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Sustainability, research and policy making

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In recent years, certainly over the last decade or so, there has been an emphasis on sustainability and evidence-based practice, e.g. in decision making, policy development, and action plans. Clearly, good quality and appropriate evidence is essential to inform the process of decision making.

However, we live in a world that is continually changing. The notion of evolution in its broadest terms indicates that nothing will stay the same. A question of interest would be what governs how fast or slow change occurs? Of course this is a very complex question. We may assume that the base-line rate of change is influenced by natural processes which have impacted human behaviour. Thus, rate of change is exacerbated and expedited by the feed-back effects of human behaviour, e.g. industrialisation, manufacturing and subsequent lifestyle changes. The rate of change in all dimensions from socio-political to health and climate outcomes has accelerated with rapid industrialisation and advancements in technology and communication over recent centuries, e.g. see (Mannion, 2014) for a historical context.

It can be assumed that technological advancements have been at a much faster rate than we can cope with in our current pace of life. One of the feedback effects of technological achievements has been to refer to electronic gadgets and ICT products as "solutions", i.e. before identifying and defining a problem (Shahtahmasebi & Millar, 2013). It is plausible that the application of technology in this way may lead to more problems than it solves, whilst at the same time exacerbating the feedback effect and contributing to the rate of change. Thus, policy making and decision making becomes a continual process of intervention. The feedback effect from a process perpetuating the creation of "solutions", technological or otherwise, for unknown problems means we are continually bringing about change whilst expecting human and environmental outcomes to remain constant.

On another level, individuals' expectations and social norms are also subject to the feedback effect and have changed, e.g. in how we live, or our dietary habits (Betsch et al., 2015; Mannion, 2014; Shahtahmasebi, 2014b). On a different level, some compare current socio-environmental parameters with those of millenniums past and argue that we should return to the practices of previous millenniums (e.g. (Ratey & Manning, 2014), http://www.fresh-network.com/Why-Raw.Html, or http://www.peta.org/living/food/natural-human-diet/). Others argue that such beliefs are misconceptions about evolution (e.g. (Lieberman; Zuk, 2013)). Certainly, a return to old practices, without taking into account centuries of change in humans and human behaviour, environment and natural processes, may in fact lead to negative impacts on health and social outcomes.

Returning to the issue of sustainable research/decision making, the question that should be asked is: What does sustainability mean? What is meant by sustainability?

Certainly, in a political context, policy actions will differ widely from strategy for the main reasons of political influences, and, resource limitations, which implies adoption methods/models for allocating resources, e.g. prioritising. It is plausible that this difference or gap between the definition of and practice of sustainability is due to our "expert" led and top-

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down approach to policy prioritising and development (e.g. see (Shahtahmasebi, 2012; Shahtahmasebi, 2013; Short, 1997)). Such approaches lead to the creation of blind corners and exclude many important stakeholders.

To develop and lead research programmes that will inform the process of policy formation or lead to holistic and sustainable solutions we must develop a holistic and critical understanding of the system(s) and sub-systems (e.g. food, environment, and health) governing our lives. In other words we must understand systems change and feedback effect.

Most studies of systems, whilst acknowledging the interrelationship between them, tend to study elements or part of a system within defined boundaries (Shahtahmasebi, 2006).

In this way temporal dependencies and complex inter-relationships are overlooked because systems which are based on the environment and human activities are dynamic processes.

Traditionally, changes due to temporal dependencies have been gradual and our systems and policies may have been able to cope with sufficient modifications. However, quite apart from unexpected epidemics (e.g. bird flu or Ebola), it is not clear whether or not our systems will be able to cope with major change, e.g. global warming.

Do we know what the consequences will be? What will be the impact on public health? How will agriculture and food systems behave? Will we find out the answers in time to develop relevant policies?

However, we can get some ideas from our past and recent experiences. For example, it is not surprising for science/research (perhaps I should say scientists/researchers for obvious reasons, e.g. see (Shahtahmasebi, 2014a)) to be rebuked or policies to fail due to hasty reporting of incomplete research. It occurs frequently and is perceived as the norm in the public mind set e.g. the recent criticism of dietary advice http://www.theguardian.com/lifeandstyle/2015/feb/10/fat-guidelines-lacked-any-solid-scientific-evidence-study-concludes. Whether policies are good or bad they often have a short life span and change with governments. Regardless of failure or success they will have consequences.

An understanding of how various human and environment processes impact each other's outcome over time is necessary to address the same issues of global change but must be done innovatively and collectively, e.g. see (Shahtahmasebi, 2006).

Temporal dependencies of each process (food, environment, economy, health, education, etc) are complex on their own which then become overly complicated due to inter- and intra-process dependence. Human behaviour and the feedback effect have made these processes too complex (Shahtahmasebi, 2006; Shahtahmasebi, 2014b).

To develop innovative and visionary research strategies and research programmes we must remove borders and boundaries – we must challenge the assumptions, theories and models that form the basis of our current insight. Innovation follows appropriate and relevant quality information (Shahtahmasebi, 2008; Shahtahmasebi & Liddell, 2011; Shahtahmasebi & Millar, 2013); appropriateness and relevance may be achieved through holistic thinking and a multi-dimensional approach (Shahtahmasebi, 2006; Shahtahmasebi, 2014b).

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Global change (e.g. due to warming) has been gradual to such an extent that some still question it (incomplete research and not enough quality information) but it has already impacted all our processes and it is foolish to wait for it to fully manifest itself.

In recent years it has become fashionable for policy makers and their advisors to make statements about an integrated and inclusive based approach to include other disciplines, but this in itself is not sufficient and equates to moving from a one-dimensional approach to a two-dimensional one.

For example, despite decades of dedicating vast resources to research and service development for the prevention of mortality from heart disease, cancers, and suicide, we are still told that these diseases are still the top causes of mortality. Why? Certainly, there have been major advances in medicine and medical technology, but, these advances appear to benefit interventional strategies rather than prevent. Multiple organ transplants are now a "solution" in the public mindset. But, for this solution to work someone has to die in order for a sufferer to benefit. Therefore, another consequence may be the impact on social perceptions, expectations and social norms. A similar argument can be made about climate change.

To be innovative and visionary we need to be more critical, open-minded, treat the various systems (e.g. food, education, environment, health) as dynamic processes in a multi-dimensional context.

This approach has produced extremely favourable results in preventing youth suicide in New Zealand communities that took part in the programme (Shahtahmasebi, 2013).

In summary, there has been so much change over the centuries that fantasising about re-adopting past practices will be as harmful/beneficial as continuing with the status quo. We need to embrace and understand change and work collaboratively to be responsive to it.

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