituted 'historically' as a weave of differences..."

[16] See the next paper (Sheard, 2006) in this series for fuller discussion of Heidegger relative to Derrida and Ricoeur.

[17] See Lawlor (1992: 128) in which he describes the difference between the two theorists as follows:

“The formulae for the Derridean idea is:

Origin + mediation + end + the “+” = idea

...for Derrida, the Idea’s ‘strange presence’ arises in Husserl from the space between the idea’s form and content, between totality and infinity...

Whereas, in the case of Ricoeur, the formulae is: Origin + mediation + end = Idea”

[18] See for instance, the biting case of Sweetman (1999). See also, Habermas critique of Derrida, for instance discussed in Fleming (1996).

[19] Bergson (1912: 6) notes that: “A consciousness which could experience two identical moments would be a consciousness without memory. It would die and be born again continually.”

[20] Mathews, et al. (1999) defines a range of theories which comprise the complexity sciences, of which the most important for the emergence phenomena are the areas of nonlinear dynamic systems theory; nonequilibrium thermodynamics, dissipative structures, and chaos theory.

[21] Formerly emphasis tended to be on chaos and chaotic effects including attractors, for instance, Butz (1997) stating that “the three major distinctions in chaos theory are between dynamical systems theory, self-organization theory and fractal geometry” (Butz, 1997: 8). The modeling of nonlinear equations within ‘phase-space’ is a feature which depicts the form of a particular attractor (Capra, 1996: 129). An unstable or strange attractor constituting aperiodic oscillations. Kellert (1993: 4) defines chaos theory as a “specialized application of dynamical systems theory.” Specific transformations of end states became the province of an area of theorization known as catastrophe theorization (Thom, circa 1970s). Whereas, a range of transitions occurs in self-organizing open systems, it is also possible to conceptualise the theorization of transitional states in terms of catastrophe theory as an alternate description of end state departures or bifurcations.

[22] Overlap in areas like chaos and self-organizing effects are amongst the more notable. However, the overlap can also be a cause of ambiguity, and is present in other areas of the complex sciences. For instance, the notion of ‘edge of chaos’ at which transitions towards order occur builds on the aspect of the presence of nonlinearity within human systems (Packard & Langton, quoted in Waldrop, 1992). This correlates with the work of Holland (1998) related to the presence of the complex adaptive system (CAS), which in turn can be related to the contra-Darwinism of Kauffman’s self-organizing systems.

[23] The project of Martin Heidegger.

[24] Lawlor (2002: 21) discussing Fink in relation to Derrida. Fink’s position is as follows: “Separating and distinguishing [the transcendental ego from the psychological ego] is as false as their direct equation” (PP 155/144). The relation, as Fink says, consists in a “unique identity” (PP 121/115), a “singular identity in difference... [a sameness in being-other]” (PP 155/144). The ego’s identity consists in a “tension” (PP 123/116); the ego’s in other words overlap and coincide. No matter what, for Fink, the relation must be posited as “transcendental,” and this means that man’s worldly finitude is conceived as a constituted sense and thereby “taken back into the infinite essence of spirit” (PP 155/145).

[25] It is not, as Goldstein (1997) notes in his contradiction of Kellert, a geometry which supersedes causal explanation.

[26] See Cilliers, (2005). Note his discussion of the issue of whether we can have perfect knowledge of complex systems, and the status of claims to knowledge relative to Derrida and complexity theories.

[27] My reflections here relate to Husserl’s Origin of Geometry, contained as an appendix in Derrida (1989).

[28] The issue of definitions – of concepts like ‘phenomenology’ is stretched in the case of the inclusion of Derrida Schroeder (2005), Derrida’s form of post-structuralism as a “philosophy of dispersion,” and classes it as in opposition to phenomenology, as also it seems to be in opposition to a certain extent to areas of thought like hermeneutics.

References

1. Bergson, H. (1912). *The creative mind: An introduction to metaphysics*, New York, NY: Putnam, ISBN 080652363 (2002).
2. Boje, D. M. (2000). “Phenomenal complexity theory and change at Disney: Response to Letiche,” *Journal of Organizational Change Management*, ISSN 0953-4814, 13(6): 558-566.
3. Boje, D. M. (2001). “Flight of antenarrative in phenomenal complexity theory: Tamara - storytelling organization theory,” conference paper at the 25th Conference of Complexity and Consciousness, Huize Molenaar.

4. Butz, M. R. (1997). *Chaos and complexity: Implications for psychological theory and practice*, Washington, DC: Taylor and Francis Inc, ISBN 156032418X.
5. Cairns, D. (1976). *Conversations with Husserl and Fink*, (Phaenomenologica S), Heidelberg, Germany: Springer, ISBN 9024717930.
6. Capra, F. (1996). *The web of life: A new scientific understanding of living systems*, London, UK: Harper Collins, ISBN 0385476760 (1997).
7. Cilliers, P. (1998). *Complexity and postmodernism: Understanding complex systems*, New York, NY: Routledge, ISBN 0415152879.
8. Cilliers, P. (2005). "Complexity, deconstruction, and relativism," *Theory, Culture and Society*, ISSN 0263-2764, 22(5): 255-267.
9. Derrida, J. (1982). "White mythology," in J. Derrida, *Margins of philosophy*, A. Bass (trans.), Chicago, IL: University of Chicago Press, ISBN 0226143260 (1984).
10. Derrida, J. (1989). "Introduction" in E. Husserl, *The origins of geometry*, J. Derrida (trans.), Lincoln, NE: University of Nebraska Press, ISBN 0803265808.
11. Evans, F. (2003). "The beginnings of post-modernism: Phenomenology and Bergsonism, Derrida and Deleuze," in Lawlor, L. (ed.), *Thinking through French philosophy: The being of the question*, Bloomington, IN: Indiana University Press, ISBN 0253215919.
12. Fleming, M. (1996). "Working on the philosophical discourse of modernity: Habermas, Foucault and Derrida," *Philosophy Today*, ISSN 0031-8256, 40(1): 169-178.
13. Goldstein, J. (1997). "Causality and emergence in chaos and complexity theories," in W. Sulis and A. Combs (eds.), *Nonlinear dynamics in human behavior: Studies of nonlinear phenomena in life sciences*, Hackensack, NJ: World Scientific Publishing, ISBN 9810227426.
14. Holland, J. H. (1998). *Emergence: From chaos to order*, Oxford, UK: Oxford University Press, ISBN 0192862111 (2000).
15. Husserl, E. (1913). LI VI appendix, II, o.343, Hua XIX/2 765, extract in D. Moran and T. Mooney (eds.) (2002), *The phenomenology reader*, New York, NY: Routledge, ISBN 0415224225.
16. Juarrero, A. (1999). *Dynamics in action: Intentional behaviour as a complex system*, Cambridge, MA: MIT Press, ISBN 0262100819.
17. Kellert, S. (1993). *In the wake of chaos*, Chicago, IL: Chicago University Press, ISBN 0226429741.
18. Kelly, S, and Allison, M, A. (1998). *The complexity advantage: How the science of complexity can help your business achieve peak performance*, San Francisco, CA: McGraw-Hill, ISBN 0070014000 (1999).
19. Lawlor, L. (2002). *Derrida and Husserl: The basic problem of phenomenology*, Bloomington, IN : Indiana University Press, ISBN 0253215080.
20. Lawlor, L. (1992). *Imagination and chance: The difference between the thought of Ricoeur and Derrida*, Albany, NY: State University of New York Press, ISBN 0791412180.
21. Letiche, H. and Boje, D. (2001). "Phenomenal complexity theory and the politics of organization," *Emergence*, ISSN 1521-3250, 3(4): 5-32.
22. Letiche, H. (2000a). "Phenomenal complexity theory as informed by Bergson," *Journal of Organizational Change Management*, ISSN 0953-4814, 13(6): 545-57.
23. Letiche, H. (2000b). "Self-organization, action theory and entrainment," *Emergence*, ISSN 1521-3250, 2(2): 24-37.
24. Mainzer, K. (1994). *Thinking in complexity: The computational dynamics of matter, mind, and mankind*, Berlin, Germany: Springer-Verlag, ISBN 3540002391 (2003).
25. Mathews, K. M, White, M. C, and Long, R. G. (1999). "Why study the complexity sciences in the social sciences?" *Human Relations*, ISSN 0018-7267, 52(4): 439-461.
26. Merleau-Ponty, M. (1962). *The phenomenology of perception*, London, UK: Routledge, ISBN 0415278414 (2002).
27. Moran, D. and Mooney, T. (2002). *The phenomenology reader*, London, UK: Routledge, ISBN 0415224225.
28. Prigogine, I. and Stengers, I. (1984). *Order out of chaos*, London, UK: Harper Collins, ISBN 0394542045.

29. Schroeder, W. R. (2005). *Continental philosophy: A critical approach*, Oxford, UK: Blackwell, ISBN 1557868816.
30. Sheard, S. (2006). "Complexity theory and continental philosophy 2: A hermeneutical theory of complexity," accepted for publication in *Emergence: Complexity & Organization*, ISSN 1521-3250.
31. Stellardi, G. (2000). *Heidegger and Derrida: Imperfect thought*, New York, NY: Humanity books, ISBN 1573928240.
32. Smith, J. K. (2005). *Jacques Derrida: Live theory*, London, NY: Continuum, ISBN 0826462812.
33. Sweetman, B. (1999). "Postmodernism, Derrida, and difference," *The International Philosophical Quarterly*, ISSN 0019 0365, 39(1): 5-18.
34. Waldorp, M. M. (1992). *Complexity: The emerging science at the edge of chaos*, New York, NY : Simon and Schuster, ISBN 0671872346.
35. Wheatley, M. (1994). *Leadership and the new science*, San Francisco, CA: Berrett-Koehler, ISBN 1881052443.