Towards a Theory of Social Fractal Discourse: Some Tentative Ideas

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ABSTRACT

The development of chaos theory and fractal geometry has made significant contribution to our understanding of the natural world. As students of organization, chaos theory provides an opportunity to broaden our thinking beyond the linear and predictable with its presumed stability, in order to embrace chaos rather than stability as the ‘default’ state for organization. This demands we think in new ways about organizational theory and practice. It also creates a schism in the fabric of our knowledge - a divide to be bridged. By taking the scientific concept of fractals and applying it to a social theory of discourse, this paper hopes to emerge some tentative ideas around developing a theory of social fractal discourse.

Keywords: chaos theory, instability, organizing as process, critical discourse analysis, complexity

The aim of this paper is to outline a number of tentative ideas around the development of a theory of social fractal discourse. It will focus on qualities and features of fractal and chaotic systems. Drawing on ideas from chaos and complexity theory, we will argue that discourse can be fractal. While there is some difference in theoretical constructs within the complexity literature, we will use the terms fractal and chaos interchangeably throughout this paper.

In this context we use a constructionist perspective of discourse, which suggests that any theory of fractal discourse should not only resonate with fractal features such as, scale, strange attractors and self-similarity, but also should speak to constructionist and poststructural ideas. In essence a fractal discourse is non-essential and therefore relative.

To show this to be the case we must identify plausible links between fractal ideas and non-essential or relative ideas. Contemporary organizational and management literature shows that other essentialist fields of the academy have laid claim to theories of chaos, complexity and fractals. Systems and critical realism in particular have colonised the discourse surrounding this field (see Byrne (1990); see also Al-Amoudi & Willmott (2011) for an argument that suggests Critical Realism embraces Constructionism). However, initial research has shown that the concepts and principles espoused by complexity, chaos and fractals also speak to poststructuralist scholars.
Observing these reality constructing social practices, Fairclough (1992: 66) comments that ‘social practice has various orientations – economic, political, cultural, ideological – and discourse may be implicated in all of these without any of them being reducible to discourse’. Knowledge through reductionist methods is critically challenged by the relativist perspective held by non-essentialist scholars, including critical realists (Al-Amoudi & Willmott 2011). For example, Chia (1996: 117) highlights Elias’ critical reflection on Parson’s work as being a ‘systematic reduction of social processes to simpler, seemingly homogeneous components’. This emerges the tendency in the literature to see discourse in simplistic and Newtonian, linear terms. For example, a Powerpoint presentation in which one idea follows logically and discretely on from the previous idea, there is a beginning and an end, and one can move forward or back from any point in the presentation. In contrast, relativist scholars contend that discourse is not linear but in fact a dynamic process that constructs, reconstructs, reproduces and transforms society (Chia 2000; Cooper & Law 1995; Fairclough 1992). We further contend that a fractal discourse has form but not structure.

In this paper we will first briefly describe discourse as we understand it to be, and as it will be used in this paper. Second, we identify those features of chaos, complexity and fractal theory that should be found in a fractal discourse and link these to non-essentialist or relativist ideas. Third, we look for examples of how a fractal discourse behaves in a social setting. Fourth, we discuss the contributions these ideas make to the extant Management and Organization studies literature and finally we discuss the implications that these ideas have for management thinking, education and practice and we identify future directions for this research.

Given the limitations, the analysis section of this paper will only summarise fractal and poststructural ideas. For fractals, chaos and complexity ideas we will draw on the work of Murphy (1996) because the principles of chaos are nicely set out in point form. We will then identify key ideas from scholars who hold an anti-essentialist or relativist world view such as; Cooper (1989, 1990), Foucault (1970; 1978, 1979), Derrida (1973, 1976, 1978), Burrell (1988, 1989, 1997), and relate these ideas to theories of fractal, complexity and chaos.
Discourse

Discourse refers to ‘a set of meanings, metaphors, representations, images, stories, statements and so on that in some way together produce a particular version of events’ (Burr 1995: 48). It is a ‘practice not just of representing the world, but of signifying the world, constituting and constructing the world in meaning’ (Fairclough 1992: 64). These everyday commonplace interactions between people constitute the practices that result in construction of our shared versions of knowledge. That is, ‘our current accepted ways of understanding the world, is a product not of objective observation of the world, but of the social processes and interactions in which people are constantly engaged with each other’ (Burr 1995: 4). In short, discourse constructs reality, but we aim to show that discourse can be patterned.

Underpinning this research is the argument that unless managed or controlled in some fashion, all social life tends toward chaos. In this context chaos is not viewed as some kind of random disorder (Murphy 1996) but instead we understand chaos in terms of non-linear, unpredictable systems behaviour that does not unfold in a ‘conventional cause and effect manner over time’. Equally, Cooper (1989, 1990) would argue that chaos in these terms can be classed as ‘disorganization’.

Based on the ontological assumption that social life as we know it is constructed (Burr 1995) and that order is temporary, requiring continuous re-construction, if what we are organizing is neglected or something beyond our control changes, there is a tendency toward chaos, that is we do not and cannot rely on some form of predictive mechanisms to alert us to the signs of disorganization (Cooper 1990). So it seems appropriate to turn to fractal theory for clues on how to further develop our knowledge and understanding of the similarly complex and chaotic arena of the social.

We contend that by introducing form not structure, we can contribute to the debate around antithetical concepts of structure and process (Cooper 1989). And so in an effort to bridge the gap between the often binary opposing schools of thought between realism and relativism – without dismissing or judging the merit of either – this paper will attempt to investigate the ‘space between’ by taking
elements of Mandelbrot’s (Mandelbrot 1982) concepts of fractal geometry and applying these to social theory.

CHAO S THE ORY AND FR A CTAL GEOM ETRY

Chaos theory is a field within mathematics that studies the behaviour of complex or dynamical systems that are often found in nature. If we understand the concept of chaos as order without predictability (Byrne 1998), then it stands to reason that studying chaotic systems at a single point in time will, at best, give us only part of the answer (Murphy 1996). Were it possible to study them in their entirety, it would not facilitate generalizable results as, by their very nature, chaotic systems defy predictability. In the 1970s, Benoit Mandelbrot, a slightly eccentric mathematician working in IBM’s pure research division, discovered this when attempting to quantify the length of Britain’s coastline:

The result is most peculiar: coastline length turns out to be an elusive notion that slips between the fingers of one who wants to grasp it. All measurement methods ultimately lead to the conclusion that the typical coastline’s length is very large and so ill determined that it is best considered infinite. Hence… length is an inadequate concept (Mandelbrot 1982: 25).

Identifying the inadequacy of his theoretical tools – standard Euclid geometry – in the face of the ‘altogether different level of complexity’ found in nature (Mandelbrot 1982: 1), led him to pioneer a completely new field of study known as fractal geometry. Mandelbrot coined the term fractal – taken from the Latin frāctus, meaning ‘broken’ or ‘fractured’ – to describe irregular, geometric patterns in nature. This represented a departure from pure mathematical concepts of theoretical fractional dimensions and their corresponding characteristics of determinism and predictability (Mandelbrot 1982).

Mandelbrot provides us with a clue to social fractal discourse. Like Mandelbrot’s coastline, the concept of meaning is complex, dynamic, and ‘fractured’; an ‘elusive notion that slips between the fingers of one who wants to grasp it’ (Mandelbrot 1982: 25). In short, fractal systems in nature trend towards infinity, and this property can be found in the social theory literature, for example Cooper’s (1976) concept of the ‘open field’. In his work, Derrida (1982) concentrates on the analysis of...
meaning in social theory and favours undecidability over polysemy – multiple meanings that may be grouped and aggregated to arrive at an ‘answer’. And so Mandelbrot’s infinite is to length as
Derrida’s undecidability is to meaning as unbounded is to Cooper’s ‘open field’. Murphy (1996)
expands these ideas by saying that singular units of analysis are often misleading yielding insignificant outcomes. In contrast analysis of fractal systems, being holistic, will yield their complexities in the form of correspondences or ‘couplings’. ‘Instead of studying individual units and generalizing, fractal researchers look for correspondences across scales of different lengths… emphasizing overall symmetries and the complex interactions between microscale and macroscale levels’ (Hayles 1991: 90).

We contend that the above description of ‘correspondences’ or ‘couplings’ suggests an outline methodology not unlike the archaeology method Foucault proposed to search out fractured historical data (Burrell, 1988). Linked to this is the concept of self-similarity, which makes it possible to analyse fractal systems by tracking similar patterns through successive stages of evolution (Murphy 1996).

Any theory of fractal discourse by definition would need to exhibit those qualities and features of classical fractal theory. However, a word of caution to the reader who is expecting a straight exchange of ideas between what is basically a mathematical theory and a social theory. We are not arguing that a fractal discourse is mathematical, or that our theory of a fractal discourse would lend itself to mathematical modelling and manipulation, but instead, we are using the concepts produced in fractal theory to generate a fractal type discourse. The desired outcome will be the emergence of tentative ideas around the development of a theory of social fractal discourse that will contribute to our understanding of organizational theory and practice. So what are these fractal qualities and features?

A number of principles surround and inform fractal theory and Murphy (1996) has succinctly condensed them into seven working categories: Non-linearity, Feedback (positive), Bifurcation and Phase Changes, Strange Attractors, Scale, Fractals and Correspondences and Self-similarity.
Given the editorial constraints placed on this paper we will focus on only three of the above features of fractals that we believe to be more salient with respect to the development of a theory of fractal discourse. They are: scale, strange attractors and fractals and correspondences or ‘couplings’

**Scale**

The concept of scale figures strongly in a constructionist analysis of discourse. (Fairclough 1992), drawing on the ideas of Foucault in terms of *epitemes*. Implicit in this theory is the notion of self-similarity, which means that while discourses may vary significantly with scale, they still retain similar patterns. Take Mandelbrot’s ‘different effective dimensions implicit in a ball of thread’ (1982: 17) as an example:

> To an observer placed far away, the ball appears as a zero-dimensional figure: a point.  
> As seen from a distance of 10cm resolution, the ball of thread is a three-dimensional figure. At 10mm, it is a mess of one-dimensional threads. At 0.1mm, each thread becomes a column and the whole becomes a three-dimensional figure again. At 0.01mm, each column dissolves into fibers, and the ball again becomes one-dimensional.

And so it is with discourse and social theory. On the surface its ‘meaning’ may appear simple, complete and easily understood, but infinite complexity and *undecidability* emerge as this dynamic system resists efforts to simplify or distill it’s complexity into a static ‘truth’. Some discourses exhibit differences dependent on ‘scale’, underlying patterns of ‘self-similarity’ and ‘correspondences and couplings’ that can be traced back through time.

Given the complexity of human existence and social relationships, the idea of using a concept designed for such complex systems – fractal geometry – seems appropriate. That said, and as stated above, it is not the purpose of this research to develop a ‘system’ for understanding social phenomena, but rather to take principles found in fractal geometry and use them to further develop innovative ways of thinking about issues of organization.

The old adage that knowledge is power becomes important here, as those who control the discourse have the power to affect the way in which our perception of reality is constructed. Murphy (1996)
concurs with this idea, when she says that any truth value of any theory, in fractal systems depends on scale and is a feature of human choice. Both Derrida and Foucault identify human choice as being a major factor in the control of chaotic (fractal) discourses. Foucault writes that ‘discourse is not simply that which translates struggles or systems of domination, but is the thing for which and by which there is struggle, discourse is the power which is to be seized’ (Mallows 2002: 7). As it is discursive process that serves to construct our reality, the power relations embedded within the discourse are important to recognize, as they serve to regulate which realities emerge from the discourse and which are suppressed, or realities that are fore-grounded over those that linger in the background struggling for a voice.

**Strange Attractors**

Morgan (2006: 262) drawing on the work of Lorenz (1993) describes ‘strange attractors’ as those; ‘multiple systems of interaction that are both ordered and chaotic’ that are often found in nonlinear systems, This, in turn, creates internal complexity through random disturbances, unpredictable events and relationships that create novel patterns of change, but “…despite all the unpredictability, coherent order always emerges out of the randomness and surface chaos” (p 262). On a societal and organizational level, attractors have been seen as indices of human agency and free choice (Murphy 1996). For example on an organizational level, the more dominant the regime the more static (and thus predictable) the attractor is (or tries to be), conversely, the more free choice within an organization the more it will tend to the chaotic.

In short, strange attractors in the social world are about living with and switching between multiple chaotic threads of interaction, while at the same time retaining stability. Gouldner (1959)’s concept of the unemployed self is an example of an alternative thread or strange attractor, that was adopted by many factory workers to alleviate the boredom of repetitive tasks. In this context strange attractors would place Cooper’s (1990) organization/disorganization at the centre of experience – through the ever occurring tendency to switch between multiple instances of organization and disorganization – order and chaos.
Morgan (2006) goes on to say that ‘strange attractors’ exhibit unique events yet are patterned. We argue that, what we have named; social strange attractors are the multiple texts of discourse, and that each individual would experience a switching between these. However, in line with Morgan’s analysis individuals tend to fall under the influence of dominant discourses as a result of dominant influencing processes. For example, contemporary education systems tend to focus the individual on the technical, consuming and vocational discourses, rather than the aesthetic, creative discourses, resulting in a myopic interpretation of experience, that is, alternative social strange attractors are processed out.

**Couplings and correspondence**

In this section we weave in the work of Derrida’s ideas on ‘logocentrism’ and ‘texts’ into the fabric of fractal discourse. First linearity and prediction are described and opposed by Derrida (1978) in terms of ‘logocentrism’. By this he explains that logocentric language is not seen as a constructor of meaning but a mere vehicle for transporting thought. In doing this language is separated from thought and thought is external to the discourse. Based on this notion of division (Cooper 1990, 2006) it is easy for dominant coalitions to proclaim that what they speak is not of their own invention, but is some essential truth found out there in the wider world. This sits well with management discourse, because it also proclaims that essentially there are laws of organization that cannot be changed – they are fixed, centred and stable – they are the law. In contrast Derrida is saying that there is nothing fixed, but everything is always becoming and *undecidable*, it is always shifting and incomplete. These ideas sit well with those of fractals. Derrida is almost describing social strange attractors where everything is in flux (Chia 2003) and *undecidable*.

Secondly, in relation to the notion of texts, Derrida sees writing as the ‘physical action of inscribing marks or signs on a surface – a sheet of paper, the brain, the surface of the earth, etc – and not a supposed logocentric origin beyond those marks’ (Cooper 1989:485). Rather than proclaiming some detached entity, Cooper (1989) says that writing texts, for Derrida, has the character of latent pathways and traces in the unconscious that directs what we write (and speak). The actual act of
inscribing has no content, but merely responds to unconscious stimuli that emerge to the level of consciousness at the time of writing. This is rather like the child’s toy, the ‘Magic Writing Pad’ (a toy that is constructed so that the stylus inscribes the top celluloid layer, but it is the wax layer beneath that shows through as it is touched) where the writing is thus not inscribed as shown when the image disappears due to contact between the first and second layer being broken. However, the ‘waxed base still bears the impression of the stylus despite the writing being no longer visible on the surface’ (Cooper 1989: 485). Derrida argues that writing texts exhibit these same underlying properties.

We relate Derrida’s ideas to fractal discourse in the following way; Murphy (1996) writes that:

... a strange attractor is a fractal curve that imbues all the diverse elements it governs with its own underlying pattern. Because it combines iteration with elements of chance, a fractal representation of a system shows highly similar, though not identical, patterns at successively greater magnification...In theory such forms can bifurcate to infinite complexity [creative writing – author’s insert], yet each generation is based on the one that preceded it... Any given outcome cannot be considered apart from its history; each step recapitulates (albeit unpredictably) elements of the step that came before.

Derrida’s notion of the ‘Magic Pad’ phenomenon parallels the ‘underlying patterns’ of a strange attractor in that each time an inscription occurs it follows similar (though not identical) underlying patterns from the unconscious. This has implications for fractal discourse in that we argue that within fractal discourse there are discernable patterns that are linked to the past. We further contend that, in the name of stability and prediction, the dominant discourses that are imbued into our ‘habitus’ (Bourdieu 1999), lock us into certain patterns at the expense of alternative patterns. In essence, we correspond with our history.

To summarize, we have shown that particular sections of the non-essential literature exhibit social fractal features. In particular there is resonance between scale, strange attractors and couplings and correspondence and the works of Derrida, Cooper, Fairclough and Foucault. In the next section we discuss the implications our findings have on management and organization, and the contributions made to the extant literature on discourse.
DISCUSSION

This brief excursion into the fractal and discourse literature has indicated that the development of a fractal theory of discourse is plausible. So why is this important and what are the implications for management and organization theory? One of the primary criticisms of much of contemporary mainstream management theory is its claim to being linear and predictable (see for example Robbins, Bergman, Stagg & Coulter 2003). However, Cooper (1989) contends that one of the main shortcomings of contemporary organization is its neglect of the complexity that surrounds language and symbolism in our attempts at making sense of the world.

Scientific claims to organizing are eagerly adopted by management and integrated into practice with a belief that they are a panacea to organizational and managerial problems. One of the main outcomes of this adoption is a significant growth in formal organization systems that focus on division of labour, deskilling and surveillance – in short a process of oversimplifying organization through complexity exclusion processes and practices. Often these systems are written as texts and proclaimed by their authors as being the essential truth around contemporary organizational practice, and neglect of these texts will result in exclusion. For example ISO 9000 and related products based on quality accreditation processes are the epitome of this belief because their foundations are based on written texts. Often much of the discourse surrounding these oversimplified systems of organization is replete with rhetoric and hyperbole that bears little or no resemblance to the reality for many of those working in the system (for a good example listen to or read the rhetoric and hyperbole given out by universities to prospective students). A clear example of a discourse that is based on linearity and predictability is the operating narrative of the ‘Toyota Way’ (Toyota Motor Corporation 2001). It is also no secret that the dominant discourse and text within Toyota is based on reductionist scientific principles (Liker 2004; Liker & Hoseus 2010; Ohno 1988; Spear & Bowen 1999). Known for its strong and very precise discourse within its manufacturing plants we argue that the discourse of the ‘Toyota Way’ elides the complexity of language and symbolism and attempts to avoid ‘fractal chaos’ by adopting a myopic worldview in its singular pursuit of organized efficiency. The way Toyota achieved its success was held up as the beacon of efficient production methods and many others
strived to adopt Toyota’s approach as their benchmark for an efficient and productive future. Yet within two years, Akio Toyoda, Toyota’s president, announced that the firm could be in a ‘spiral of decline’ (Economist 2009). Today Toyota is still in crisis with many of its supporters arguing that the reason for this situation is that Toyota has strayed from the ‘Toyota Way’ and that the solution is for Toyota management to return to the principles embodied in its philosophy – back to reductionism, linearity and prediction.

What Toyota has missed is an opportunity for managers to follow Mandelbrot’s example and begin thinking in new ways in order to at least begin to account for the ‘altogether different level of complexity’ (Mandelbrot 1982: 1) that proliferates in the study of social phenomena and in particular discourse. This paper asserts that one step in this process is to develop a theory of social fractal discourse. However, saying and doing are two different things and it is not easy for someone to fundamentally change the way they think overnight. As we have revealed above, fractal discourses exhibit qualities and features similar to fractal systems found in nature, for example, correspondence and couplings, scale and strange attractors. But we must not forget that the Theory of Scientific Management (Taylor 1911) on which many contemporary reductionist systems are built has been around for some time. It has also dominated organization thinking for the passed forty years and some would argue that this could also exhibit fractal features in its discourse. This is a reasonable assertion, however, scientific management’s problem is that it was a discourse based on reduction to begin with. In other words, much of the complexity surrounding work organization at the turn of the twentieth century was eliminated by the then dominant coalitions who constructed the discourse.

So what should managers do with all this complexity and how will fractal discourse help? Mandelbrot suggests that although greater and greater complexity emerges on closer observation, we can approximate its properties in order to manage this complexity without dismissing it. That is, ‘at certain scales and for certain methods of investigation, many phenomena may be represented by regular continuous functions, somewhat in the same way that a sheet of tin foil may be wrapped round
a sponge without following accurately the latter’s complicated contour’ (Mandelbrot 1982: 8). This is the concept of scale.

We locate the contribution of this paper firmly in the field of organizational discourse and in particular in the multidimensional space known as organizing textscapes (Keenoy and Oswick 2003). Keenoy and Oswick (2003: 139) describe textscapes as spaces that accommodate multiple perspectives on organizational discourse and highlight the importance of intertextuality, described as; ‘…aspects of bounded space and multiple locales – the landscape in which discourse is located’. In our paper we also promote the concept of intertextuality and have identified bounded spaces and multiple locales that exhibit a number of the features of chaos and complexity described in the literature. In essence we describe a landscape in which fractal discourse is conducted.

**LIMITATIONS AND FUTURE RESEARCH**

The contribution of chaos theory to social theory has a significant limitation in that it does not account for power and politics and the role they play in systems. Nature, it seems, is apolitical. This is an element that cannot be neglected in human systems, and is a topic for future research. A further limitation of sorts is that although there is underlying order, pattern and resemblance, fractals and chaos theory are by their very nature unpredictable. However, there are examples of the application of simplified chaos theory to supply chain, group leadership and health services with the aim of modelling complexity and ultimately influencing organizational outcomes, while still retaining predictability (Haigh 2008; Levy 1994; Otten and Chen 2011).

There are significant opportunities for future research into fractal discourse theory. For example, big D discourses (Alvesson and Karreman 2000) such as craftwork and jazz seem to have avoided the close down of their strange attractors, surviving into contemporary times relatively unscathed.
REFERENCES


