http://ijhpm.com
Int J Health Policy Manag 2015, 4(5), 307–309

doi 10.15171/ijhpm.2015.49

IJHPM
International Journal of Health Policy and Management

Commentary

Thinking shift on health systems: from blueprint health programmes towards resilience of health systems

Comment on "Constraints to applying systems thinking concepts in health systems: A regional perspective from surveying stakeholders in Eastern Mediterranean countries"

Karl Blanchet*

Abstract
International health is still highly dominated by equilibrium approaches. The emergence of systems thinking in international health provides a great avenue to develop innovative health interventions adapted to changing contexts. The public health community, nevertheless, has the responsibility to translate concepts related to systems thinking and complexity into concrete research methods and interventions. One possibility is to consider the properties of systems such as resilience and adaptability as entry points to better understand how health systems react to shocks.

Keywords: Systems Thinking, Complexity, Resilience, Adaptability, Equilibrium

Citation: Blanchet K. Thinking shift on health systems: from blueprint health programmes towards resilience of health systems: Comment on "Constraints to applying systems thinking concepts in health systems: A regional perspective from surveying stakeholders in Eastern Mediterranean countries". *Int J Health Policy Manag* 2015; 4: 307–309. doi: 10.15171/ijhpm.2015.49

Article History:
Received: 20 February 2015
Accepted: 2 March 2015
ePublished: 3 March 2015

***Correspondence to:**
Karl Blanchet
Email: Karl.blanchet@lshtm.ac.uk

International health is still dominated by equilibrium thinking. Public health disciplines such as economics (1) and epidemiology (2) have traditionally promoted equilibrium thinking and purposively ignored the adaptive capacities (or resilience) of systems (3). The dominant approach has been to systematically implement standard health interventions in different countries as suggested by the World Health Organization (WHO) strategy "Health for All" (4). The planning of this type of intervention was based on the assumption that all variables (e.g. context and actors) stayed unchanged during the whole implementation period (i.e. usually three of four years). Equilibrium thinking is based on the assumption that every element in the world has a state of stability towards which they tend to return, whatever the changes in their environment.

Assuming contextual stability is quite questionable considering the rapid contextual changes modifying our social networks on a more globalised world where the pace of change in human ecology has significantly accelerated during the past half century has even created new health challenges (e.g. HIV/AIDS, pollution-related disasters, Avian Influenza or ebola) (5,6). Past and current health strategies were considered as not adequate to highly dynamic socio-ecological systems and contexts (7). The need for alternative thinking taking into account the dynamics of systems was needed, as explained by El-Jardali *et al.* (8).

Although the WHO on health systems (9) presented the advantage of creating a comprehensive view of health systems, this definition did not really reflect the interactions between actors and the dynamic adaptations happening within a system. The current WHO definition of health system was also perceived by some as being a constraining framework restricting health policy-makers to a normative understanding of health systems preventing them from searching innovative and alternative solutions to current complex global health needs and problems (10–12). As a consequence, health system strengthening interventions resulted in the implementation in developing countries of standard blueprint policies often duplicated from Western countries' health systems and not adjusted to local and contemporary contexts (10). In 1980, Hofstede made the same analysis when describing approaches applied in organisational management: "The silent assumption of universal validity of culturally restricted findings is frequent" (13).

System thinking and complexity science have represented a critical response to equilibrium thinking beyond public health. Already in 1930, Elton questioned the equilibrium view in ecology arguing that the equilibrium state of nature was an illusion (14). However, new thinking on complexity and system thinking has really gained importance only during the last decade as a potential response to global climate change. In the fields of biology and ecology, complexity science has become convergent thinking facilitated by the enhanced capacities of computers to analyse large data sets (15,16) and illustrate complex phenomena with graphs (17,18). Chaos theory helped understand complex phenomena (19). In social sciences, game theory based on complexity thinking helped analyse individuals' behaviours, cooperation relationships and dynamics between groups

Clinical Research Department, London School of Hygiene and Tropical Medicine, London, UK

(20–22). System thinking and complexity have created a new perspective to apprehend relationships between society, technology and the environment. The world is now described as a sum of dynamic systems interacting between each other and influencing different levels of society (23). Dynamic systems of different sizes interact across scales (24–27) and affect systems' properties in function of the shocks experienced (28). The challenge for policy-makers, service providers, donors and programme managers is to understand how to translate the concept of systems thinking into practical evaluation and research methods. Developing systems thinking methodologies has been a real need and still requires further development and clarification on which methodologies should be used. However, several initiatives took place such as the development of the Eye Health System Assessment guidelines tested in two different countries (Ghana and Sierra Leone) (29) and used by the WHO in Laos and Cambodia. Another model of good practice is the creation of communities of practice initiated by the International Development Research Centre in Canada resulting in generating evidence on innovative studies looking at the links between health and ecosystems (30). Analysing the properties of health systems may provide a response to need for better clarification requested by policy-makers and programme implementers (8).

Analysing resilience and adaptability of health systems consists of understanding the processes of survival and transformation of systems (31,32). In the field of health sciences, resilience is defined as "the capacity of individuals, families, communities, systems and institutions to anticipate, withstand and/or judiciously engage with catastrophic events and/or experiences" (33). Resilience is a measure of the amount of change a system can experience and still maintain the same controls on structure and function (31,32,34). Adaptability is the capacity of the actors in a system to manage resilience (i.e. capacity to respond to stresses and shocks) (35). Because human actions dominate social-ecological systems, the adaptability of such systems is mainly a function of the actions and decisions taken by individuals, networks and groups managing these systems (23,36). Health service managers are confronted with the difficulty of being able to anticipate shocks and stresses that are often unpredictable and the challenge of responding to disruptive events (shocks and stresses) in a minimum response time (37,38). There exist two different types of approaches to cope with uncertainty from a governance point of view. One consists in elaborating normative strategies with statistical models constructed to provide tools of certainty for "rational decision-making" (39). Ecologists have long been concerned with how ecosystems responded to shocks and stresses, and through the 1980s constructed mathematical models (40,41). A second approach tends to be more descriptive and focuses on the study of rational or irrational decisions and behaviour and the adaptive capacity of individuals and organisations. Although past research on decision-making processes were only restricted to developed countries, analysing their findings will help identify the main characteristics of decisions, the main factors influencing managers' decisions and the level of rationality of management decisions. Decisions are of different nature in function of their level of impact on the outputs or outcomes of health services (42). What makes complex systems complicated is that the sum of actions of the elements (in the case of human systems, elements are individuals) do not sum up in a simple way. Rather human beings interact within their social networks and generate behaviours that are not always easy to predict or analyse (43). As a result, it is expected that mixed methods will be the most appropriate to capture the complexity of health systems (44,45).

Ethical issues

Not applicable.

Competing interests

Author declares that he has no competing interests.

Author's contribution

KB is the single author of the manuscript.

References

1. Starr R. *General Equilibrium Theory: An Introduction*. Cambridge: Cambridge University Press; 1997.
2. Gerstman B. *Epidemiology Kept Simple: An Introduction to Classic and Modern Epidemiology*. New York: Wiley-Liss; 2006.
3. Worster D. *The Wealth of Nature: Environmental History and the Ecological Imagination*. Oxford: Oxford University Press; 1993.
4. Kickbusch I. Global Health Governance: Some Theoretical Considerations on the New Political Space. In: Lee K, editor. *Health Impacts of Globalization*. Basingstoke: Palgrave Macmillan; 2003.
5. Brownlie J, Peckham C, Waage J, Woolhouse M, Lyall C, Meagher L, *et al*. *Infectious Diseases: Preparing for the Future*. London: Future Threats: Office of Science and Innovation; 2006.
6. Blanchet K, James P. The role of social networks in the governance of health systems: the case of eye care systems in Ghana. *Health Policy Plan* 2013; 28: 143-56. doi: 10.1093/heapol/czs031
7. Bloom G, Edström J, Leach M, Lucas H, MacGregor H, Standing H, *et al*. *Health in a Dynamic World in STEPS Working Paper 5*. Brighton: STEPS Centre; 2007.
8. El-Jardali F, Adam T, Ataya N, Jamal D, Jaafar M. Constraints to applying systems thinking concepts in health systems: A regional perspective from surveying stakeholders in Eastern Mediterranean countries. *Int J Health Policy Manag* 2014; 3: 399-407. doi: 10.15171/ijhpm.2014.124
9. World Health Organization (WHO). *World Health Report 2000*. Geneva: WHO; 2000.
10. Bloom G, Standing H. Future health systems: Why future? Why now? *Soc Sci Med* 2008; 66: 2067-75. doi: 10.1016/j.socscimed.2008.01.032
11. Crush J. *The Power of Development*. London: Routledge; 1995.
12. Esteva G. *Development, in The Development Dictionary: A guide to Knowledge and Power*. London: Zed Books; 1992.
13. Hofstede G. *Cultures consequences: International differences in work-related values*. Newsbury Park: Sage; 1980.
14. Elton C. *Animal Ecology and Evolution*. Oxford: Oxford University Press; 1930.
15. Zinn-Justin J. *Quantum Field Theory and Critical Phenomena*. Oxford: Clarendon Press; 2002.
16. Newman L, Dale A. Network structure, diversity, and proactive resilience Building: a response to Tompkins and Adger. *Ecology and Society* 2005; 10: r2.
17. Thom R. *Structural Stability and Morphogenesis: An Outline of a General Theory of Models*. Reading, MA: Addison-Wesley; 1989.

18. Mandelbrot B. *The Fractal Geometry of Nature*. New York: WH Freeman; 1982.
19. Stewart I. *Does God Play Dice? The Mathematics of Chaos*. Harmondsworth: Penguin Books Ltd; 1989.
20. Kiel L, Elliott E. *Chaos Theory in the Social Sciences: Foundations and Applications*. Ann Arbor: University of Michigan; 1997.
21. Maynard-Smith J. *Evolution and the Theory of Games.* Cambridge: Cambridge University Press; 1982.
22. Axelrod R. *The Evolution of Cooperation*. New York: Basic Books, Perseus Books Group; 2006.
23. Berkes F, Colding JF, Folke C. *Navigating Nature's Dynamics: Building Resilience for Complexity and Change*. New York: Cambridge University Press; 2003.
24. Allen T, Starr T. *Hierarchy: Perspectives for Ecological Complexity*. Chicago: University of Chicago Press; 1982.
25. O'Neill RV, Johnson AR, King A. A hierarchical framework for the analysis of scale. *Landscape Ecology* 1989; 3: 193-205. doi: 10.1007/bf00131538
26. Wilbanks TJ, Kates RW. Global change in local places: how scale matters. *Clim Change* 1999; 43: 601-28. doi: 10.1023/a:1005418924748
27. Turner MG, Gardner RH, O'Neill RV. *Landscape Ecology in Theory and Practice: Pattern and Process*. New York: Springer; 2001.
28. Janssen MA, Bodin Ö, Anderies JM, Elmqvist T, Ernstson H, McAllister RR, *et al*. Toward a Network Perspective of the Study of Resilience in Social-ecological Systems. *Ecol Soc* 2006; 11: 15.
29. Blanchet K, Gilbert C, Lindfield R. *Eye health systems assessment (EHSA): How to connect eye care with the general health system*. London: International Centre for Eye Health, London School of Hygiene and Tropical Medicine; 2012.
30. Charron DF. *Ecohealth Research in Practice - Innovative Applications of an Ecosystem Approach to Health*. Canada: IDRC; 2012.
31. Carpenter S, Walker B, Anderies JM, Abel N. From Metaphor to Measurement: Resilience of What to What? *Ecosystems* 2001; 4: 765-81. doi: 10.1007/s10021-001-0045-9
32. Walker B, Holling CS, Carpenter SR, Kinzig A. Resilience, adaptability and transformability in social–ecological systems. *Ecol Soc* 2004; 9: 5
33. Almedom A, Tumwine JK. Resilence to disasters: a paradigm shift from vulnerability to strength. *Afr Health Sci* 2008; 8: S1–4.
34. Holling CS. Understanding the complexity of economic, ecological, and social systems. *Ecosystems* 2001; 4: 390-405. doi: 10.1007/s10021-001-0101-5
35. Westley F, Zimmerman B, Patton MQ. *Getting to Maybe: How the World is Changed*. Toronto: Random House; 2006.
36. Gunderson LH, Holling CS. *Panarchy: Understanding Transformations in Human and Natural Systems*. Washington, DC: Island; 2002.
37. Streefland PH. Enhancing coverage and sustainability of vaccination programs - an explanatory framework with special reference to India. *Soc Sci Med* 1995; 41: 647-56. doi: 10.1016/0277-9536(95)00036-7
38. Senge P, Scharmer CO, Jaworski J, Flowers BS, *et al*. *Presence: Human purpose and the field of the future*. Cambridge: The Society for Organisational Learning; 2004.
39. Donaldson L. The normal science of structural contingency theory. In: Clegg SR, Hardy C, Nord WR, editors. *Handbook of organisation studies*. London: Sage; 1996.
40. May R. Thresholds and breakpoints in ecosystems with a multiplicity of stable states. *Nature* 1977; 269: 1-7. doi: 10.1038/269471a0
41. Holling C. *Adaptive Environmental Assessment and Management.* London: Wiley; 1978.
42. Trevis Certo S, Connelly BL, Tihanyi L. Managers and their not-so rational decisions. *Business Horizons* 2008; 51: 113-9.
43. Watts DJ. *Six degrees. The science of connected age.* London: Random House; 2003.
44. Bergman MM. *Advances in mixed methods research: Theories and applications*. London: Sage; 2008.
45. Teddlie C, Tashakkori A. *Mixed methods research*. The Sage handbook of qualitative research, 2011. p. 285.