The Restoration of Community Resilience – an Alcohol and Drugs Perspective

Abstract

In June 2007, the Scottish Parliament through its agency Scotland's Futures Forum launched a project which took as its key inquiry "How can Scotland reduce the damage to its population through alcohol and drugs by half by the year 2025?" This area of social wellbeing is a prime example of a "wicked problem" that is escalating. For example, many commentators say the "war on drugs" is being lost. Research on the effects of alcohol and drugs shows that they contribute to loss of resilience at both individual and community levels as well as to economies as a whole. The issue is highly complex, has multiple stakeholders, is riddled with conflict, social, political and even criminal, and it is dynamic and constantly shifting. It is usually tackled piecemeal with agencies in poorly communicating "stove pipes" and caught up in deeply ingrained defensive routines and a tangled web of unintended consequences.

Recognising this, the project committee, as well as commissioning contributions from a diverse range of perspectives, asked for an attempt to be made to produce useful system maps of the whole field and areas of intractable issues. This paper describes how the task was set about and introduces a number of system maps using influence diagramming and causal loops as part of the sense making of the wicked problem. In conclusion, the paper will indicate how systems thinking is an essential tool for holistic approaches to the wicked problems of social resilience such as climate change, peak oil and geopolitical intractability.

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Key words: wicked problem, complex mess, causal loops, holistic influence diagram, public policy

Introduction – Reducing Harm

A resilient society has a degree of health and well being which enables it to respond to challenges and shocks and take care of itself under duress. The opposite of resilience is brittleness. To cultivate resilience as a positive attribute, we also have to remove the negative factors that produce brittleness. There are many factors that contribute to producing and maintaining brittleness. This paper focuses on the association of alcohol and drugs with brittleness and a project in Scotland that is addressing this challenge at the strategic level in a novel way.
The Scottish Parliament set up in 2005 *Scotland's Futures Forum* as a vehicle for investigating major questions about possible futures and briefing parliamentarians on its findings. This forum is set up under the chair of the Presiding Officer to enable MSPs and others responsible for Scotland's future prosperity, cohesion and welfare to look beyond the normal four year electoral policy cycle at the challenges facing the nation and seeks ways of meeting those challenges. In May 2007 the Forum took on the challenge of investigating the question "How can Scotland reduce the damage to its population through alcohol and drugs by half by the year 2025?"

A brief summary of the implications of this issue reveals the pervasiveness and scale of the problem. Drugs are the second largest global industry after armaments and ahead of oil and gas.

The financial scale is estimated as greater than global oil and gas at a staggering three trillion dollars per annum, most of which is controlled by criminal elements. In Scotland the scale is significant and growing. In 2007 the figure was 253 per 100,000 of the Scottish population on the drugs misuse database.[1] The level of harm is currently increasing. An assumption made in the approach is that, given the global scale of the problem and the nature of human beings, the aim of a drug free society was quite unrealistic and evidence is that where this is pursued it often has the opposite effect of increasing the problem. So the choice of goal made was harm reduction, not elimination. This includes a diverse range of harms - health, social and economic.

A programme of seminars was devised that covered a wide range of perspectives. For example:

- Prevention and early intervention
- Association of harm and inequalities
- Impact on communities
- Role of drinks industry
- Regulation and prohibition
- Criminal justice
- Education and social norming
- Fostering self-change culture
- International experience
- Information and life-style choices
- Minority and immigrant communities

In contrast to a conventional commission, the SFF was keen to take a longer term view and to construct a holistic overview. The duration of the project was about a year and as the information accumulated various levels of systems mapping were carried out in a re-iterative and learning way. An important take off platform for this work was also the comprehensive RSA Commission on drugs. In parallel in 2008 the Scottish Government revised its shorter term drugs policy. It was also the aim of the SSF to raise issues and indicate options that were not present in this narrower frame of reference.

Alcohol and Drugs as a "Wicked Problem" or "Complex Mess"

The Alcohol and drugs scene is complex and its history shows that, in spite of efforts over many decades all over the world to control it, its scale and complexity has continued to grow. Robert Horn[2], a leading expert on methods to map complex social problem fields, characterises a wicked problem or a social mess as follows:

1. No unique "correct" view of the problem;
2. Different views of the problem and contradictory solutions;
3. Most problems are connected to other problems;
4. Data are often uncertain or missing;
5. Multiple value conflicts;
6. Ideological and cultural constraints;
7. Political constraints;
8. Economic constraints;
9. Often a-logical or illogical or multi-valued thinking;

[1] http://www.drugmisuse.isdscotland.org/publications/07dmss/07dmss-023.htm
[2] Robert Horn's work can be found at http://www.stanford.edu/~rhorn/

10. Numerous possible intervention points;
11. Consequences difficult to imagine;
12. Considerable uncertainty, ambiguity;
13. Great resistance to change; and,
14. Problem solver(s) often out of contact with the problems and potential solutions.

This was well recognised by the Forum team and led to their interest in the possibilities arising from application some variants of systems thinking. As a tool for mapping complex messes, systems thinking

- helps us to see the big picture
- helps us recognise inter-relationships in complex situations
- helps us recognise feedback loops which generate behaviour over time
- increases our chances of identifying strategic insights and leverage points
- provides tools for communicating holistically complex situations and exploring options with multiple stakeholders

A survey of the literature in the alcohol and drugs field showed little application of a systems approach. Most notable was work in Australia (Midgley et al, 2005) where a programme of research in to six types of systems thinking was undertaken. However, only two were conducted in any depth and they were limited to subsidiary problems in the total problem field. In the Forum work reported here the main approach was a 'soft systems' approach called a holistic influence diagram which helps portray a rich picture of the whole complex mess as a set of interacting feedback loops that drive the behaviour of the system as a whole.

Three Levels of Approach

A distinction was made between three levels. Each level sought to address a corresponding level of complexity. At the commencement of the project it was not clear which would be the most interesting and useful. This was part of the learning process of the project.

Level 1 - systems mapping

This was the basic level of taking the contributions from different authors and speakers and diagramming in different ways the patterns of connectivity between information and issues.

Level 2 - dynamic loops

On the principle structure drives behaviour, certain aspects of the contributions suggested the presence of underlying causal loop systems or archetypes. These were investigated at greater depth and more technically. However, resources were not available to take these further than the anecdotal level into stocks and flows and computer simulation.

Level 3 - holistic influence diagram

This was the level of trying to map the total field as a systemic structure that could reveal some of the aspects that made it a wicked. This rapidly became the main focus of interest as feedback from people in the field commented on the uniqueness of the approach and the potential it might have for shifting strategic and policy conversations to a new level. This possibility also led to some ways of constructing the diagram that led to its being designed somewhere between a rich picture and a cause loop diagram. The technicalities of this will be discussed later (Section 5)

Some Causal Dynamics

The most interesting application of causal loop method to the field is where there is a recognised history of unintended consequences. However, it was surprising that there was little information of 'behaviour over time' nature. Mostly the data presented in the various papers was of a statistical nature and revealed little about dynamics. One example which has received some in depth treatment of dynamical structure is the so-called crime spiral. In this dynamic the feedback loops lead to a behaviour over time in which a public demand for a crack down on drugs related crime temporarily has effect but, after a delay, the situation becomes worse than the original starting point. The key here is that the opportunity for shifting the level of criminal profit is increased by taking drugs off the streets and the level of seriousness of the crime of users to pay for their habit goes up.
Rather than repeat this work which is available elsewhere a couple of core examples of this Level 2 work will be briefly described.

The Example of Prohibition

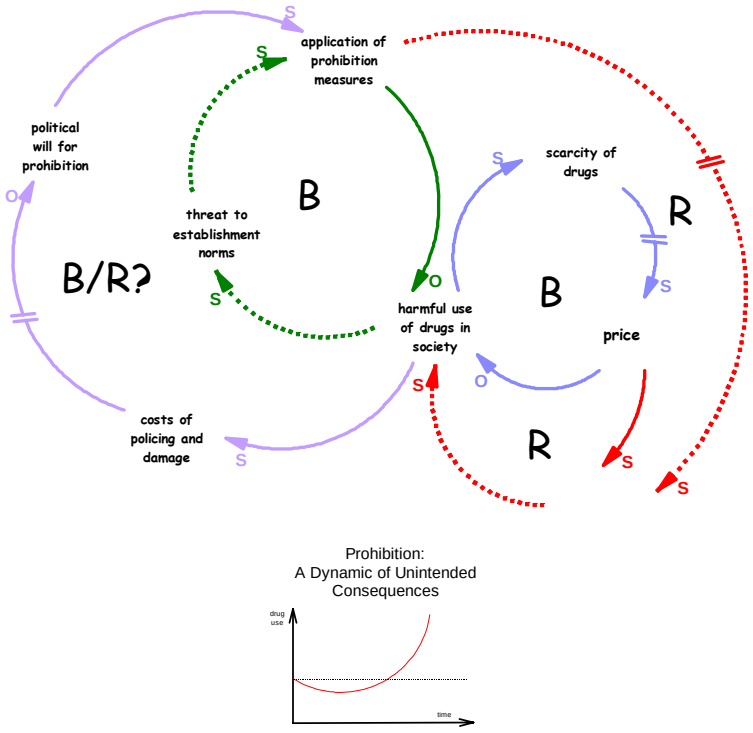

Figure 1 – Prohibition Dynamical System

THE PROHIBITION STORY
1) increasing harmful use raises the threat to established norms which leads to the application of prohibition measures. This has some initial success in reducing use.
2) after some time and success the increasing scarcity of drugs drives up the price which further suppresses purchasing power.

3) however, an unintended consequence is that the criminals see the opportunity and increase the supply of illegal drugs at a price that will grow the market. (*Gangsters Charter*) This begins to drive up use again.
4) Increasing criminal activity leading to greater use drives up the costs of policing and damage which slowly erodes the political will to maintain the demand for prohibition as a "solution"
5) when the criminal pressure beats the resources to contain it then there is a chance that other measures, such as regulation will be considered (*losing the war on drug crime*)

The Example of Regulation

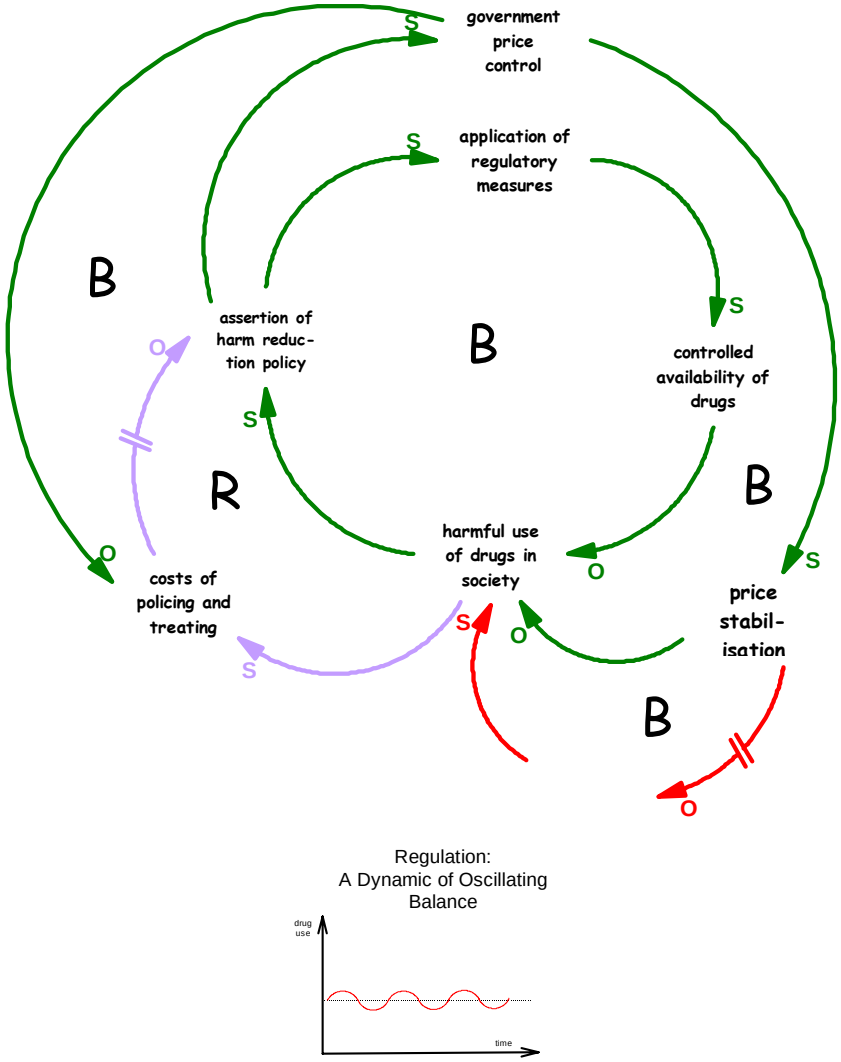

Figure 2 – Regulation Dynamical System

THE REGULATION STORY
1) increasing harmful use raises the conviction to do something about it through regulation and government control including taxation. Some success in reducing use.
2) Over time a better stabilisation of price is achieved - high enough to discourage; low enough to be less attractive to criminals

3) the costs of policing and treating on a larger scale create waves of questioning the policy
4) these costs are mitigated by the tax appropriation form legitimate use.
5) price stabilisation reduces the criminal involvement as other forms of crime are more profitable

Conceiving a Big Picture

Moving up a level, another stream of work was to try and create a "big picture" overview of the whole field that brought out interconnections often overlooked by stakeholders caught up in their own 'stove-pipe' of concerns and assumptions. A number of experimental diagrams were tried and tested for relevance and comprehension in a number of individual consultations and two workshops. It was clear that a diagram needed to be designed which could work at the policy level as a framework for strategic conversation. The challenge was to create a transitional object [3] that would

a) emphasise the interconnectedness of key areas often treated separately
b) emphasise the idea of circular causality through the depiction of loops
c) provide an enabling platform for policy conversations
d) act as a holistic overview to place and link the expert submissions and the areas of current practice
e) be rapidly discussable by people not versed in systems thinking

It became clear that, without participation of the users in the creation of either causal loop diagrams (where variables have to be firmly specified) or soft systems modelling (where there are clear customers, owners and so on) was not possible. It was also clear that simply connecting things with unlabelled and unverifiable arrows was too vague leading to an indecipherable "spaghetti diagram". The challenge was to make an artful compromise between the principles and techniques of the systems sciences and a pragmatic depiction that would catalyse the needed conversations.

Instead of simple causal variables, the nodes of the diagram needed to cover the primary factors from which much more detail could be unpacked, especially in relation to the content of the expert papers and submissions. Twelve notes were chosen. Each node had to be included in a feedback loop that indicated that effects were also causes and that influences were not linear but flowed around the diagram. The links in these loops had be clearly instantiated from evidence even though they were not at the level of rigour to establish causal loops or stocks and flows. The final diagram ended up with seven loops. Each loop needed to be a basis for a story of current and possible future dynamics of harm reduction. The resulting diagram was eventually named a "Holistic Influence Diagram".

Holistic Influence Diagram

The many viewpoints of the expert contributors were distilled down to seven overlapping and interacting areas. These emerged from looking at interactions at a more detailed level of information rather than by predetermined categories. This each of these areas is composed of three or four other interconnected nodes. Of the total set of twelve nodes, ten are members of more than one loop.

[3] De Geus, Arie, (1988) *Planning as Learning* Harvard Business Review

The nodes themselves cover complex areas that could easily be decomposed into multiple sub-models. Nodes are connected by arrows which imply a dominant direction of influence. Each arrow is labelled in a way to leave variable interpretations open for discussion but at the same time reflecting critical observations in the field. Additionally a convention is used that a strong influence (whether "good" or "bad") is a continuous arrow and a weak influence is a dashed arrow. The convention of identifying loops as balancing or reinforcing and as same or different as in causal loop diagrams was found to be too technical for the non-systems policy makers. However, most that we tested the model reflected that this form of model did correspond to aspects of their experience of the interlocking complexity.

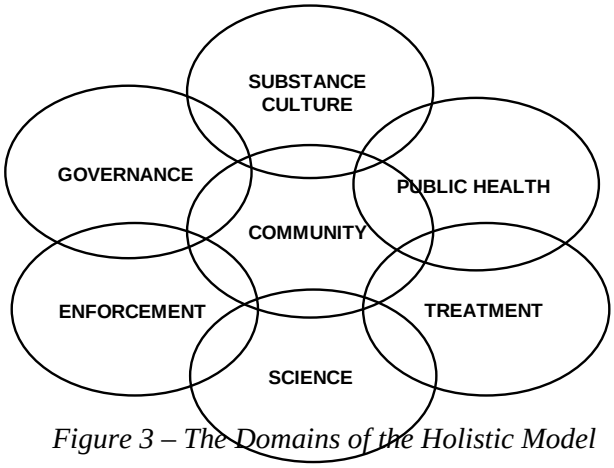

Figure 3 – The Domains of the Holistic Model

The model was developed in two forms. One depicted a summary of the Scottish scene as of today, 2008. The other showed modifications to the loops that offered promise to achieve the target for 2025; that is, if they could be implemented – a big proviso.

The complete model for 2008 is shown in Figure 4.

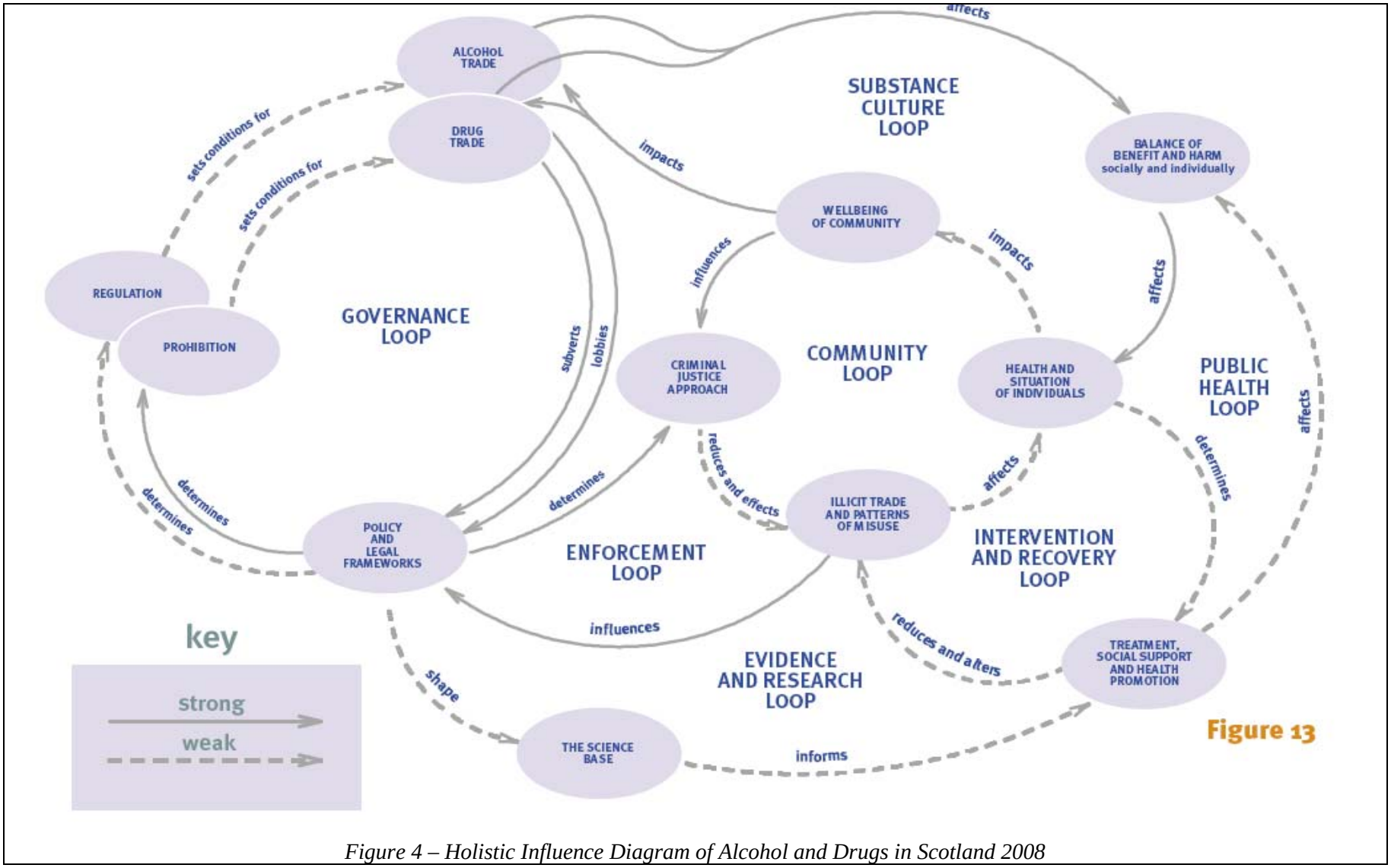

Figure 4 – Holistic Influence Diagram of Alcohol and Drugs in Scotland 2008

The complete model for 2025 is shown in Figure

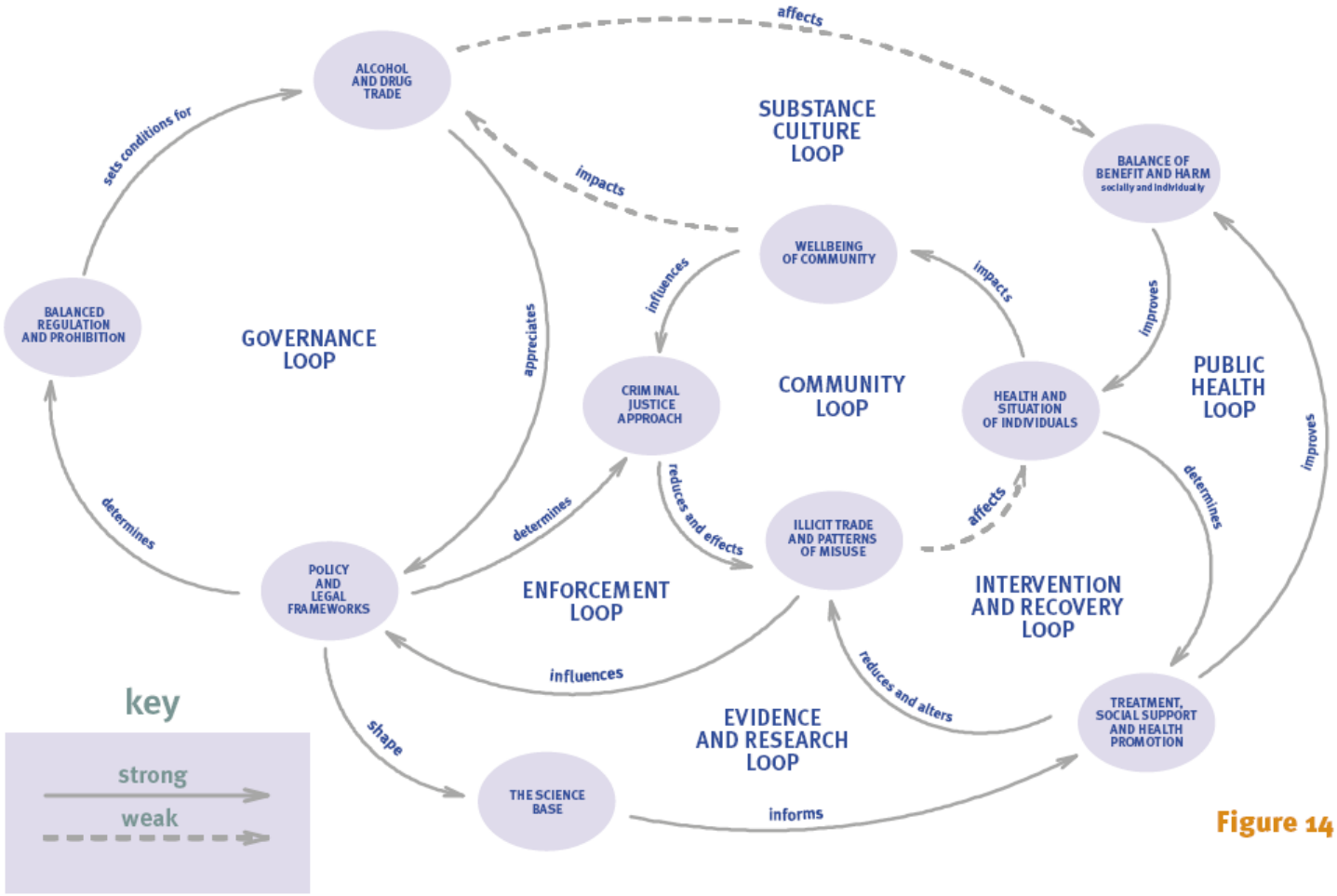

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Figure5 – Holistic Influence Diagram of Alcohol and Drugs in Scotland 2025

Reading the Diagram

In a causal loop diagram which links, say, two variables, if variable one increases then variable 2 either increases or decreases depending on the link being the same or opposite in effect. In the holistic influence diagram the link is more general. The arrow means "the condition of area 1 significantly affects the condition of area 2". For example, as seen from the earlier examples of prohibition and regulation in Figures 1 and 2, if the justice policy is to rigorously impose possession laws then the criminalisation of the mentally ill frustrates treatment of their addiction as a health problem. The connections strongly determine the scope of what can and can't happen around a loop. The box on the next page shows an example of how one of the loops is highlighted and the "story" of the loop is told. This provides the trigger for policy and practice discussions amongst multiple stakeholders.

In the influence diagram the arrows are given two strengths. A weak link is a dashed line and a strong link is a continuous line. In policy terms this first of all summarises the judgement of those involved as to whether the influence, whether helpful or unhelpful, is weak or strong. In terms of moving the system to reduce harm, in some cases the need may be to weaken a link; in others to strengthen it. For example, in 2008 treatment weakly affects the balance of *benefit and harm*, meaning that harm is not reducing. Whereas in 2025 that link is strengthened and has a comparatively significant effect on harm reduction. The desired nature of the influence also depends on what needs changing in an area. For example, if policy and legal frameworks shifts in emphasis from criminality to health risk in 2025, then a strong influence to the criminal justice approach is desirable. If not, a strong link is actually perpetuating harm, as in 2008.

Chapter Three: **Enforcement Loop**

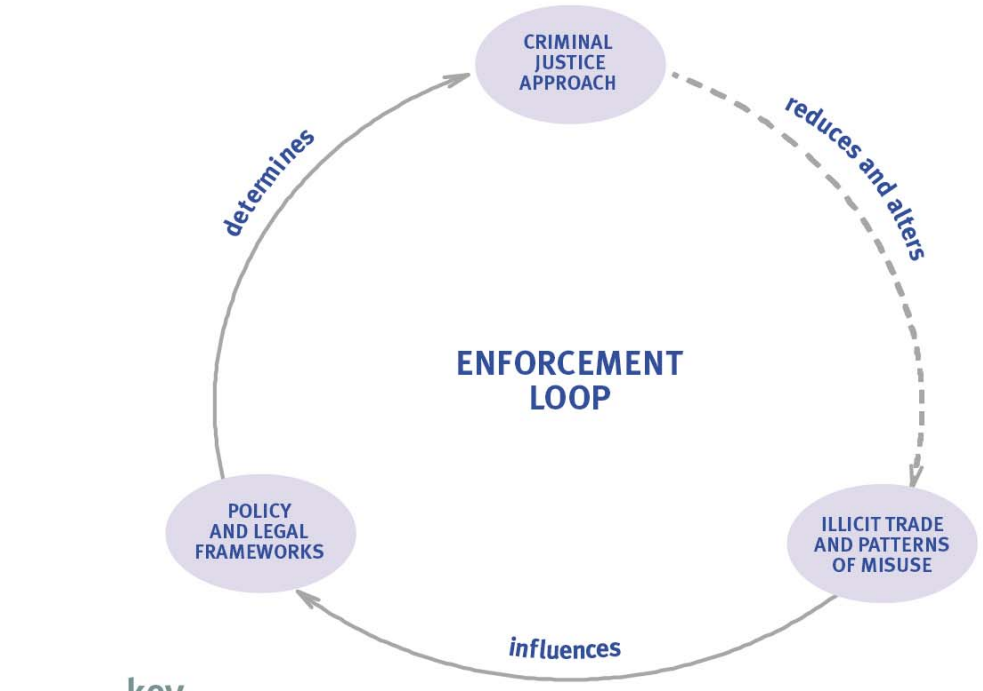

Figure 7

The reader should start from the **policy and legal frameworks** balloon:

- Policy and legal frameworks influence the shape of the criminal justice approach – for example, through use of imprisonment and combination of criminal justice systems and treatment measures.
- The approach of the criminal justice system affects the illicit trade and consumption patterns of psychoactive substances, for example, through disrupting the supply to local markets.
- The level of consumption of psychoactive substances determines the policy and legal response, for example, the increased use of skunk has provoked legal and policy changes in recent years.

The Strategic Value of the Model

The fundamental value of the model is in its stimulation of strategic conversation. This can be the case at the policy level or at the level of practitioners. For example, the draft model was discussed with a range of people from a Canadian Senator to a Glasgow addiction psychiatrist, from a young persons educator to a sociology research professor.[4] This range of practitioners from different areas who found it helpful to place there expertise in the whole system and see expressed connections that were part of their experience but perhaps not clearly articulated. However, the more powerful value was the way that the diagram (suitably populated by more detailed knowledge) could express the situation in Scotland and become a high level diagnostic. It was appreciated that even a complex diagram like this is still a very partial representation.[5]

The next stage of thinking with the model is how far it helps in re-examining policy in a way that might point towards fulfilling the aim of harm reduction. How might we try to answer the question "How can Scotland reduce the damage to its population through alcohol and drugs by half by the year 2025?"

The model creates a joined-up agenda for seeking improvements. These are best summarised as a series of questions.

1. what is the quality of each node in relation to reducing or increasing the level of harm?
2. how could the primary influence arrows be improved? For example, should weak ones be strengthened? Are there links which are counter-productive and should be weakened or removed?
3. are there links that have not been highlighted in the diagram that are as important or more important than the those represented?
4. what might the diagram look like as representation of a successful multi-facetted approach to harm reduction in 2025?

The opening statement of this paper was that a society heavily dependent on a substance culture much of which is in the hands of criminals, is a brittle society. Reducing harm by a more systemic approach is a contribution to reducing brittleness and hence increasing resilience. However, we need to be clear about what kind of resilience we are referring to. King (2008) points out three levels of resilience; engineering or mechanical resilience (the systems resists change and returns to its norm); ecological resilience (the system flips to another state beyond a certain level of disturbance) and adaptive capacity resilience (the system in non-equilibrium, transforms itself cyclically between different states). Most interventions in the alcohol and drugs mess encounter a push back suggestive of an inbuilt mechanical resilience which will maintain the harm growth whatever anyone does. An intervention at the next level may be able to flip the system behaviour to a better level for a while, but global stresses (e.g. Columbia or Afghanistan) are likely flip it back again. Paradoxically to conventional policy making, the best bet may be to recognise that the complex situation is continuously in flux and it will go through waves of oscillating harm production which, hopefully, can be sustained by adaptive intervention rather than fixed formulae. As King puts it:

> "This third model allows the possibility of managing a coupled system in terms of *plasticity*, of function, structure and process……this model recognises (i) the need to reduce uncertainty in order for governance to function, (ii) the precautionary principle as the justification for action (rather than, as it is sometimes taken to be a, a rationale for

[4] The list of expert involvement is shown in an accompanying document *12 Dimensions of a Manageable Problem: a collection of expert views.* http://www.scotlandfutureforum.org/assets/files/12_Dimensions.pdf
[5] A former Scottish Justice Minister remarked that it really needed to be three dimensional!

blocking action) and (iii) there will be bad decisions with serious, perhaps irreversible consequences. This, here the emphasis is on maintaining continuing capacity to *generate options* and *scenarios*".

Conclusions

The resilience of a society is partially determined by the health of its members, the capacity for productive and meaningful lives, often referred to as social capital. It undermined by creeping conditions, referred to in resilience modelling as "slow variables" that lower the thresholds against which abrupt changes take place. Sow a combination of a lowering threshold (increased brittleness) and creeping variable (say, addiction and drug crime) lead to a sudden regime change, in the ecological sense. Whole communities flip to a more degraded state and a piecemeal approach will not get them out of it.

The problem is that the combination of strongly held social and political about drugs, fragmented institutions and often strong disregard for the evidence that science is accumulating, makes a system change virtually impossible. Piecemeal approaches of any school of policy inevitably trigger unintended consequence. "Crack drown" on drugs crime usually increases it; driving consumption habits underground reduces hygiene and increases HIV aids spread; competition rules in the alcohol industry stimulates low prices, accessibility and binge drinking.

This work is a pioneering effort to introduce a systems thinking approach into a domain of public policy embedded in a social mess. The modelling reported on is the first stage of creating a sufficiently plausible tool to frame new strategic conversations between different groups of stakeholders. These conversations need to take place at the individual, community, national and regional levels. It is hoped that the model is sufficiently recursive at these levels that it can also help communication between levels. Future work hopes to pilot a variety of strategic conversations around the model, locally in Scotland and internationally in Europe. It by no means covers the potential scope of systems thinking for policy work but it is hoped that it will open up a way to engage policy makes without technical training in the field but who wish to participate in the thinking rather than commission experts to produce a view.

Of course, a desirable goal is to "loosen up" the dominant compartmentalised thinking and create conditions where the value of more rigorous systems modelling and research could be recognised, commissioned and appreciated. The potential is there. As one US expert put it:
"This report is impressive in a number of ways. It uses a systemic approach to grapple with the entire range of factors one needs to consider in reducing harm from substance use. … The systemic approach here can be expanded, as the culture of substance use is considered in relation to other cultures with Scotland and humanity….Just as this report shows interacting loops around its seven dimensions, one can imagine an even bigger graphic with interacting loops around all the cultures of living."[6]

Acknowledgements

The author is indebted to Robert Rae, Director of Scotland's Futures Forum, and Michael McCarron, of SADAAT (Scottish Association of Drug Alcohol Action Teams), for their enthusiasm in exploring new ways of thinking about the challenge and helping distil the best information upon which to base the modelling.

[6] Dr Thomas Horvath, President, Practical Recovert Swervices, USA See page 64 of the report *Approaches to Alcohol and Drugs in Scotland: A Question of Architecture.*

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