Critical Corporate Social Responsibility in *Tamara*-Land: The Role of Tetranormalizing Fractals

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Abstract: This chapter contributes a critical approach of CSR, with implications for governance and ethics. I will develop a critical-CSR theory of storytelling by building on my earlier work on *Tamara*-Land. Tamara-Land is a storytelling organization in which storytellers and audience members are doing storytelling simultaneously in many different rooms, and cannot be in more than one place at one time. *Tamara*-Land can be applied across organizations, and to CSR, where governance is being attempted of organizational practices, distributed widely across nations, for international and global enterprises. Here, I will give examples of Monsanto and its detractors who are attempting to resist and/or enact local and global governance and approach ethics from different standpoints. This interaction of Monsanto, standards-setting institutions, and activist in the anti-GMO movement, as well as supply chains, researchers on both sides of the GMO issues ---- sets off 'fractal' patterns in Tamara-Land of stakeholders in different rooms, simultaneously doing storytelling in a distributed network, while trying to find out what is the storytelling in locations around the world. I will contribute recent work I have been doing with colleagues on Fractal Change Management (FCM) methods. A fractal is a pattern of cross-scale self-similarity and irregularity that occurs among socioeconomic actors. My question: how can governance and ethics of 'Critical-CSR' be analyzed using fractal methods? One such method I will develop here is called Tetranormalizing. Tetranormalizing extends the work of Henri Savall and Veronique Zardet, and their international colleagues, to the chaos of standards imposed on corporations in the areas of accounting/economics, social/cultural, trade, and ecology/quality. I contend that in each of the four (tetra) areas a re-normalization process can affect the kinds of fractal patters unfolding there. In this way FCM becomes possible as a research intervention.

Introduction

Linda Hitchin (2014, 2015) has breathed new life into *Tamara*-Land. Tamara-Land was used to describe the storytelling organization behaviors of Disney Corporation (Boje, 1995). *Tamara*-Land is a storytelling organization in which storytellers and audience members are doing storytelling simultaneously in many different rooms, and cannot be in more than one place at one time. Hitchin extended it by pointing out the politics of researching storytelling across multiple organizations, networking in health care. Here, I want to continue the revival of

Tamara-Land by considering its applicability to Critical-CSR. The implication is the interorganizational *Tamara*-Land is political, and can be helpful in developing a Critical-CSR analysis.

The case we shall develop is Monsanto versus the Non-GMO activists. In between them are all the standard-setting institutions attempting to govern corporate behavior. From all sides are narratives and counter-narratives as the ethics of Monsanto, its CSR, and Monsanto's counter-narratives to any charges that it is not acting in a completely ethical and socially, and ecologically responsible manner. As a long-lived corporation, over many decades, Monsanto has been able to fend off its CSR critics about its Agent Orange, Bovine Growth Hormones, Terminator Seeds, Round-up Resistant Herbicide and many other products, and continue to develop its global production and distribution practices.

As a large, complex, global corporation Monsanto affords us the opportunity to consider four kinds of CSR areas: quality/ecology, accounting/economics, trade, and social/cultural. Is Monsanto good for the ecology, does the accounting and economics prove sustainable, are the seed trade tariffs bringing greater harvests or misery, and is this a corporately socially and responsible corporation? There are scientists and management professor answering 'yes' and others, a resounding 'no.' But, how do we study Monsanto's CSR, much less actually intervene to change its practices?

The chapter is organized as follows: Part One summarizes the Tetranormalizing Fractals. Part Two develops fractality in relation to *Tamara*-Land, including the role of antenarratives. Part Three applies the first two parts to Monsanto and the activist's contentions over Monsanto's CSR. The chapter ends with a discussion of possible FCM interventions and fractal research possibilities for the critical-CSR field.

Part One: Tetranormalizing Fractals and CSR

One answer comes from a group of colleagues actively studying these four areas using a model called 'Tetranormalization' (Savall & Zardet, 2007, 2012; Boje and Rosile, 2012; Boje, 2015 *in press*). My recent work is to move from the *noun*, Tetranormalization, to the *verb*, *Tetranormalizing* (Boje, 2015, *in press*). Tetranormalizing looks at ways to create normalizing change practices in the four areas, across nations, and over long temporal horizons. Tetranormalizing is about research interventions (action research) into the four (tetra) areas that will change the ongoing patterns across scales. Henderson and Boje (2015, *in press*) summarize the Fractal Change Management (FCM) methods. A recent edited book applies FCM to Tetranormalizing (Boje, 2015 *in press*).

"A fractal is defined as a pattern of self-similarity across scale levels, from micro to macro scales, and vice versa" (Boje, 2015 *in press*: 15, italics, bold, underlined in original). FCM seeks to shift the patterns by intervening in unique ways, creating discrepancies in replication and iteration processes across scalability (Henderson & Boje, 2015 *in press*). Applied to Critical-CSR, FCM is a way researchers (action researchers) can intervene in ongoing fractal patterns in an interorganizational network that has become a *Tamara*-Land.

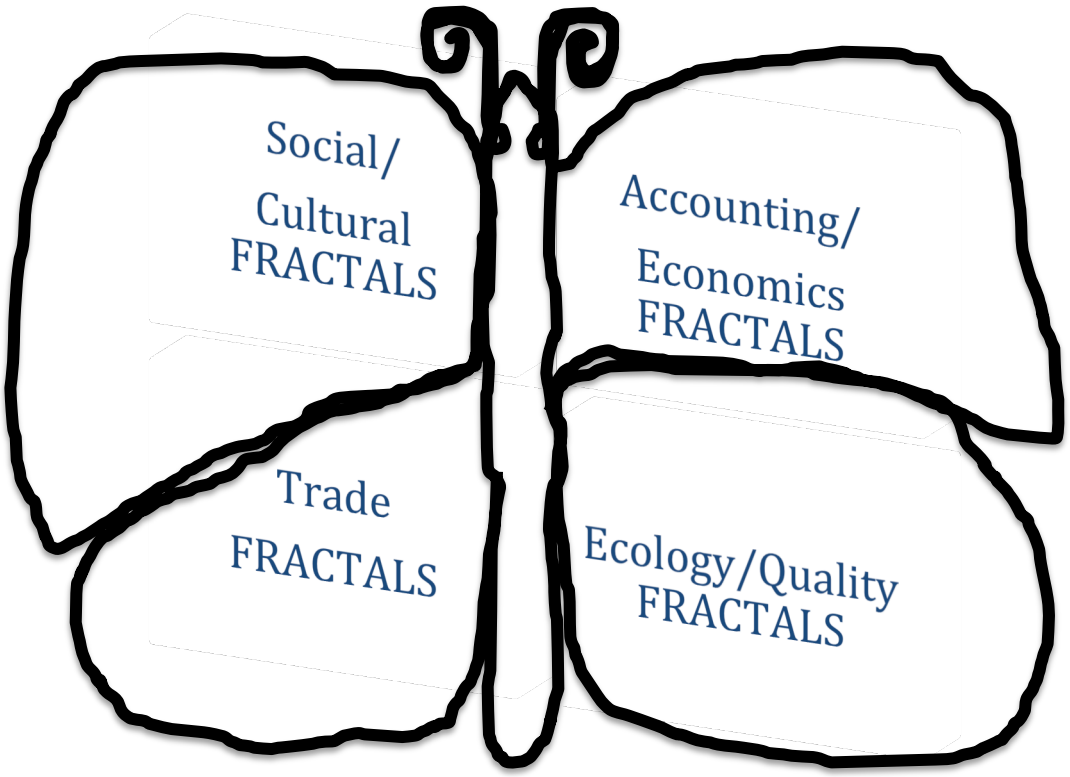

Figure 1: Four Wings of Tetranormalizing Fractals

Next I will briefly summarize examples of scores of fractal and multifractal research studies going on in the four wings of Tetranormalizing.

Accounting/Economics fractal research: Smith, Boje, and Foster (2014) have applied Tetranormalization to accounting practices globally. According to Boje (2015, *in press*), Benoit Mandelbrot (1999) developed a multifractal approach to analyzing Wall Street stocks. He follow this us with a study of the Deutschemark/US dollar exchange rates. Since then there have been more than a dozen multifractal studies in accounting, finance, and economics (Ausloos & Ivanova, 2002; Bershadskii, 2001; Gorazza & Malliaris, 2002; Fillol, 2003; Lux, 2003; Muzy, Sornette, Delour, & Arneodo, 2001; Schmitt, Schertzer, & Lovejoy, 2000; Turiel, Pérez-Vicente (2002); Xu & Gencay, 2003; Yalamova, 2003, 2006). Mouck (1998: 189), for example, applies Mandelbrot's fractal studies of economics and financial time series to the chaos and complexity (order

& disorder) of capital markets in ways that awakens the grip of traditional capital markets research paradigm on financial standards reporting. "Critical accounting is a fractal tool, and a fractal-finance tool (Mandelbrot, 1997, 2005) for transformation (Maurer, 2002), including risky asset fractal activity (Heyde, 2010), and inverse fractal statistics in finance (Jensen, Johansen, & Simonsen, 2003), and its market analysis (Peters, 1994)." The linear fractal form of conventional accounting standards compliance of sameness/difference takes on a plural/multifractal of multiple agents influencing and enlarging scaling-shape patterns in a critical accounting framework (Maurer, 2002: pp. 662-663). Laïdi's (2002) thesis of the with the rise of the 'fractal state', globalization need not downgrade nations states' global regulation in fulfillment of the market. Rather, the fractal state transforms itself to move beyond itself to simultaneously oppose and act within the market as a "fractal actor" (p. 393). The nation state as fractal actor is caught between the roles of public rationality and market developer on the global stage. Yalamova (2006), for example, looks at multifractality of index prices series on daily data to assess wavelets, short form waves with local support, time/scale decomposition along the time series. She develops a multifractal spectrum (MFS) theory and a method to reveal trading time irregularities.

Ecology/Quality Fractal research: Fractal models of earth science (Ibañez, & De Alba, 2000; Korvin, 1992; Martin & Taguas, 1998; Taguas, Marti, & Perfect, 1999) are developing in a different direction than fractal frameworks of quality standards compliance. The eco-fractal approaches stress entropy and diversity while the quality standards fractal practices are about automating compliance to ISO and other quality standards. The standards-fractal bringing quality-compliance-reporting into software algorithms, which do not account for fractals-riven by commercial exploitation (commodification) of earth that has accelerated with dire consequences that eco-scientists are calling global warming (Williams, 2002: 120). Warnecke (1993) metaphoric use of fractal to envision the 'fractal company' became inspiration for work in quality standards-fractals in production, planning and control (PPC) systems doing so-called flexible or agile manufacturing. The approach it top-down, and the focus is on the material resources of the 'agile enterprise' accomplishing self-organization and self-optimization, self-similarity, and vitalism dynamics, in a "hierarchical system" (Boje,

2015, *in pres*). Vasiliu and Browne (2003) defined fractals as displaying self-simiarity, across all scales, making it possible to implement Warnecke's Fractal Factory, in modeling and then controlling the manufacturing processes according to enterprise objectives and standards in a system of objectives managed in an organization network of central control (ass summarized in Boje, 2015, *in press*). Bruce Pugesek (2014) just came out with an article showing that there are fractal cycle turning points in the crises of social, economic, and ecology that when analyzed for patterns, look just like the Fibonacci-spiral fractal. He identifies several cycle patterns (Kuwae, Tambora, and Deflationary) that align closely with historical events (disease pandemics, famines, revolutions, and war) in England and the US that are linked to anomalous weather patterns (heat, drought, etc. leading to crop failures) and to sociopolitical turmoil dating back to the 6th century (IBID.). These are fractal cycles with higher order cycles, patterns occurring within wider change patterns. The cycle is based on Fibonacci numbers that pinpoints inflationary peaks and deflationary troughs (turning points) at intervals in the Fibonacci number series (1, 3, 5, 8, 13, 21, and so on). Each interval "cycles forward and backward in time" in relation to the "next lower level in the Fibonacci sequence" (p. 159). The price major turning points had secondary turning points, such as the years of significant famine in 1322 and 1432, and the plague outbreaks of 1453, 1563, 1624 and Great Famine 1315-1322, as well as the Kuwait volcano eruption 1453.

Social/Cultural Fractal research: Jenson (2007) says the relation between the micro scale and the macro scale is a long-standing concern of social theory. In a fractal approach to the study of the social, space and infrastructure become a primary concern. We begin to think in terms of the scale of sciotechnical relations and of course in terms of Savall's interest in socioeconomic/sociotechnical relationships. Jenson looks at Danish health care as fractal social theorist. "De Florio et al (2012) theorize Fractal Social Organizations (FSOs) in the dynamic evolutions of a communities of actants. They present a software operating model to generate self-similar fractality in a service-oriented community with a set of roles, tied together in energy dynamics of Actor-Network-Theory (ANT), with channels of communication for sharing about situations, states, and goals of members processing events (or perturbations), reorganizing, reshaping the flow

of activities, to find resources as there are changes of scale, that 'unite into a coherent and self-similar hierarchical organization'" (Boje, 2015, *in press*). The Web fractal (the Internet) created limitless accessibility. This is what Abbott (2001) calls the fractal re-parameterization of morals and ethics within late modern capitalism (Williams, 2002: 120). As this standards-fractal becomes more mono mythic, it encounters a counter-narrative, the way the professions are becoming posthuman, our activities tied to the WWW, Google, Facebook, Twitter, 24/7.

Trade Fractal research: John Ruggie (2004: 36) of Harvard University asks the question, is it possible to do a fractal overlay of proliferating transnational ties and strategies among nation states and non-state actors, plotting the channels between economic, political and judicial institutions, and public opinion social action mobilization? Global trade standards are set by the World Trade Organization (WTO), World Bank (WB), in agreements such as GATT, NAFTA, and even involves the International Labor Organization (ILO). The Deleuzian rhizome-fractal posited by Hardt and Negri, the installation of WTO, IMF, ILO, and GATT were supposed to become the organization-network-regulatory-apparatus of world trade. The Deleuzian WTO-IMF-ILO-GATT-NAFTA rhizome-fractal of so-called 'free markets'-'anti-state'-'anti-regulation' has not improved either trade efficiency or tamed its rapacity and monopolizing spirt. It has only further skewed income distribution and wealth disparities globally. Cline (2004) says there is a relation between poverty worldwide and global trade standards, and trade flows and what WTO, GATT, WB, IMF, ILO, and others are doing. Cline (2004: 32) says there is rising inequality and income inequality, that is biased downward, in a Lorenz curve, where the "distribution is fractal." Brett and Swallow (2006) apply Mandelbrot (1977, 1983) fractal geometry to what they call fractal poverty traps.

Next I will develop fractality in relation to *Tamara*-Land antenarrative theory.

Part Two: Tamara-Land Antenarrative Theory and Fractality

Linda Hitchin's (2014, 2015) work on developing the Tamara-Land says that my work attends to storytelling in terms of its multiplicity, diverse materials, sociomateriality relationships, energy, actions, and situation. She combines actor network theory with Tamara-Land, by focusing on localness. As Hitchin's (2015:

222) Tamara-Land health and wellness research stresses, "social reality is construct through multiple, mobility, messy relationships" fraught with interference in a landscape that is political and sociomaterial. The notion of narratives of stability and change occurring in a landscape addresses the 'hot' topic in storytelling, how social and material are inseparable sociomateriality (Bard, 2003, 2006; Strand, 2011; Henderson, 2012; Boje, 2012, 2014; Henderson & Boje, *in press*). Tamara-Land is method: "Seeing, watching, being close to, and stepping back from these situated encounters" (Hitchin, p. 231). Hitchin (p. 216) draws out three lessons about the politics of narrative methodology and its praxis, tying the reflexive approach back in:

1. Multi-voiced approaches, with out critical reflexivity, are subject to criticism of ventriloquism.
2. Literary forms are risky because the requisite skills of poetics and fantasy are difficult to persuade, empirically.
3. At its worst, a reflexive approach can tend toward epistemological hypochondria, self-absorption in the self-analysis that misses the politics of method and explanation.

Tamara-Land is an inter-play between 'fractal narratives' and 'webs of fractal stories.' "Fractal narrative" is defined as "a narrative that finds its best accomplished form in the Web" in hyperlink networks (Durate, 2014: 284, as cited in Boje, 2015 *in press,* bold, italics, in original).

Fractal narratives grew in popularity across the social sciences after Benoit Mandelbrot's 1970s work in fractal geometry (Henderson & Boje, in press). Fractal narratives become popular in films such as Tron, The Matrix, Neurmancer, Dune, Star Wars, Star Trek, Avator (something we develop much further in Henderson & Boje, *in press*).

A ' fractal story' is defined here as a web of fluid 'living story ' interrelationships between urban-chaos and fractal-cyber-order that is centrifugal,

veering away from order, toward anarchism, discontinuity, and the erratic, violent urbanism (Boje, 2015, *in press*). A fractal story is a part of a web of more and more living stories, always in the middle, some with beginnings, the whole web-work, without end.

Tamara-Land is very much about 'antenarrative' processes connecting fractal narratives with fractal story webs (Boje, 2001, 2008, 2011, 2015 *in press*). Antenarratives are defined in four processes:

1. **Before** – antenarratives are before narrative reach coherence and recur, again and again across places, and times.
2. **Bets** - antenarratives are bets made by social actors on potential futures that are arriving or can be influenced to arrive.
3. **Beneath** - antenarratives are subterranean, in the political, in the emergent, almost perceivable, but not quite.
4. **Between** are between the coherent narratives and the webs of living stories, that are 'in-the-middle', without definite beginning, and never ending.

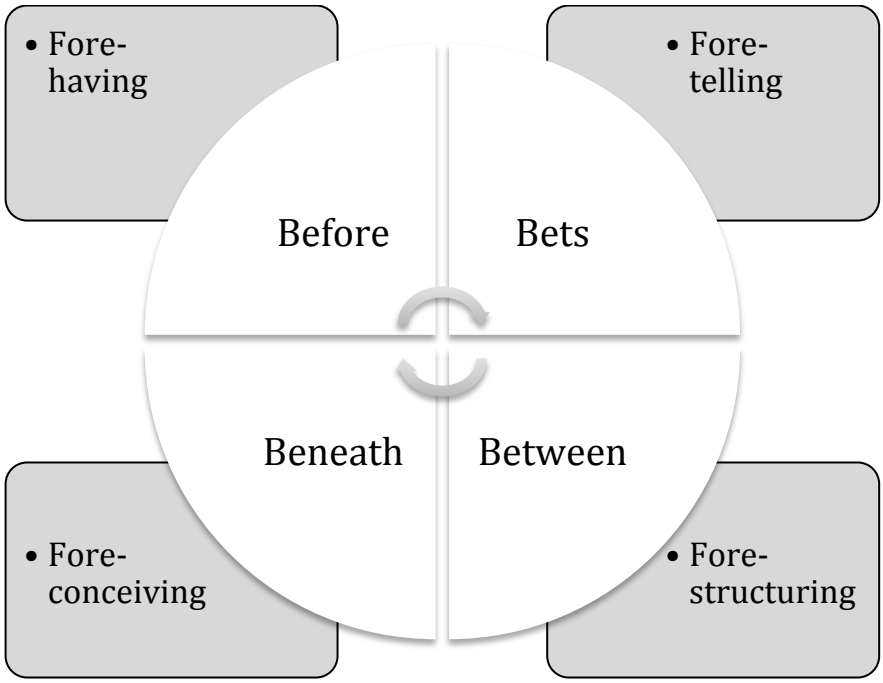

Figure 2 – Four B's of Antenarrative and their Ontological Fore's

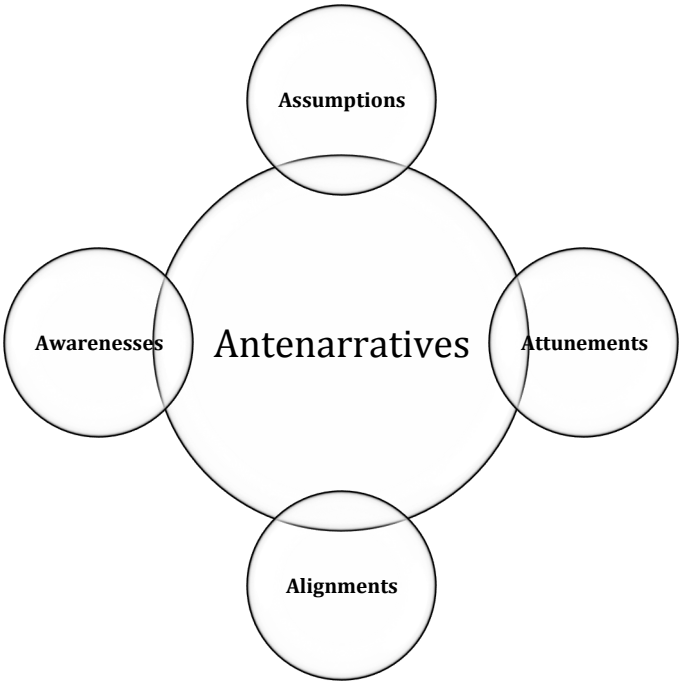

Figure 3: Four A's of Antenarratives

There is simultaneous action, movement, and emergence of fractal patters in ways that affords insight into Tetranormalizing processes and practices. Normalizing, and renormalizing occurs in an interplay of stabilizing and destabilizing events, actions, moves among not only human actors, but non-human actors, and materiality, in a landscape or field of forces.

Part Three: Applying Tetranormalizing and Fractals to Monsanto and its CSR critics

Monsanto is a $7.5 billion dollar company with operations in 36 countries. Founded in 1901, it is the world leader in genetically modified organisms (GMOs). It is

controversial for its production of Agent Orange, Bovine Growth Hormones, and now Roundup. Monsanto holds patents on life. Monsanto's website says:

"Monsanto is a sustainable agriculture company. We deliver agricultural products that support farmers all around the world. We are focused on empowering farmers—large and small—to produce more from their land while conserving more of our world's natural resources such as water and energy. We do this with our leading seed brands in crops like corn, cotton, oilseeds and fruits and vegetables" (Monsanto.com).

Monsanto has a linear 'fractal narrative' of feeding the word with GMO products, on land treated with Roundup, buying up competing seed suppliers, getting executives into key government agency positions, in-order-to pass trade standards enforced by WTO that make farmers pay tariffs to Monsanto, when GMO seeds drift onto their lands. Monsanto is not reckoning with the consequences of its creative destruction (as Schumpeter calls it) of its entrepreneurial seed-herbicide adventures. Monsanto's monopoly on seeds is forcing non-Monsanto seeds out of the marketplace. Monsanto controls more than half of the worlds seeds, has 650 seed patents, and a 30% market share of biotech research. Other seed monopolists include DuPont Bayer and Syngenta, who with Monsanto controls over half the world's seed market.

Tetranormalizing would be pragmatic, taking what John Dewey calls 'intelligent action' do something to develop a long-term socioeconomic to change the relationship between Monsanto and Milkweed-Monarch partnership. There are other issues. Cotton farmers in India commit 600 to 700 suicides a year, unable to get out of Monsanto seed debt, those exorbitant Monsanto seed royalties. There is hope. Haitian farmers are burning tomato seeds that Monsanto donated to the farmers (Bell, 2010). The seeds are treated with 'thiram,' a chemical the U.S. Environmental Protection Agency determined gave mice cancer growths. Agricultural workers must wear special protective clothing in handling the seeds. EPA banned home gardeners from using thiram coated toxic seeds, since home gardners know little about protective clothing. Critics often accuse . One of Monsanto's lawyers, Michael Taylor, figured out how to sue states or companies telling the public that their milk products were free of Monsanto's rBGH. Taylor then became a

FDA official involved in setting rBGH policy. Another example is Margaret Miller a former Monsanto research scientist went work work as deputy director of FDA's Office of New Animal Dugs, and the review of Monsanto's rBGH safety studies. The revolving door includes hiring former Department of Commerce, White House intergovernmental Affairs, White House Chief of Staff, FDA, USDA, EPA officials to work at Monsanto, such as Linda Fisher, William Ruckelshaus, Michael Freidman, James Watson, Marcia Hale, Watrud, and Michael Kanto (Murray, 2002, online).

Tetranormalizing is an ethic of care for the long term intergenerational multiple species relationships. As Sennett (1988: 27) puts it, its time to change the "Draconian standards" of global capitalism, and develop socioeconomic norms that are long-term interspecies relationships.

Discussion and Conclusions

Fractal Change Management (FCM) can be combined with Tetranormalizing to analyze critical-CSR of global corporations, such as Monsanto. This will take a longer time horizon, and a study of global corporations habits of operation across multiple countries. With a company such as Monsanto, the CSR habits are in all four wings of Tetranormalizing: Accounting/Economics, Ecology/Quality, Trade, and Social/Cultural.

References

Abbott, A. (2001). Chaos and Disciplines. Chicago, IL: The University of Chicago Press.

Adel, B., & Lamia, S. (2012). Crash occurrence probability and stock market efficiency the indie stock exchange case via Shannon entropy. International Journal of Accounting and Financial Reporting, 2(2), Pages-158.

Ausloos, M. and Ivanova, K. (2002). Multifractal nature of stock exchange prices. arXiv:cond-mat/0108394 v2.

Barett, C. B.; Swallow, B. M. (2006) Fractal poverty traps. World Development. Vol. 34 (1): 1-15.

Batten, J., & Ellis, C. (2001). *Scaling Foreign Exchange Volatility* (No. 2001_01). Deakin University, Faculty of Business and Law, School of Accounting, Economics and Finance. http://finance.martinsewell.com/fx/long-memory/BattenEllis2001.pdf

Bernus, P. (2003). Quality of Virtual Enterprise Reference Models. In Enterprise Inter- and Intra-Organizational Integration (pp. 135-146). Springer US.

Bershadskii, A. (2001). Multifractal diffusion in NASDAQ. J. Phys. A: Math. Gen., 34, L127–L130.

Boje, David M. (2015, *in press*). Change Solutions to the Chaos of Standards and Norms Overwhelming Organizations: Four Wings of Tetranormalizing. London/NY: Routledge

Cajueiro, D. O. and Tabak, B. M. [2008], "Testing for time-varying long-range dependence in real estate equity returns"; Chaos, Solitons & Fractals, Volume 38, Issue 1, October 2008, Pages 293-307.

Cajueiro, D. O. and Tabak, B. M. [2009], "Testing for long-range dependence in the Brazilian term structure of interest rates"; Chaos, Solitons & Fractals, Volume 40, Issue 4, 30 May 2009, Pages 1559-1573.

Corazza, M. and Malliaris, A. G. (2002). Multifractality in foreign currency markets. Multinational Finance Journal, 6(2), 65–98.

De Florio, V., Coronato, A., Bakhouya, M., & Serugendo, G. D. (2012, November). Service-oriented communities: Models and concepts towards fractal social organizations. In Signal Image Technology and Internet Based Systems (SITIS), 2012 Eighth International Conference on (pp. 450-457). IEEE.

Eglash, R. (1999).African Fractals. New Brunswick, NJ: Rutgers University Press.

Fisher, A., Calvet, L. and Mandelbrot, B. (1997). Multifractality of Deutschemark/US dollar exchange rates. Coelwes Foundation discussion paper #1165.

Fillol, J. (2003). Multifractality: Theory and evidence: An application to the French stock market. Economics Bulletin, 3, 1–12.

Gucciardi, Anthony, and Mike Barrett. (2011). "Monsanto declared worst company of 2011." Natural Society, USA.

Haraway, Donna. (1990). Donna Haraway, Simians, Cyborgs, and Women: The Reinvention of Nature (New York: Routledge), especially "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century," pp. 149-82

Hayles, N. K. (1990). Chaos Bound: Orderly DIsorder in COntemporary Literature and Science. NY: Cornell University Press.

Henderson, Tonya L.; Boje, David M. (in Press). Managing Fractal Organizing Processes. NY/London: Routledge.

Herring, Ronald J. "Opposition to transgenic technologies: ideology, interests and collective action frames." Nature Reviews Genetics 9.6 (2008): 458-463.

Heyde, C. C. (2010). A risky asset model with strong dependence through fractal activity time. In *Selected Works of CC Heyde* (pp. 432-437). Springer New York.

Hitchin, Linda (2015). Method and story fragments: Working through untold method. Pp. 213-238 in Hitchin, L., Izak, M., & Anderson, D. ((Eds.) Untold Story Futures. Untold Stories in Organizations. NY/London: Routledge.

Hoverstadt, P.: (2008). The Fractal Organization: Creating Sustainable Organization with the Viable System Model. John Wiley & Sons, Chichester.

Jensen, C. B. (2007). Infrastructural fractals: revisiting the micro-macro distinction in social theory. ENVIRONMENT AND PLANNING, 25(5), 832.

Jensen, M. H., Johansen, A., & Simonsen, I. (2003). Inverse fractal statistics in turbulence and finance. *International Journal of Modern Physics B*, *17*(22n24), 4003-4012.

Laïdi, Z. (2002). Does Globalisation Threaten the State? Thesis on the Fractal State. *Cambridge Review of International Affairs*, *15*(3), 393-405.

Lofdahl, C. L. (2002). Environmental impacts of globalization and trade: a systems study. MIT Press.

Lux, T. (1995). Herd behavior, bubbles and crashes. Economic Journal, 105, 881–896. . (1998). The socioeconomic dynamics of speculative markets: Interacting agents, chaos and the fat tails of return distributions. Journal of Economic Behavior and Organization, 33, 143–165. .

Lux, T. (2003). Detecting multifractal properties in asset returns: The failure of the 'scaling estimator'. CAU Kiel Economics Working Paper No. 2003–14.

Mandelbrot, B. (1974). Intermittent turbulence in self similar cascades: Divergence of high moments and dimension of the carrier. Journal of Fluid Mechanics, 62, 331–358.

Mandelbrot, B. (1999). A multifractal walk down Wall Street. Scientific American, 280(2), 50– 53.

Mandelbrot, B. B. (1997). Fractal and Scaling in Finance: Discontinuity, Concentration. *Risk*.

Mandelbrot, B. B. (2005). The inescapable need for fractal tools in finance.*Annals of Finance*, *1*(2), 193-195.

Maurer, B. (2002). Anthropological and accounting knowledge in Islamic banking and finance: rethinking critical accounts. *Journal of the Royal Anthropological Institute*, *8*(4), 645-667. http://www.iefpedia.com/english/wp-content/uploads/2009/09/Anthropological-and-Accounting-Knowledge-in-Islamic-Banking-and-Finance-Rethinking-Critical-Accounts.pdf

Mouck, T. (1998). Capital markets research and real world complexity: the emerging challenge of chaos theory. *Accounting, Organizations and Society*,*23*(2), 189-215.

Mügge, D., & Stellinga, B. (2014). The unstable core of global finance: Contingent valuation and governance of international accounting standards.*Regulation & Governance*.

Muzy, J., Sornette, D., Delour, J. and Arneodo, A. (2001). Multifractal returns and hierarchical portfolio theory. Quantitative Finance, 1, 131–148.

Peters. E. E. (1994), "Fractal Market Analysis", First Edition ed. NY: Wiley finance.

Pugesek, B. H. (2014). Fractal cycle turning points: A theory of human social progression. *Ecological Complexity*, *20*, 157-175.

Ruggie, J. G. (2004). Reconstituting the global public domain—issues, actors, and practices. *European journal of international relations*, *10*(4), 499-531.

Schmitt, F., Schertzer, D. and Lovejoy, S. (2000). Multifractal fluctuations in finance. International Journal of Theoretical and Applied Finance, 3, 361–364.

Shearer, T. (2002). Ethics and accountability: From the for-itself to the for-the-other. Accounting, Organizations and Society, 27: 541-573.

Smith, W. L., Boje, D. M., Foster, T. W. (2014). A tetranormalization intervention of the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB). *Recherches en Sciences de Gestion-Management Sciences-Ciencias de gestión, 99*(6), 65-101.

Sornette, D., Johansen, A. and Bouchaud, J. P. (1996), Stock market crashes, precursors and replicas. J. Phys. I France, 6(1), 167–175.

Sunder, S. (2011). IFRS monopoly: the Pied Piper of financial reporting.Accounting and business research, 41(3), 291-306.

Turiel, A. and Pérez-Vicente, C. (2002). Multifractal geometry in stock market timeseries. Preprint submitted to Elsevier Science.

Williams, Paul F. (2002) Beyond the Brilovian critique: Traditional vs. organic intellectuals in Critical Accounting Research, Vol. 2(1): Accounting and the Public Interest 118-123. http://www.aaajournals.org/doi/pdf/10.2308/api.2002.2.1.118

Xu, Z. and Gençay, R. (2003). Scaling, self-similarity and multifractality in FX markets, Physica A, 323, 578–590.

Yalamova, R. (2003). Wavelet MRA of index patterns around financial market shocks. Ph.D. thesis, Kent State University

Yalamova, R. (2006). Wavelet test of multifractality of Asia-Pacific index price series. *Asian Academy of Management Journal of Accounting and Finance*, *1*, 63-83.