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Capturing the imprecision during an OR intervention: What is, what isn't and what should be

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ABSTRACT

Being rigorous is in part about knowing what we can and can't do. For example, we can't always model what is important with precision. The degree of precision is likely to vary over three dimensions of Community Operational Research: the qualitative, the quantitative and the ethical. To encourage coherence, the three dimensions can be mapped onto a common systemic framework. In this three dimensional approach, community is viewed as a multi-level dynamic. Two other interwoven dynamics are very evident: authority and exchange, which are often manifested as state and market. Each of the dynamics can be understood as a continuum from personal attitudes through social beliefs and practices to formal social enterprises. The social enterprises produced by the interaction of the dynamics are hybrids, some of which are primarily understood as communities. This dynamic view is explored in relation to a set of theories of community, and the implications for practice are discussed in the context of Community Operational Research and the log-frame approach. The mapping of ethics is then discussed, and the technique is applied to a community event: a threat by doctors to go on strike. The accessibility of the approach is then demonstrated, and the role of experts briefly explored. In conclusion, it is suggested that, as this technique emerged from practice and has been located in a variety of theoretical contexts, the next step could be formal evaluation through action research.

1. What is, what isn't and what should be

In most decisions there are some elements that can be modelled mathematically, and some which cannot. For example, there could be an earthquake in Tehran at any time. Mathematical models can structure decisions about where to locate resources to deal with the aftermath. They can even help us to determine the consequences of treating everyone equally or seeking the greatest good of the greatest number (Tofighi, Torabi & Mansouri, 2016:240). Maths has its role, but ultimately the calculus depends on our imprecise and subjective judgments of the value of different human experiences.

Being rigorous therefore seems to be in part about acknowledging what we can and what we cannot do. As Amartya Sen wrote, "A good statement of an inherently imprecise concern – and most important concerns in the world are imprecise – must capture that imprecision, and not replace it by a precise statement about something else" (Sen, 2012:6).

Clearly then, our first step is to decide the subject of our interest (von Bertalanffy, 1968; Checkland, 1981). Following Sen's theory, if the subject is important to us, it may well be imprecise. This has implications for the way in which we respond. In particular, when we describe the system, some of the evidence may be strictly objective, but much of it is likely to depend on social negotiation and construction.

If our research is intended to lead to social intervention, there is reason to treat it as important, imprecise and complex. Deciding what to do may well require three dimensions of analysis, which can be described as qualitative, quantitative and ethical: the qualitative provides a narrative about our system of interest; quantitative methods help us to evaluate our perceptions of circumstance and possibility; and there is an ethical dimension to the choices we make.

In everyday speech, this may translate as *what is, what isn't and what should be*. 'What is' refers to the qualitative account, and 'what should be' to the ethical; but why describe the quantitative as 'what isn't'?

The first reason is epistemological. Popper (1963) offers a useful contrast between "conjecture" and "refutation". For any given circumstance, we select a set of conjectures about the nature of the system of interest. For human activity systems, these are mostly qualitative assertions about what is. We then subject the conjectures to critique, testing them by seeking to refute them. Usually this is a quantitative process, but the natural and social sciences often diverge at this point. We could follow Popper and construct

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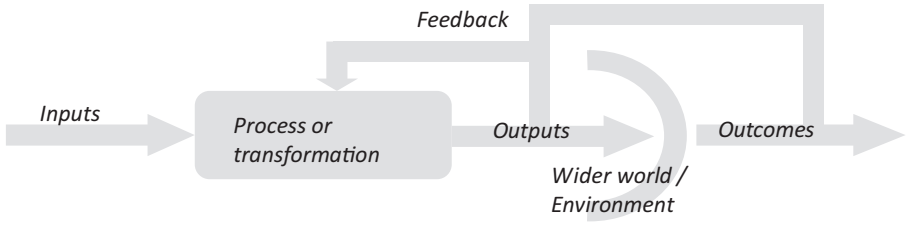

Fig. 1. Basic system model.

tests deductively. However, in order to justify intervention in the affairs of living creatures, we tend to rely on induction, quantification and probabilistic reasoning. We are seeking acceptable outcomes, not pure knowledge.

In either the natural or the social sciences, a failure to refute a conjecture doesn't make it true. We work within epistemic parameters. However, we can make use of *that which isn't unreasonable*. That which isn't reasonable can be put to one side. To make these kinds of judgments, we need criteria of reasonableness. One approach is to show that the conjectures have an acceptable degree of evidence-based probability, and that the risks associated with acting on them are not disproportionate (Williamson, 2008). We are not identifying the truth, but distinguishing between what isn't reasonable, and what isn't *un*reasonable.

The second reason for talking of 'what isn't' relates to social behaviour. Some cultures encourage the illusion that quantitative data have miraculous properties. Attach a number to an idea, and it suddenly becomes sacrosanct (Sen, 2012) and treated as unquestionable. Apart from the inaccuracy of this sentiment, it discourages the exploration of diverse perspectives. Asserting that we are right and others are wrong does not generally contribute to an equitably negotiated agreement. However, if we are aware that our conjectures are going to be subject to a collaborative quantitative and ethical critique that is structured in terms of reasonableness rather than absolute truth, we may be more likely to show each other mutual respect. We may have to choose between ideas as a guide for action, but, nevertheless, as Napper (2009) has remarked, it can be OK for me to think one thing, and you to think another. Describing the approach in simple terms as *what is, what isn't, and what should be* is therefore offered as a contribution to open discourse, as well as being epistemologically grounded.

The field of exploration in this paper, then, is how to capture imprecision in order to intervene intelligently, and to do so by thinking about what is, what isn't and what should be. The exploration will be developed around a particular technique called 3D-COR (Three Dimensional Community Operational Research). The essence of 3D-COR is that we can map the three dimensions (the qualitative, quantitative and ethical) onto each other by using a systems model. With care, we can capture imprecision while constructing a coherent model around which we can co-ordinate change or continuity.

2. The systems model

If the three dimensions are to be used coherently, they need to share a common medium. A systems model allows 3D-COR to be used in diverse settings, not least because the basic ideas are very familiar. These ideas are *time*, *change*, *agency* and *understanding*. In a narrative form: "Things were like that; now they're like this. We may have a choice about what happens. By understanding what happened in the past, we can choose to do things differently in the future". More formally, inputs are transformed to outputs and feedback may allow us to influence future transformations.

3D-COR uses a slightly more sophisticated model. This is because some events are more or less under our control, while others are much less so. Those events that are under our control tend to produce fairly predictable *outputs*. However, those outputs impact on a wider environment, which is usually less under our control. The products of this second transformation can be described as the *outcomes*. A fully functional and systemic feedback system will consider outcomes as well as outputs.

The 3D-COR model is represented in graphic terms in Fig. 1. Those familiar with the importance of boundaries to systems models may note that "the environment" can be seen as the effective boundary of the first system. Because systems can be nested, a second boundary can be constructed around the whole, and so on to infinity. Circumstances will dictate the complexity of our analysis.

If we describe a system of interest in these terms, we will have a narrative in the qualitative dimension: what is. This can then be evaluated for credibility: what isn't. For example, a British Government Minister claimed that "We actually spend a little bit more than the average for rich countries on our health services" (Walker & Asthana, 2017). In the qualitative narrative, this looks like an input claim. Now map this onto the quantitative dimension. The per capita data show that the credibility of the statement depends heavily on how "rich countries" are defined (OECD, 2015). If Greece, Turkey and Mexico are excluded on the grounds that they are not rich, the Minister's statement loses credibility.

The narrative assertion of 'what is' has been counteracted by the evidence that it isn't really. This opens the debate to 'what should be'. The mapping here is less straightforward, so only a brief introduction will be given at this point.

The Minister, having claimed adequacy of inputs, acknowledged that "...we still have 150 avoidable deaths in our hospitals every week" (Walker & Asthana, 2017). This can be mapped as an output. The inputs, which are the Minister's responsibility, are deemed adequate. The deaths are attributed to procedures within hospitals, which are the responsibility of the health professionals, so the Minister's hands are clean of both the immediate deaths and other outcomes, such as grieving families. The moral responsibility for the deaths appears to lie, therefore, with those managing the care process. The health professionals may (and did) challenge this view (BMA, 2016).

The problem has not been resolved, but at least we have a structure for rational discussion. The evidence on outputs is agreed. There are many avoidable deaths. The cause is contested. Who should be believed on the adequacy of the resources? We might return to the quantitative dimension to decide which viewpoint is less credible. One relevant set of data is the perceived trustworthiness of the actors. The data for the UK suggest that doctors and nurses can be trusted 90% of the time, and Government Ministers once in every five occasions (Ipsos-MORI, 2016). (An alternative interpretation is that one fifth of everything they say can be believed; but either way, conventional wisdom tends to support the health professionals).

This example is intended to illustrate two things: firstly, how the common map can be used to structure debate; secondly, that capturing imprecision can be informative. We can see how narratives compete, and we can evaluate their merits as a guide to action.

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