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COMPLEXITY AND FUZZINESS IN DYNAMIC SOCIAL SYSTEMS

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# COMPLEXITY AND ‘FUZZINESS’ IN DYNAMIC SOCIAL SYSTEMS

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## Introduction

Futures in which ‘social innovation’ is guided by ethics of social justice and equity must be informed by sophisticated research that takes into account the complexity of dynamic social systems. In ‘Beyond Positivism’ (Lees 2007), I argued that simplistic, ‘either–or’ arguments, and trends towards a narrowing of policy and research discourses, preclude sophisticated, inclusive and collaborative approaches to social problem solving (or ‘solution building’). In this paper, I would like to take up this point again, but with a focus on describing what it is we might *mean* when we say that something is ‘complex’ (things such as ‘society’, ‘research’, ‘social systems’, ‘institutions’, ‘identities’, ‘equity’ and ‘social problems’). This paper is designed to complement my presentation at the History and Future of Social Innovation Conference, University of South Australia, Adelaide, June 2008; not to simply re-state what I said in person, but to set the frame around my more informal presentation and discussion at the conference. Here, I will explore aspects of ‘complexity’ in terms of human identities and relationships (which are ‘relationships of power’: Foucault 1982). I also reflect on some of the implications for social research and government policy making from more sophisticated and inclusive conceptualisations of ‘human experiences’ and ‘meaning making’.

## I

In every field of contemporary human endeavour, at the cutting edge of human thought, complexity is the watchword. To ‘do’ sophisticated and innovative research, and to ‘solve’ social, biological, environmental, local, national and international ‘problems’, we must first understand that all these things are intertwined: a myriad of dynamically interrelated events and discourses that, together, constitute human experiences, ‘truths’ and ‘realities’. Effects in one domain can trigger or influence events in another; words once spoken can affect lives across space and time; systems, processes, actions, reactions and interactions feed back upon each other, into each other, at times overlapping, informing and influencing, competing and complementing.

James Lovelock’s Gaia theory (1979) reflects this complexity, how our Earth is constantly evolving through the movements and interactions of dynamically related, symbiotic and competitive systems; ever-changing in a complex dance among the stars. But ‘Gaia’ – that is, the totality of what we call ‘Earth’ – is not simply a set of interrelated eco-biological systems; it is also constituted in and through social systems. These sets of systems are enmeshed in complex and dynamic relationships, ever under construction (yet appearing to humans as unified and whole). Social, environmental (or ‘natural’) and biological systems are dynamically interrelated and interdependent (global warming reminds us, for example, that human fates are bound to their ecologies), and these interrelated systems

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are themselves complex processes, involving the interaction of multiple personal, social, biological and environmental factors. In other words, the individual, the social, the biological and the environmental are all embedded within each other, each within the other, often mutually interdependent, but also sometimes competitive and oppositional. Conceptual distinctions, such as ‘the social’ and ‘the biological’, are often useful (particularly for research and government), and have historically been the basis of many dichotomies. But these distinctions are, in the end, also human constructions (and ongoing processes). The languages and discourses we produce can be a tool for innovation, but not if we let them become a cage, binding us to useless and unethical ways of thinking and relating. To understand the complex nature of human experiences, we must accept that multiple factors are involved that simply cannot be ignored, reduced or rendered more simply.

For example, one cannot ‘solve’ poverty without considering the complex interactions and effects of multiple factors: employment and infrastructure, broader economic conditions, government policies, environments (places and spaces), educational and social factors (the classic sociological list includes gender, age, ethnicity, cultures, religion, socioeconomic status, employment and so on), the family (a complex and contested concept in itself), the psycho-social biology of individuals, and the interaction and overlapping of different ways in which humans ‘think themselves’ – the ‘discourses’ that we weave, even as they weave ‘us’. To ‘help’ disadvantaged peoples, researchers and policy makers must consider how human identities arise, change and interact within ‘relationships of power’, systems of thought and ‘games of truth’ (Foucault, in Gauthier 1988). We must ask, not just *how* inequitable situations arise – how poverty has been allowed to thrive at a time when many say our nation is ‘rich’ – but we must also investigate *why* people believe and feel things the way they do; investigate the assumptions, constructions and discursive technologies that permit inequitable ‘realities’ to happen in the everyday lives of citizens.

Human identities include feelings, sensations, motivations and desires, knowledge(-power), personal health and ‘well-being’. But, again, these ‘physical’, ‘mental’, ‘sociocultural’ and ‘spiritual’ factors are not separate from discourses and events, nor from each other. They are dynamically interrelated parts of the same whole. Despite the argument from neo-conservatives (including politicians like Australia’s former Prime Minister, John W Howard) that postmodern debates about identity are pointless, understandings of human identities, their construction and how they interact (with their selves and with each other) are fundamental to sophisticated and useful social research, to ‘good’ policy making, to ethical relationship building and collaborative problem solving. While it might be easier, for policy makers *and* researchers, if human identities were fixed, stable, easily categorisable and (statistically) predictable, this is simply not the case. While it may be comforting to dream of timeless truths and an essential human nature, this denies the much more complex realities of an ever-evolving universe, the improvised symphony of ‘human being’, discord and harmony, mingling, joining, competing, the interrelated and interdependent multiplicity of ‘things that happen’.

## II

In the critical vein, I reject any sense of an essential human nature, or of a natural evolution of humans towards some pinnacle. Just as things have not always been thus, they will not necessarily always remain so. And gains that humans may have made in some contexts can too easily slip away if we do not remain vigilant. A ‘better’ world will never evolve of its own volition; there is no Godly guiding hand that we can rely on; rather, we humans must make it happen ourselves. Whatever future awaits

us, we know it will be constructed, largely by humans. So, too, ethical relations and equity must be constructed in and through the everyday worlds and lives of people. Uninformed (by ‘good’ research and public debate) about what it is like to be a particular person, playing the game of life, living with the effects of certain social conditions, government policies or research practices, then we (as social researchers or policy makers) cannot enter into ethical relationships with those people as stakeholders in their own future.

Uninformed about what different people desire and believe about the multiplicity and diversity of human experiences, we are doomed to the tyrannical rule of logic, reason, statistics, top-down policy making and ‘expert’ opinion. It has been seen in many contexts: top-down policy making undermines collaboration and partnership, and people are marginalised from systems and processes that affect them, their families and communities. In order to reach social justice goals, to ‘solve’ social problems, we need ‘understanding’ of human experiences. As my supervisor, Professor Barbara Comber, argues regularly, ethical and effective solution building requires partnerships between stakeholders; we need a more democratic approach to social innovation. Similarly, social research, public debate and government policy must inform each other. Social research cannot be separate from policy making, but must be simultaneously part of policy discourses, yet also objective and critical.

Sophisticated, innovative, inclusive and useful social research will necessarily acknowledge the complexity, diversity and ‘fuzziness’ of dynamic social systems. I do not use the word ‘systems’ in any mechanistic sense: social systems are not like factory production lines. While they are ‘productive’, what social systems ‘produce’ is not homogeneous, not stable or fixed. Rather, the ‘products’ of human social systems can be conceptualised in terms of discourses, identities, relationships (of power), truths and subjectivities: all complex processes in themselves (as well as being discursive ‘products’), dynamically interrelated and inter-reliant, ever-changing and changeable, amorphous and ambiguous, fluid, organic and evolving. And all these systems, whatever else they might also be, are discursive: they are social events that rely on human languages, which are also systems.

Language is not a medium, then, but a *system*. This system is not determined by what happens outside of it, in some prelinguistic space. It is built around an internal arrangement of *differences*. (Mansfield 2000: 39, italics in original)

Systems of languages shape, and are shaped by (and within), social systems. I do not want to be drawn into arguments about which might come first, experience or affect or discourse. For this paper, it is enough to conceive of ‘human being’ as a complex and ‘fuzzy’ system, in which humans play different parts as sentient agents – as feelers and speakers, as actors and lovers – in different relationships (with others, with their worlds, and with their selves). Humans simultaneously constitute and are constituted by a range of dynamic (and dynamically interrelated) social systems. These are systems within systems, bound to each other in diverse and changeable ways. Along with identities, memories, relationships and other aspects of being human, multiple systems of languages and discourses co-exist: they are interrelated and inter-reliant, but also competitive and oppositional, connected and disconnected, dynamically affecting and being affected, weaving in and out of each other, ever-changing and evolving across time and space and social context.

In this sense, social systems are more chaotic than mechanical systems. But, again rejecting any simplistic rendering of ‘what is’, we should not imagine that social and mechanical systems are

separate entities. On the contrary, like social and biological systems, social and mechanical systems are intertwined in dynamic relationships (along with the discursive and material ‘technologies’ deployed within and across those systems). Particular languages and discourses are inherent to (and necessary *for*) the deployment of technologies (and vice versa). All these social and material factors – identities and relationships, environments and objects, places and spaces, technologies and discourses – combine in complex and ever-changing ways, simultaneously constituted by and constitutive of diverse ‘human realities’. ‘Realities’ for humans are an ongoing symphony of interwoven processes, constructed in and through our experiences and beliefs, sensations and desires, arising in and through particular contexts (which are themselves amalgams of ever-changing environmental, biological and socio-cultural processes/events).

Human experiences and beliefs are symbiotic (that is, they are mutually interdependent), but they also compete and contradict; they are often ambiguous and contested. Being human is a paradox, complex and contradictory, often infuriating and painful, but also wonderful and beautiful. Simply put, human experiences are not one thing or the other, but both (and more) simultaneously. Far from being ‘pointless’, sophisticated understandings of how human identities are constructed and maintained, and what effects these processes can have (on people, communities, environments and other species) are vital to good research and policy making. Old distinctions and dichotomies, such as body–mind and nature–nurture, are outmoded. More importantly, they fail to capture the integrated, embodied and complex nature of being human, which makes such dichotomies useless (and even counterproductive) for achieving and sustaining equitable ways of living. I believe many arguments (and ‘wars’, literal and metaphorical) between different stakeholders might be solved if this ‘fuzziness’ – this ambiguity and multiplicity – was accepted. But vested interests in an inequitable status quo seem loathe to embrace a genuine social justice agenda. Rather, many seem intent on embracing simple answers and ‘timeless truths’. Complexity loses out to competition, and human diversity becomes ‘problematic’ as standardised, ethnocentric and parochial approaches to research and policy making gain ascendancy in the neo-positivist milieu (see Lather 2006).

The capitalist enterprise has infected our public institutions (including schools and families) with ‘market values’ (Ball 2003) and discursive technologies of power that undermine and preclude more sophisticated and inclusive conceptualisations of society, education, literacy, research, evidence, identity, truth and so on. The so-called ‘culture wars’ (‘literacy wars’, ‘history wars’, etc: see Snyder 2008) represent divided communities and contested visions (of past, present and future). As people engaged in the critical project, not only must we take on the challenge of more sophisticated meaning making, but we must simultaneously defend our works (theories, methods and conclusions) against the neo-positivist onslaught. This is an uphill battle, as we are unable to give easy answers, nor even ‘final’ or ‘absolute’ answers – while positivist-capitalists can and do (the consequences of which can be catastrophic: Professor John Gray observes the contemporary ascendancy of dangerous western utopianism and parochialism, leading to such outcomes as the Iraq War: see e.g. Gray 2007). Consistently denounced, mis-represented as ‘relativism’, and connected mischievously with various backlashes against falsely homogenised ideas or movements (such as feminism, critical literacy and ‘political correctness’), so-called ‘postmodern thought’ remains marginalised. The critical insight that truth is constructed (by humans, for various purposes) seems to be too threatening for some people.

Postmodern ‘answers’ are often confronting, even frightening, offering little solace in the face of the void; while the patriarchal hegemony offers security, simple and comforting answers, ‘timeless

truths', and perhaps even promises of a path to eternity. But the critical social researcher cannot rest, for we see all around us the terrible effects of positivist thinking and ideology (for women, for children, for the poor and marginalised, for 'our society' and 'our world'). Environmental degradation, global warming, war and famine, and massive inequities between peoples; our planet (the global system, 'Gaia') is being decimated to feed the capitalist machine (Fairclough 2003 is particularly scathing of 'new capitalism'). Somehow we must find a way beyond the war metaphor, to imagine ourselves as 'us', humans, with common purposes and shared desires (for peace, justice, equity, inclusion, etc), rather than warriors in the 'culture wars'.

### III

As critical social researchers, I believe we must hold our ground, philosophically and linguistically, and retain an interest in the languages of science and empiricism. To conceive 'evidence' as purely numerical – that is, to deny the validity of qualitative data – is to misrepresent the complexities of interrelated and inter-reliant human languages: humans interact using combinations of numbers and words (combinations that are determined largely by context). We must defend our right to use, and to define, terms, concepts and metaphors from a range of sources. This is integral to an interdisciplinary approach (to research and policy making). For example, statistics may be a tool of government (Foucault 1991), but they are also vital to comprehensive and sophisticated understandings of human realities. Qualitative and quantitative approaches to meaning making are not mutually exclusive, nor even oppositional (not inherently, anyway); rather, they represent interrelated languages that tell human stories in (potentially) complementary ways (see Lees 2007). 'Evidence' is not purely numerical, nor 'owned' by the quantitative sciences. Broader and more inclusive conceptualisations of science and evidence are integral to sophisticated and useful examinations of human lives and experiences (Delandshere 2006; Lather 2006; Lees 2007).

No, words like 'science' and 'evidence' do not mean here exactly what they might mean in 'purely' quantitative-statistical contexts, yet these words have a certain cachet that can be politically useful, and they demand status for the qualitative sciences as an equally important aspect of 'good' research and policy making. Similarly, concepts used in other sciences (the physical, the biological, the philosophical) can be useful in the social sciences. The concept of evolution is perhaps one of the best examples; it provides a way of thinking about the complex, dynamic and ongoing nature of the construction of 'what is'. Evolution invokes notions of a complex and interactive process – a dynamic process constituted by/in/through the interactions of interrelated parts (aspects or dimensions). In this paper, and in my work more generally, I want to be able to borrow terms from other fields when they can provide explanation (usually through metaphor) and help us think about human realities in more sophisticated ways. To me, this is inherent to a truly inter- and multi-disciplinary approach to social research and innovation. Specifically, in terms of thinking about complexity, I believe the physics concepts of 'dynamic systems' and 'fuzziness' can be usefully applied to social research, to policy making, and to understanding human experience as embodied psycho-social phenomena.

### IV

So, what do we mean when we suggest that human social systems are complex, dynamic and fuzzy? I explore these terms below, but I do not presume to offer any kind of definitive statement about complexity. Rather, I seek to participate in well-established (but still often marginalised)

interdisciplinary dialogues; to open up some aspects of social research for discussion, using a particular set of languages, in an effort to ‘think new ways’ about how we can understand human experiences.

Social systems are complex: an ongoing generative process constituted in and through the interrelations and interactions of multiple parts, which are themselves systems and processes. One cannot, therefore, consider one part (such as identities, histories, knowledge, truth, power, or social institutions such as family, school or community) without considering the relationships between these and myriad other factors (such as cultures, socioeconomic status (material and discursive), technologies, time, environments, place and space). Consider the example of addressing poverty, used at the beginning of this paper. Another example is unemployment: to gain useful insights, one must consider how employment factors interrelate with education, local, social and individual factors, government policies, poverty and so on. In the social sciences, there are no simple answers. Complexity is inherent to social systems, not only because there are many factors at play, but because the human factors are emotional-rational agents in their own lives and the lives of others. Yet complexity need not be the enemy of social research and policy making. Fullan (2000, 2003) suggests that complexity can be harnessed to increase the effectiveness of policy implementation, to effect genuine social change in and through education.

This complexity arises in and through the interaction of multiple parts to constitute a larger whole. These interactions are dynamic – that is, they are interrelated and changeable, affecting each other in ways that can change across time and circumstance. Dynamic does imply a dialectical relationship, of sorts, but it more easily implies a multiplicity of interrelated aspects (not just two). The word ‘dynamic’ already has meaning in terms of systems theories and physical sciences; it speaks to notions of psychological ‘feedback’ and ‘reinforcement’, capturing a sense of something exponential (a well-known example is the concept of ‘negative teacher expectancy effects’ in which a teacher’s low expectations of a child can reinforce behaviour that does indeed lead to under-achievement – often called a ‘self-fulfilling prophecy’). The dynamic interaction of different parts thus constitutes a complex whole. Even more complexity is added when one considers that, in terms of human experience, the parts of our social whole are also ‘systems’, interrelated and interdependent (that is, symbiotic).

Human identities, human relationships and institutions, human memories and the stories we tell each other: all these things are interrelated processes that can be seen as ‘systems’ – systems that simultaneously produce and are produced by human subjectivities, relations of ruling and games/regimes of truth (see Foucault; also Smith 1987; Mansfield 2000). Thus, the ‘dynamic system’ metaphor works on multiple levels: one can consider the interrelated parts of human identities (knowledge, experience, sensation, belief, psychology, etc); identities that constitute human relationships (of power); relationships that constitute social institutions; institutions that constitute the ‘superstructure’ of society (Marx, cited by Smith 1987); and societies that constitute ‘our worlds’ (which are becoming ever more ‘globalised’). Together, these systems within systems constitute, and are constituted by/in/through, the everyday lives of people (and through broader patterns of social and environmental change). These processes within processes are simultaneously constituted by and constitutive of human experiences, identities and relationships. They are the place where human experience arises/occurs; the social context/milieu that is constituted in and by discourse. The complex processes of human interaction form the substance from which human identities,

subjectivities and ‘truth games’ (Foucault in Gauthier 1988) are manufactured/fabricated. More than just dynamic, though, human realities and social systems are also ‘fuzzy’.

‘Fuzziness’ is a concept borrowed from the physical and quantum sciences, used previously in examinations of chaos and logic. In terms of the social sciences, fuzzy thinking can help us accept that social systems, identities and relationships are simultaneously processes *and* products, both constitutive *and* constituted. The concept of ‘fuzziness’, which relies also on its common meaning (as in being ‘unclear’ or ‘ambiguous’), relates notions of multiplicity and possibility. Fuzziness can be used in this sense to describe states of being that are neither ‘this’ nor ‘that’, but (possibly) both. This fits nicely with postmodern thinking: it accepts that multiple renderings and multiple truths may co-exist (in tension/opposition, in symbiosis, and in changeable, evolving relationships). In terms of human experience, for example, it seems much more accurate to acknowledge that humans can experience multiple ‘states of being’ simultaneously; and that human subjectivity occurs as a simultaneously ‘unified’ yet ‘alien’ and ‘decentred’ experience (Mansfield 2000: 43). Humans can be, for instance, simultaneously sad and happy (reunions with loved ones often evoke this kind of complex emotional state for me). Such a feeling is neither happiness nor sadness, nor a lesser version of either; it is not disaggregated nor stitched together (some clumsy hybrid of emotions); rather, it is an event (that is, a process) in which certain emotional states arise, interact and change, simultaneously interacting with others (their identities and emotional states) in the constitution of that event. Human identities and relationships are simultaneously produced *and* productive, beautiful *and* terrible, singular but also multiple.

In this way, human ‘being’, similarly, is many things simultaneously: a symphony of language and sensation, power and possibility; an ongoing co-construction, ever-changing and changeable. Ideas, identities, relationships (of power), institutions and social contexts: these are not separate things (except, perhaps, ontologically), but, rather, they are interweaving tapestries of discourses; complex, dynamic and fuzzy. We can be both see-er and seen, speaker and listener, I and other; we can be and do any number of things (and we cannot do or be other things), in some combination or all at the same time. In this sense, then, we can say that human experience, human ‘being’, is fuzzy – many things at once, ambiguous, contradictory and complementary, ever-changing and fluid, yet, and ultimately, irreducible.

Accepting that human experiences and realities are complex, dynamically interrelated and fuzzy has implications for the future of social innovation, for ethical and useful social research and policy making.

- We must consider not only aspects of human experience, their constitution and ‘evolution’, but also the changing and changeable interrelations *between* different aspects.
- Answers cannot be standardised across contexts or across time (thus, research must be ongoing, and policies must be designed with flexibility and review in mind).
- Solutions, like human experiences generally, will always be ‘under construction’ (but this is not to say unfinished). As critical social researchers, we might ask, not just ‘How are human realities constructed?’ but also, ‘*Who* is involved in the construction (of “truths”, “values”, “problems”, “solutions” and “resistance”)?’ If we accept the need for collaboration and partnerships between stakeholders, then questions of inclusion and marginalisation become very important.

- Complexity demands that we ‘expect the unexpected’ – not just rhetorically, but in a critical and proactive sense (again, ethical relations, flexibility and change must be considered).

Given that human ‘being’ is ever in flux, an unfolding process, a dynamic interaction of systems within systems, then flexibility must be constant companion to ethical relationships, particularly in research and policy making. What is respectful, fair and just in one context, for one person, at one time, will not necessarily be fair and just for another, in another place, or at another time. By definition, if we desire social innovation we must be open to change. To understand and shape that change, we must acknowledge and address the complexities and fuzziness of dynamic social systems.

## Conclusion

Creativity and innovation are necessary for reaching social justice and equity aims, and for producing high-quality research. But before humans can innovate in useful, socially just and inclusive ways, we must first come to understand how ‘human being’ is constituted in and through experiences, events and discourses; we must ‘do’ sophisticated social research. This requires us to shake ourselves free of ideology, dogma, positivism, utopianism and the neo-conservative hankering for idealised versions of some imagined past golden age. Similarly, we must beware utopian visions of ‘better’ futures, including versions from socialist, humanist, technologist and capitalist camps (although we would not wish to abandon hope that humans can co-construct more just and sustainable ways of living together with our planet). The critical social researcher must be forever questioning, never assuming, seeking to multiply rather than reduce, to complicate and set free rather than to simplify and cage the incredible diversity and complexity of human ‘being’.

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