

Editorial: Human behaviour and *degrees of freedom*

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Human behaviour is dynamic. This means it changes over time. How does this change occur? To answer this question it is necessary to take a look at our own lives as individuals. We do not wake up one day to find out that we are smokers, a champion athlete, obese, have health issues, depressed, or have a tendency towards excessive drinking, and/or other behaviour. What is meant by phrases such as ‘time will change a person’, or ‘time is a great healer’? Is it human nature to learn from changes in our surroundings? Time in itself is simply a vehicle that takes us from the start line to the finishing line. In other words, it is what happens on the journey that brings about change, e.g. through aging (physiological and biological changes), knowledge and experience, and through interactions with the living environment (communities, health and social policies).

At the centre of human behaviour is the individuals themselves. For example, individuals with similar characteristics will have different outcomes, e.g. one smokes, has low morale/self-esteem while the other does not and so on. Furthermore, individuals may be affected in different ways and with different outcomes by social and environmental behaviour for example, government health and social policies, or, the climate.

However, change, whether good or bad, is not without consequences and is the result of previous changes occurring around us.

Micro-level behaviour is individual specific but collectively it influences and is influenced by macro-level behaviour. For example, being a smoker, or a binge drinker, or user of technology and so on are often perceived as choices made by an individual. But the feed-back effects of individuals’ choices are at both micro-and macro-level. A decision to smoke will affect a change in diet, daily activities, self-perception, health and mental wellbeing (perceived self-esteem, confidence) and social behaviour. A decision to smoke, although an individual choice, will affect macro-level change not only in optimising manufacturing profitability, availability and social perceptions of smoking but also government economic, health and social policies.

Perhaps perceptions are the most intriguing of human behaviour. Perceived improvements in our lives as a result of a change in behaviour through adopting and utilising gadgets has impacted on us in a variety of ways economically, socially, culturally and health.

In statistics, the number of independent observations used to estimate a statistic (e.g. mean) is the number of degrees of freedom – every additional estimation results in the loss of a degree of freedom. The degree of freedom for a dynamic system can be defined as the number of ways it can move without violating its constraints.

As humans, we believe that we are born free. As we grow within our surroundings we take options based on our experiences and according to the social and political governance that rules society. For every option we choose, we lose a degree of freedom that we were born with. For every personal choice we make to own and drive a car or fly to a holiday destination; more roads and highways are constructed and more flights are scheduled. More highways and better roads often referred to as the economic arteries of a nation probably encouraged migration in and out of neighbourhoods and multiple car ownership. The feedback effects can be interpreted as what was once perceived as convenient and good (e.g.

car ownership) is now a necessity at micro- and an inconvenience at macro-level as the nations' arteries becoming increasingly congested. Justifying networks of urban and rural roads as important necessities has led us to overlook losses in degrees of freedom which include the rising costs of maintaining a nation's arteries, using up available resources, physical and emotional damage and loss of lives (road accidents), environmental damage and contribution to global warming.

We trade off perceived gains/improvements in our lives from behavioural change as a result of social and technological advancement for loss in degrees of freedom which include changing social norms and expectations. Trade-offs occur in all aspects of life, e.g. due to advancements in technology, medicine and human development (e.g. culture, language and freedom of expression).

Medical technology has certainly improved health outcomes, but the loss of freedom may be related to a new relationship between changes in behaviour and capabilities of medical intervention. For example, are we more likely or less likely to look after our health given that medicine appears to have a remedy for most common illnesses: either medication or surgery or both? The availability of options such as taking a pill or surgery to lose weight, or lung/heart transplants reduce the likelihood of behaviour modification. But in order for someone to live another person must die, or becomes 'spare parts' donor. At the micro-level, organ transplantation is a real medical option. It is plausible that even though organ transplantation is not a straightforward option and depends on many factors to be successful nevertheless it is an option. The mere possibility of transplantation may attenuate any risk associated with behaviour that increases the likelihood of poor health and death. Our human answer to the loss of degrees of freedom is of course to design and develop human limb farms, or better still human cloning.

Similarly, for every freedom of expression a social norm may be adversely affected, other individuals or groups may be offended leading to social divisions and counter expression, thus leading to attenuation of social cohesion. Conversely, the lack of freedom to express oneself may also lead to social disharmony. Perhaps, a 'constrained' (as opposed to complete) freedom of expression may help behaviour change in the desired direction.

There is no doubt that human beings can do almost anything. With the current level of technological advancements we do much more now for humanity and we could do even more in the future than is currently happening. We can further utilise technological advancement only if we adopt a holistic approach to development rather than develop for the sake of development and call each development a solution: which raises the question 'solution to what problem?' (Shahtahmasebi & Millar, 2013).

Culture and traditional languages are not safe from a loss in degrees of freedom leading to changes in social behaviour. Languages are the keys to unlocking cultures. With the rapid utilisation of technology in all aspects of our lives language is giving way to e-language, social interaction is giving way to virtual social networking and a virtual reality. As babies' toys give way to smart phones and tablets, and education and work is also carried out using one or several of these gadgets, then every aspect of life is mirrored in a virtual reality. We are beginning to learn of some of the adverse effects of virtual living, notably cyberbullying and unwanted sexual solicitation (Valkenburg & Peter, 2011) and other criminal activities. However, we know very little about personality and psychosocial development in a virtual environment. We know from social observations that one possible outcome from a change in

behaviour as a result of cyberbullying could well be a poorer quality of life and suicide. With cyberbullying the bullies can hide and inflict their harassment with devastating effects without even knowing the victim.

On the other hand we can argue that change is inevitable regardless of what we do and how we behave (our decisions and policies), e.g. the generation gap. The generation gap exists because we created it in the first place: we do not practice what we preach to our children; we confuse them by our actions; we do not communicate well with our adolescents (Omar, 2013).

Such gaps exist at all levels from micro- to macro-level, e.g. at a family level, to a workplace setting, to communities. For example, situations have arisen in the workplace where the authority replaces managerial skills, experience, knowledge and competence. In the absence of the latter, authority is used to withhold employees' rights in order to enforce conformity. The loss of degrees of freedom are very clear under these circumstances: (1) such conditions will lead to a bullying culture in the workplace, (2) a bullying culture has adverse effects for both employer and employee, (3) it will lead to misunderstanding and miscommunication, (4) which will in turn prevent progress and lead to the loss of productivity and skill-sets (Shahtahmasebi, 2004).

Some organisations appear, at least in theory, to have addressed such issues by establishing organisational values. In practice enforcing a policy of organisational values is often a one-way and top-down system. Similar to the generation gap, often the values are preached but not adhered to by those preaching them. And sometimes the values are even used to vilify an employee who may have complained about a lack of adherence to the values by their managers (Shahtahmasebi, 2004). The employers' loss of degrees of freedom will be organisational performance based on behaviour change. For example, loyalty to the cause (e.g. organisation) has no meaning to some executives and managers who expect obedience (i.e. loyalty to the person in charge). In other words, management perceptions of staff loyalty dictate criteria for staffing management positions, which then define the management culture and becomes synonymous with that organisation. This outcome is a heavy price to pay for an organisation to maintain 'loyalty' to a manager rather than to the cause (i.e. the skilful use of resources for the good of all). This can lead to difficulties in attracting customers/clients/students as well as the set of skills required to be responsive and productive (Shahtahmasebi, 2004).

The knowledge gap can also affect change at all social levels. Decision makers and researchers get their 'up-to-date' information from specialised and discipline specific academic journals. Most such journals claim to reject 90% of all submitted papers before sending them for peer review. Again the loss of degrees of freedom is clear: (1) criteria, reasons and motives for publishing only certain research means that critiques of methodology and published research is rarely aired, (2) the readership is only up-to-date with certain research, (3) can lead to biased assumptions in future research and study designs, (4) a biased flow of information to practitioners and policy makers, (5) which will lead to variation of more of the same policies (Shahtahmasebi, 2013), (6) adverse changes in behaviour, e.g. social and health outcomes (e.g. see also (Shahtahmasebi & Berridge, 2009)).

There is no doubt that change is inevitable, the whole of the universe is designed to evolve and change. The reason we inflict loss of degrees of freedom is because micro- and macro-level changes are not always in line with the direction of universal change. It seems to me

that the dynamics of human behaviour is affecting change all around us, including our own individual and social behaviour (the feedback effect). These changes will have consequences on health and social outcomes, e.g. environmental changes will affect health outcomes not known previously, or, cultural and social changes will impact on personality and mental wellbeing. The question is whether we have changed in the right direction so that our health services have the capacity to provide appropriate care, or, whether society has changed fast enough to be responsive to changed outcomes.

In some respects, taking each case separately and analysed in isolation, e.g. choice of transport, it is arguable that the problem is well understood and measures are being put in place to address its adverse effects. For example, the development of cleaner engines, alternative environmentally friendly fuels, hybrid or electric cars are all very exciting and good for the economy. But when taken in conjunction with other processes with their own feedback effect (Shahtahmasebi, 2006) then it could be visualised that changes in human behaviour are not following in the same direction as universal evolution.

However, politics is the key factor in affecting change. Our behaviour whether at micro- or macro-level is affected by our politics and the Politics of macro-level decision making. In turn, macro-level politics is, at least in part, influenced by other processes, e.g. national and international interactions and relationships, globalisation, economic growth, health outcomes, environment and so on (Shahtahmasebi, 2006).

We will never catch up with universal change but we can try to at least align the direction of change. One way to attempt realigning the direction of change is at an individual and grassroots level. In other words, we need to keep a check on ourselves as individuals and communities, and then influence societies and nationalities by asking the question ‘where are the changes taking us and how are they affecting our loss in degrees of freedom?’

In the final analysis, we are not born as free as we commonly perceive. Our general environmental conditions (social, culture, health, economy, parents behaviour etc) dictate babies developmental parameters not only while in the womb but also after birth. So our new-borns are losing their degrees of freedom even before they are born – can we really claim that we are born free?

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