Making sense in a complex landscape: how the Cynefin Framework from Complex Adaptive Systems Theory can inform health promotion practice

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SUMMARY

Health promotion addresses issues from the simple (with well-known cause/effect links) to the highly complex (webs and loops of cause/effect with unpredictable, emergent properties). Yet there is no conceptual framework within its theory base to help identify approaches appropriate to the level of complexity. The default approach favours reductionism—the assumption that reducing a system to its parts will inform whole system behaviour. Such an approach can yield useful knowledge, yet is inadequate where issues have multiple interacting causes, such as social determinants of health. To address complex issues, there is a need for a conceptual framework that helps choose action that is appropriate to context. This paper presents the Cynefin Framework, informed by complexity science—the study of Complex Adaptive Systems (CAS). It introduces key CAS concepts and reviews the emergence and implications of 'complex' approaches within health promotion. It explains the framework and its use with examples from contemporary practice, and sets it within the context of related bodies of health promotion theory. The Cynefin Framework, especially when used as a sense-making tool, can help practitioners understand the complexity of issues, identify appropriate strategies and avoid the pitfalls of applying reductionist approaches to complex situations. The urgency to address critical issues such as climate change and the social determinants of health calls for us to engage with complexity science. The Cynefin Framework helps practitioners make the shift, and enables those already engaged in complex approaches to communicate the value and meaning of their work in a system that privileges reductionist approaches.

Key words: evidence-based health promotion; health promotion discourse; systems thinking; determinants of health

INTRODUCTION

In recent years health promotion has transformed itself into an evidence-based profession in which 'rigour' has come to equate with meticulous application of reductionist science to quantify links between causes or strategies and clearly definable health outcomes (Rychetnik and Wise, 2004; Brownson *et al.*, 2009). Yet there has been growing disquiet that this 'one-size-fits-all' mode of operation may be inappropriate when addressing the less-definable and far more '*wicked*' issues that now confront us (Rychetnik *et al.*, 2002; Hawe *et al.*,

2004; Kreuter *et al.*, 2004; Mark, 2006; Australian Public Service Commission, 2007; Norman, 2009). Their complex webs of non-linear cause–effect relationships across multiple scales give rise to unpredictability and the potential for powerful feedback loops to rapidly precipitate catastrophe.

The issues we face in health promotion vary from simple to highly complex. Preventing scalds among young children caused by excessively high temperatures in domestic hot water systems would appear to be a relatively simple issue. There is a well-established relationship between a cause and a preventable health outcome, and there are effective evidence-based interventions to address it (NSW Health, 1998). A more complicated issue like increasing physical activity among children in child care may still require clarification of a number of contributing factors. For such issues, reductionist scientific method has generally been considered most appropriate and has been the foundation of 'evidence-based practice' (McWilliams *et al.*, 2009). Historically, health promotion, embedded in the biomedical paradigm (health as absence of disease, reflecting individual biology and choice), has widely advocated this reductionist approach as its 'gold standard'.

However, there is growing urgency to address complex issues that impact the health of entire populations yet do not fit reductionist assumptions of predictability and order (Jayasinghe, 2011). 'Upstream' issues (Ardell, 1976), like social determinants, equity and climate change have complex webs and loops of cause and effect with the inherent potential for unpredictable and far-reaching consequences. Such issues, while not amenable to reductionist science, can be understood using complexity science, which differentiates the qualities of Complex Adaptive Systems (CAS) from mechanical systems (Jayasinghe, 2011; Jones, 2011).

CAS theory, while relatively new to health promotion, has gained attention in related fields as a way to understand and address complex issues. This paper highlights CAS concepts considered relevant to health promotion, reviews the emergence of 'complex' approaches within the field and presents the Cynefin Framework (Kurtz and Snowden, 2003) to help practitioners engage with these concepts. Current examples of health promotion practice are used to help readers understand CAS concepts, and to use the framework to choose methods and strategies

most appropriate to their own contexts. Implications are discussed in terms of existing health promotion theory, practice, research, values and investment.

COMPLEXITY AND HEALTH PROMOTION

To fully understand the relevance of CAS theory, practitioners need to engage with key complexity principles. A CAS is 'a dynamic network of many diverse agents ... constantly acting and reacting to what the other agents are doing. Control tends to be highly dispersed and decentralized. Coherent behaviour arises from competition and cooperation among the agents themselves. The overall behaviour of the system is the result of a huge number of decisions made every moment by many individual agents' (Waldrop, 1994). Examples of CAS include the biosphere, forests, reefs, stock markets, the immune system, humans, organizations and communities (Shiell *et al.*, 2008).

CAS theory has been applied within epidemiology, disease and health behaviour processes; healthcare organization; economics; general practice; health social science, health equity and, quite recently, health promotion (Alexander *et al.*, 1998; Sweeney and Griffiths, 2002; Christakis and Fowler, 2007; Rickles *et al.*, 2007; Matheson *et al.*, 2009; Norman, 2009). Aspects particularly relevant to health promotion include: webs of reciprocal and non-linear causal relationships such as those seen in social modelling of health-related behaviours; the tendency for agents within the system to self-organise as seen among pedestrians and motorists in shared space urban zones and the emergence of novelty seen in the spread of ideas and behaviours in human networks. The behaviour of a CAS is fundamentally different to, and cannot be predicted from, the behaviour of its constituent agents (e.g. we cannot predict behaviour of a crowd from individual behaviour). There is potential for a small change in one variable to shift the whole system beyond a critical threshold into a radically different state such as that seen when a tip in consumer confidence triggers a cascade of share market selling. System and agents co-evolve, and agents modify the system through their interaction with it (e.g. individual sentiments and national policies relating to food labelling). A CAS has capacity to

adapt to change by learning and responding (Snowden and Boone, 2007). In this sense it has a memory and time base (e.g. a community responds to the threat of food insecurity with a subsequent surge in backyard gardening over and above its existing propensity for such gardening). It also has a degree of resilience to external perturbations depending on factors such as diversity of its agents; the quality of network ties (Buchanan, 2003); and proximity to any critical thresholds (e.g. oil price rises impacting the cost of food). A top-down, mechanistic intervention in a CAS can precipitate unexpected problems by stimulating latent feedback loops within the web of cause and effect (e.g. alcohol bans in remote Indigenous communities leading to homelessness in nearby towns).

The implications of these principles for health promotion practitioners can best be understood by reviewing, from the complexity standpoint, evolution of health promotion from the medically defined 'downstream' focus on the individual in the 1960s to the highly complex social and global issues of today. During this development the profession has drawn from theoretical perspectives of medicine, psychology, social science, education, political science and marketing with different perspectives dominating in different periods and jurisdictions. This in turn has driven changes over time in the priority and resources given to issues, approaches and their proponents (Baum, 2010).

The 1960s' focus on self-care in a biomedical context was strongly underscored by the reductionist scientific paradigm. The bureaucracy was medically dominated and those proposing a community development approach found themselves marginalized by a system demanding forecasted, short-term, individual health gains. In the early 1970s this focus broadened to include health policy and programmes but still with the prime objective of improving the risk factor profile of the individual through coordinated top-down programmes (Norman, 2009).

A plea for practitioners to consider broader complexities of individual context including biology, lifestyle, environment and the health-care organization was made in 1974 (Lalonde, 1974). Soon after, the Alma Ata declaration called for an even broader social-ecological view, with primary care to advocate for social justice, a key determinant of population health (World Health Organization, 1978). While such

declarations do not instantly transform practice, these shifts towards complex thinking were reflected in the ascent of collaborative networking, coalitions and the '*settings approach*' (World Health Organization, 1978; Butterfoss *et al.*, 1996; St Leger, 1997).

By the mid-1980s, visionary thinkers with an understanding of complexity were calling for a major reorientation towards social determinants of health. The Ottawa Charter highlighted them as prerequisites for health, outlining a range of processes by which societies as a whole might address them (World Health Organization *et al.*, 1986). To match the changing landscape, some practitioners began incorporating principles consistent with social-ecology into their blueprints for actions (Labonte, 1998; Baum, 1999; Green and Kreuter, 2005). Such changes in practice were far from universal, and those more entrenched in the bio-medical paradigm responded by shifting to a '*population approach*' that simply interpreted each newly validated determinant in terms of another risk factor to be addressed via standard service-based deterministic programmes (Lawlor *et al.*, 2000).

The Bangkok Charter recast the Ottawa principles into the context of a highly interconnected and complex global community (World Health Organization, 2005). This sparked further reflection on the inadequacy of reductionist thinking in relation to complex issues (McQueen, 2000; McQueen and Jones, 2007; Norman, 2009).

In *The Structure of Scientific Revolutions* (Kuhn, 1996), Thomas Kuhn observed that paradigm changes are preceded by an accumulation of anomalies in traditional thinking. Could it be that our profession's struggle to effectively address the social determinants of health mirrors an accumulation of anomalies? Increasingly, we find that our traditional, reductionist paradigm is unhelpful in progressing upstream work. *Reductionist thinking* asserts that we proceed *when certain. Complexity thinking* enables us to proceed by probing that which will *always be uncertain*. The emerging shift towards CAS thinking in health promotion is paralleled by other professions dealing with complex issues (Plsek and Greenhalgh, 2001; Plsek and Wilson, 2001; Hawe *et al.*, 2004; Shiell *et al.*, 2008).

The potential applications of CAS theory to contemporary health promotion are substantial. It provides a lens through which we can better

understand multi-causal dynamics within our contexts, issues, organizations and communities. It can guide us to appropriate ways to manage, plan, design, implement and evaluate with respect to the degree of complexity of the issue in question. Those engaged in community-development might take heart from current shifts to complexity thinking and understand why their efforts may be undervalued by organizations founded on reductionism.

The Cynefin Framework described below emerged from CAS thinking within the corporate world. It was conceived by Snowden and colleagues (Kurtz and Snowden, 2003) to inform management process. It is translated here into the health promotion context as a practical tool to make the shift to complexity thinking accessible to those less familiar with CAS theory.

THE CYNEFIN FRAMEWORK

The Welsh 'cynefin', literally 'habitat', alludes to our myriad affiliations such as those of kinship, culture and location. We are never fully aware of them, but patterns of multiple experiences that emerge from them influence our every interaction (Kurtz and Snowden, 2003). The Cynefin Framework helps us make sense of this complex process and act appropriately. It has now been applied to knowledge and strategy management, research, policy making and leadership training (Mark and Snowden, 2006; Snowden and Boone, 2007). By exploring its application to health promotion we stand to gain valuable insight into our practice, our organization and our profession. While it was conceived primarily to inform corporate decision making, management and group function, these relate well to health promotion governance, management, group process, project planning, design and evaluation.

The most basic application of the Cynefin Framework is as a tool for categorizing issues and strategies. As such, it helps us decide on the most appropriate organizational structures for effective team governance and also when we should create conditions for emergent innovation instead of applying more rigid constraints. In terms of group process, it can help us decide when to stimulate open discussion to unearth multiple solutions instead of simply voting on predetermined alternatives. At project level, it
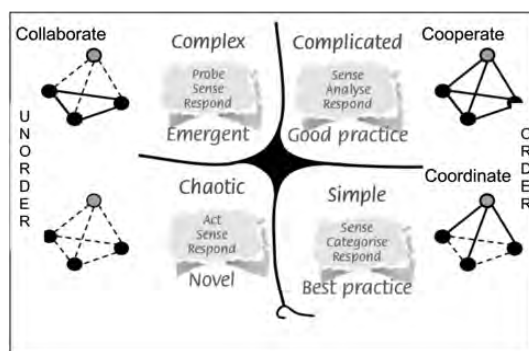

Fig. 1: The Cynefin Framework [adapted from Snowden (Cognitive Edge, 2010)] Tetrahedrons show the most appropriate management model. (Apex circle, manager. Base circles, other staff/stakeholders. Solid line, strong connection. Dashed line, weak connection). The central domain of 'disorder' is shown in black.

helps us choose between coordination, cooperation or collaboration as the most appropriate group process. In project planning, design and evaluation, Cynefin can inform our choice between traditional logic maps, preplanned outcomes and Key Performance Indicators or more emergent, action-oriented approaches.

The following description of the framework draws mainly from the writings of Snowden and colleagues. A wealth of conceptual thinking underpins the framework which interested readers may wish to explore further (Cognitive Edge, 2007a). The podcast by Snowden also provides a useful introductory overview from the corporate perspective (Snowden, 2010).

The framework (Figure 1) has five domains. The two on the right are the 'ordered' domains of 'simple' and 'complicated' (with clearly understandable links between cause and effect), the two on the left are the 'un-ordered' domains of 'complex' and 'chaos' (with no clearly understandable cause–effect links). The central domain is that of 'disorder'.

The simple (or known) domain

Here, cause and effect relationships are mostly linear, empirical and agreed upon. Consider a worksite heart health screening and referral programme. An evidence-based, '*best practice*' approach is generally accepted and has predictable outcomes. This is the domain of consistent, efficient delivery, using manuals and standard

procedures to achieve forecasted milestones and deliverables. Structured techniques and processes are desirable and mandatory. The appropriate decision-making model is to 'sense' incoming information (e.g. blood pressure data), 'categorise' it (high/low) and then 'respond' (advice/referral). Note that 'sensing' can equally apply to qualitative information. An appropriate management model for the simple domain is top-down control by a central manager. Workers may be weakly interconnected. Appropriate group function takes the form of coordination.

The complicated (or knowable) domain

As in the 'simple' domain, stable, ordered relationships exist between cause and effect but here are separated in time and space and not fully understood. Consider the influence of child fundamental movement skills on subsequent physical activity levels (Barnett *et al.*, 2009; Kelly *et al.*, 2010). Research is needed to clarify the existence and nature of the link in order to better define the key elements of 'good practice'. The term 'good practice' differs from 'best practice' in that there may be a number of acceptable options. Until such research is conducted, there are no definitive experts. Effective ties are required between researchers and decision makers, based on trust. Appropriate group function is co-operation. The decision-making model is to 'sense' incoming information (childhood skill levels), 'analyse' (in relation to subsequent adolescent physical activity) and then 'respond' on the basis of findings (apply findings to policy/programmes). In this domain, structured techniques based on reductionist science (e.g. longitudinal studies), are used to produce evidence. Impressive bodies of health promotion knowledge have been produced via such methods.

The complex domain

In this 'un-ordered' domain, there are cause/effect relationships but their non-linear nature and the multiplicity of agents defy conventional analysis. Current examples include efforts to address the social determinants of health, and organizational networking to address climate change (Commission on Social Determinants of Health, 2007; Kia *et al.*, 2009; Sabatini, 2009). Here, unpredictable patterns emerge from the

mix to be understood only in retrospect (e.g. unanticipated community outcomes from government changes to family support). The 'emergent', self-organizing characteristics of CAS highlights the importance of context, and the limitations of linear programme delivery (Keast *et al.*, 2004; Kreuter *et al.*, 2004).

Attempts to turn emergent patterns into policy or procedure by top-down 'installation' that disregards their context will inevitably be confronted by new emergent patterns, each of which will also be understood only on reflection (e.g. emergence of new crime patterns following installation of video surveillance in business districts). Indeed, we cannot be sure that apparently repeating patterns will continue, because we cannot see their underlying causes. So even expert opinion, based on historically stable patterns of meaning, will not sufficiently prepare us to recognize and act on new unexpected patterns. This has implications for replicability of complex interventions (e.g. a health promotion project with good outcomes in a highly networked context may have different outcomes elsewhere).

The decision-making model here is to develop 'probes' to reveal emergent patterns (e.g. genuine engagement with communities, skilled facilitation to enable emergence of agreed priority areas and actions). As projects emerge from agent interaction, we need to 'sense' which initiatives are useful (by evaluating relevant information) in order to 'respond' by amplifying and resourcing them. The aim is to develop open-minded observation rather than hasty action based on preconceived ideas. Narrative-based sense-making methods are helpful here (Edgeware, 2001; Cognitive Edge, 2007a). Analytic techniques appropriate to the ordered domains will not work. A highly collaborative approach to group function is desirable, and the more diverse the partners, the better a system can be understood and appropriate probes developed. A non-hierarchical management model (Australian Public Service Commission, 2007) encouraging distributed leadership among diverse and strongly linked partners is also considered advantageous.

Chaos

Unlike the simple, complicated, or complex domains, the turbulent, unordered domain of chaos has no visible cause/effect relationships.

Unexpected regional climatic catastrophes have the potential to send practice into chaos. Best practice protocols are of limited use as unprecedented circumstances call for novel responses. There are no data to analyse, and no time to wait for emerging patterns. The decision model is to take '*action*', '*sense*' the influence of that action and then '*respond*' appropriately. Links between all parties are weak. Directive intervention is often necessary to shift the situation into one of the other domains.

Disorder

Here, we are undecided about which of the four other domains our situation represents, often because we are not conscious of alternatives. We may have a personalized, 'one-size-fits-all', default approach to management, decision-making and group function that reflects our comfort zone rather than any rational choice. This domain plays a vital role when the Cynefin Framework is used during sense-making workshops described in the following section.

USING CYNEFIN AS A FRAMEWORK FOR APPROPRIATE HEALTH PROMOTION ACTION

In its simplest application, the Cynefin Framework can be used as a conventional management matrix for categorizing issues and strategies. This can be extended into planning or reviewing an entire portfolio of projects to enable emergent practices with respect to more complex issues (e.g. smoke-free interventions in Indigenous communities) while still rolling out standardized, evidence-based strategies (e.g. tobacco Quitline referral). Note here, that even within a project, different aspects and/or stages may reflect different domains requiring distinctive approaches.

While categorizing is useful, it is essentially static. When used as a sense-making process, Cynefin is more nuanced. It helps us understand that the systems we are engaged in (projects, organizations and networks) are perpetually in flux. Snowden views sense-making as a social process in which we 'make sense of the world, so we can act in it' ([Cognitive Edge, 2007b]). The workshop methods that Snowden and associates have developed help participants understand the degree of complexity inherent in issues, the diversity of viewpoints and the ways in which they might work together to find solutions ([Cognitive Edge, 2007a]).

When the Cynefin Framework is used for sense-making in such a workshop, participants become conscious of the transitions between domains and begin to develop the ability to recognize, interpret and manage them. In small groups, they are initially invited to write descriptions of processes, events, programmes, concerns or projects on small adhesive notes. These are '*sense-making narratives*'. The group then selects the four items that best exemplify the four extreme states of the framework: *Simple, Complicated, Complex, Chaos*. Each is placed in the appropriately labelled corner of a whiteboard, which at this stage has no separating boundary lines between the domains. Participants then work together to find the place on the board where they consider each of the remaining narratives best sits within the field ([Kurtz and Snowden, 2003]). As a result, some narratives will clearly lie within each domain. Others will sit on the transition zone between domains. A few may remain in the central area '*Disorder*', if there is no consensus where else to place them. The aim now is to split these unallocated narratives. For example, if one sticky note is 'Increase Regional Transport Options', the group is invited to write sticky notes for component aspects. These could be 'Survey Needs', 'Lobby for policy change', 'Form Working Group' or 'Integrate Bus Routes'. Eventually, the group is able to move all components to an agreed position on the field. This social process entails much discussion which helps participants make sense of their own and each other's assumptions. The result is a framework in which the domains and boundaries make sense in the context of health promotion. In the example below, the team is able to use the framework to make sense of how planning, project management and decision-making will vary for each component or stage of the overall project (Figure 2).

Examining transitions at boundaries between the domains is the key to understanding changes that can facilitate our work. An issue can easily shift across a boundary as a project progresses, or context changes. Aspects of a complex issue may shift into the *ordered* domains for scientific 'unpacking' or for implementation of a 'best practice' strategy. From our experience of building a regional collaboration
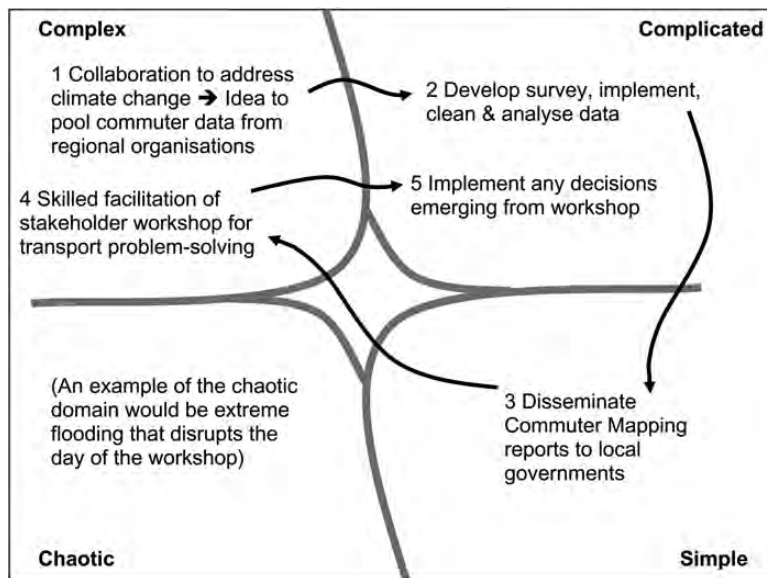
Fig. 2: Use of the Cynefin Framework to understand different stages of an emergent regional project to increase active transport.

to address climate change (van Beurden *et al.*, 2011), an initiative to conduct a regional commuter survey emerged, unanticipated, from a Transport Working Group. The work then shifted to the *complicated* domain, as data were collected, cleaned, analysed and aggregated to show major commuter flows in the region. Pre-established protocols of the lead organization were then used to disseminate the reports (*simple* domain). To capitalize on the mapping of commuter flows, a workshop is planned to deal with issues such as poorly connected areas, competing stakeholders and cross-scale impediments. Such a workshop sits within the *complex* domain, and requires skilled facilitation of shared problem-solving by diverse actors.

The transition from 'simple' to 'chaos' requires special mention as it can happen rapidly, with dramatic consequences. This typically occurs when a person or group develops entrenched inflexible processes which start to erode innovative capacity and resilience. Even small disruptions can then tip the situation into a state of chaos. A stark example was Cuba's dependence on Soviet oil subsidies for its tightly controlled, petroleum-dependant food production. The Soviet collapse plunged it into a desperate, chaotic food shortage. In what followed, the various experiments in urban organic food production exemplify a successful shift to the complex domain. This was characterized by self-organization and multiple probes to find alternative solutions. Being alert to the conditions that precipitate such transitions can help us work with organizations and communities to prevent or manage them for beneficial ends.

When we engage organizations and communities in Cynefin-based sense-making, we create opportunities for mutual understanding of alternate perspectives and agreement on appropriate action. The process encourages genuine discussion in reaching consensus. Consequently proposed actions are 'owned' by the group. The process can be challenging as participants become conscious of their default approaches and aware of the need for alternative approaches that vary depending on the nature of each issue.

WHERE CYNEFIN SITS IN HEATH PROMOTION THEORY, PRACTICE AND RESEARCH

CAS theory is a platform that can help unify existing health promotion theories. It relates closely to participatory, socio-ecological and systems approaches to research and practice (Stokols, 1992; Minkler and Wallerstein, 2003;

Folke *et al.*, 2005; Hawe *et al.*, 2009). Based on applied CAS theory, the Cynefin Framework can help us make sense of how different theoretical perspectives can inform our work. As practitioners it encourages us to ask a range of new questions. Might seemingly incongruous theoretical perspectives be mutually beneficial if viewed as parts of an overall system where each plays a valid part depending on context? If changes between these contexts are an integral part of our work, how can we consciously harness them rather than have them happen to us? How can we employ 'sense-making' approaches to best benefit from the potent group intelligence within our diverse professions and communities? The Cynefin Framework also invites us to extend our approaches to Settings and Communities. It helps us to understand more deeply the dynamic relationships between such elements as governance structures, decision making processes, network patterns and collaboration models.

From a research perspective, the Cynefin Framework can help us understand that while reductionist evaluation may have a place in evidence-based practice (Rychetnik, 2003), it is flawed if we oversimplify complex issues and overlook contextual variables critical to success. When we recommend large-scale rollouts, with high-fidelity to strict protocols, based upon such research, we risk augmenting the very problem we seek to ameliorate. This underscores the importance of local context to the success of health promotion initiatives in our communities and the need to track relevant contextual variables along with more conventional measures. It challenges us to develop new measures that broaden the concept of Community Capacity (Goodman *et al.*, 1998) to routinely include such aspects as availability of skilled networkers and collaborators, appropriate governance structures and the presence and effectiveness of pertinent social networks. It also encourages us to reflect on the lowly 'process' status we often attribute to such 'complex' determinants when we omit them from outcome evaluations. Indeed, they may explain variance that more traditional predictors do not. Some are already emerging as important predictors of health behaviour change (Christakis and Fowler, 2007, 2009). Cynefin also helps researchers from different research traditions find consensus on the need for Action/Participatory research methods when addressing complex issues.

IMPLICATIONS FOR HEALTH PROMOTION: VALUES AND INVESTMENT

The framework as conceived by Snowden is nuanced and dynamic. It is not possible here to fully capture its potential as a sense-making tool in a social process. The risk is that Cynefin might be interpreted as just another 2×2 categorization matrix. To avoid this, and also to address the challenge of translating a concept developed in another knowledge domain, readers are encouraged to employ a Cynefin 'sense-making' approach when considering new projects or reviewing existing ones. This might take the form of a team meeting using the framework as a basis for reflection, or a full workshop with a trained facilitator. We will only realize the full benefits and limitations of the framework though an ongoing process of shared exploration within the health promotion context.

When used as Snowden intended, the framework promotes conscious reflection on the benefits and risks of potential actions we might take. This can reduce the chance of investing in interventions that are ineffective or detrimental because they are inconsistent with the level of complexity (e.g. attempting to stimulate collaborative innovation using hierarchical, centralized governance).

In this respect, we are advocating that health promoters complement their skills in reductionist methods with an understanding that whenever we deal with humans, communities or social networks, we are engaging with CAS. If we lose our keys walking through the garden at night, we will not find them under the streetlamp across the road just because we excel at finding things in bright light. Likewise, we will not find the keys to the most pressing and challenging complex health promotion issues (inequity, climate change, social determinants) through reductionist thinking, just because our profession has demonstrated skillful use of it. We need to be alert to the logical error of basing decisions on findings derived from rigorous application of methodology, when that methodology was inappropriate to the issue. To help avoid such '*Type IV Error*' (Basch and Gold, 1986) when selecting an approach, practitioners need to ask themselves: 'If I treat this issue as "*simple*" or "*complicated*", am I ignoring important aspects of the broader context of which it is part, and what are the risks of doing

so?' We suggest that whatever the issue, we first consider it may be part of a CAS to reduce the likelihood of overlooking potentially important contextual factors.

In this way CAS theory and the Cynefin Framework can help us understand that while there is a place for the ordered and linear approaches of 'evidence-based practice' and hierarchical management structures, they can be detrimental when addressing complex multi-dimensional issues. The framework also highlights the challenge of proposing emergent approaches within the tight planning constraints currently required by many funding agencies. There is an urgent need to advocate for health promotion investment plans that reflect an understanding of complex issues, and place value on CAS-based approaches to 'wicked' problems (Baum, 2010; van Beurden and Kia, 2011). This in turn requires planning and monitoring processes that go beyond implementing 'best practice interventions', evaluated against forecasted and narrowly defined Key Performance Indicators. It requires learning and innovation based on the '*probe, sense, respond*' principle appropriate to complex issues. A range of planning, implementation and evaluation methods, well suited to health promotion, are already being used in other fields [e.g. (Aid on the edge of chaos, 2009)]. We have found that CAS and the Cynefin Framework resonate with the felt needs of a broad range of health promoters, from local to national, including managers, planners, policy makers, implementers and researchers. We also feel they could prove particularly useful in advocating for appropriate approaches to health promotion internationally. Efforts such as the Global Programme on Health Promotion Effectiveness, that identify effective health promotion practice and translate it to new settings with vastly differing local contexts, might well be enhanced by a complexity perspective (WHO, 2011).

CONCLUSIONS AND RECOMMENDATIONS

CAS theory has much to offer health promotion. The Cynefin Framework is a powerful conceptual tool which helps practitioners choose the most appropriate approaches to the level of complexity of the issues they address. It also highlights the pitfalls of a 'one-size-fits-all'

reductionist response to our most challenging issues. There is merit in including CAS and the Cynefin Framework in health promotion theory, discourse and practice.

The framework helps those addressing complex issues to communicate the value and meaning of their work within a system that largely privileges a reductionist approach. It challenges preferential engagement with 'downstream' issues and validates contextualized, emergent practice within communities when working with complex issues such as the social determinants of health and climate change.

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