

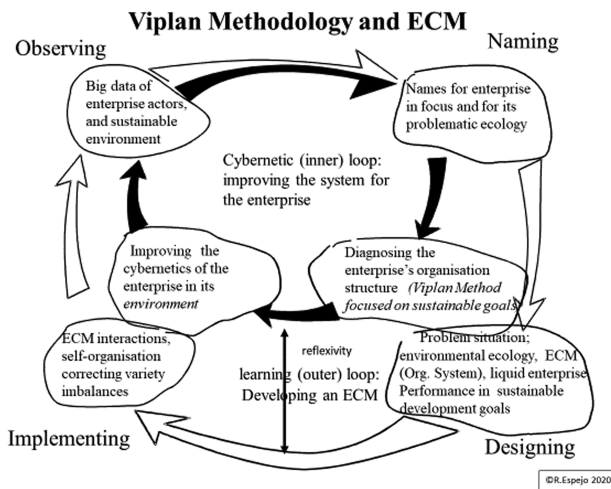
COVID-19

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1 | GETTING OUT OF THE LOCKDOWN: VARIETY ENGINEERING

Recently, I've written about 'Enterprise Complexity Models' (Espejo, 2018, 2020). These models are a methodology to deal with social and human problem situations. They are grounded in the Viplan Methodology (Espejo, 1993; Harwood, 2016; Espejo & Reyes, 2011) that, as many other related methodologies, has something to say about COVID-19. Graphically, the *Viplan Methodology* is built upon two concentric learning loops.



- The inner (cybernetic) loop which elaborates the structure of an enterprise relevant to a problem situation, such as the sustainability of society/the planet, or more directly, the response to situations like today's COVID-19. The enterprise needs *good structural conversations* to handle effectively these problem situations.
- The outer (problem solving) loop is focused on particular problem situations, such as the enterprise's contribution to the sustainability of social health in its environment, or more directly to the health of people in today's pandemic.

The viable system model—VSM—(Beer, 1979) helps clarifying necessary conversations that often restrict proper communications among organizational actors and between them and environmental agents and highlights *who are the right people to participate in these conversations* to discuss problematic issues; they help to visualize the structural conditions most conducive to appropriate conversations leading to effective action. In the Viplan Methodology,

- the cybernetic—inner—loop encourages stakeholders to question the structures underpinning their problem solving interactions, communications and relationships in the context of the enterprise's purposes. The common situation is that these structures may either facilitate or inhibit, to different degrees, these problem-solving processes, and the purpose of the cybernetic-inner loop is to make the enterprise's structure more effective. As this happens, the enterprise's improved cybernetics facilitates better conversations to improve the enterprise's management of problem situations.
- In the learning—outer loop—stakeholders take advantage of the enabling structures to engage in processes of continued learning about the situation, such as sustainable health. They engage in problematic issues and agree about any changes that they want to make to improve the situation.
- The two loops are reflexive in the sense that as the cybernetics of the enterprise improves in the inner loop, the collective appreciation of their problem situations becomes more sophisticated in the outer loop, and better appreciation of these situations are reflected in changed conversations and structures in the inner loop, recursively.

I use these notes to explore briefly COVID-19 with reference to the UK Health Services (NHS) as the *enterprise in focus*. The outer loop is the hugely complex management of COVID-19, the pandemic that we are

experiencing at the present time. The situation is one of an extended network of people and enterprises, including many government enterprises, dealing with COVID-19. From the perspective of complexity or 'variety' as is used in these notes, the NHS is experiencing a situation of imbalance of complexity with the huge complexity of the population being affected by the pandemic. From the perspective of *variety engineering* (Espejo & Reyes, 2011), the challenge is working out a selection of a *variety operators to balance the NHS's complexity with that of the population suffering the corona virus*. The design and selection of these operators is particularly relevant in today's globalized, and environmentally sensitive, societies. Because of complexity imbalances, most of this variety needs to be absorbed within society itself, leaving only a *residual variety* to be managed by the enterprise's variety operators (see Espejo, 1989). These operators are the enterprise's strategies to produce and make available their products and services, intertwined with the technologies in use. Each of these decisions generates complexity that the organizational system needs to contain structurally in ways that enhance its capacity to respond to environmental pressures. The current pandemic offers instances of mismatches between variety operators, such as in the case between the diagnostic tests necessary to work out numbers of infected people or numbers of people already possessing antibodies and the health and care services' response capacity. Both forms of testing seem to be out of balance with the operational capacity of hospitals, care homes and other services, or in short with the ECM emerging from the NHS. Increasing hospital and care capabilities to diagnose and receive infected people requires amplification of the hospitals', care homes' and other services' varieties, such as ambulances and medical general practices. At the same time, as the extended NHS learns about infected people and people with antibodies, it requires matching their varieties with those remaining at the front end of hospitals and of care services. The overall performance to counter the COVID-19 pandemic requires managing the balancing of ongoing interactions between people in the community and health and care services, that is, between people demanding services (that through their needs are amplifying demand) and health and care delivering services reducing the variety of those in need for these services (thus attenuating services' demand). As the Viplan Methodology and the above considerations suggest, structurally, flexible resources going beyond the NHS demand creating a much larger Enterprise Complexity Model (ECM), which includes care homes and other services, enabled by powerful scientific models, autonomous units, within autonomous units (i.e., *a recursive structures*) and other resources.

- *Structurally*, the NHS, among other resources, needs other enterprises, such as care homes, and communication and management systems to produce a *cohesive, adaptive and innovative, organizational system* to respond to community needs.
- *Modelling*, the support of better scientific models, such as strategies for social distancing, have emerged as most significant. Groups' response to COVID-19 is better if their members respect the distancing policy, more or less, at the threshold of 80%. At that threshold, the contamination levels are off; below that level, the growth of COVID-19 may go uncontrolled (exponential growth). It is apparent that the policy is effective at high levels of compliance with distancing. It can be argued that distancing is a form of variety management with significant social implications as explained by Stuart Kauffman in the link below: <https://www.youtube.com/watch?v=yZhOTsoNOUc&fbclid=IwAR3HdpBmPBar0Ymjn6EEcjtLYMN6lNzPBGsY-zc44mE6ozwiiwxHUKhHGq0>

This is a heuristic in the generation of ECMs. As new technologies and scientific models suggest alternative variety operators, most likely, their structural mapping will require alternative considerations about the distribution of autonomy and discretion (Espejo & Reyes, 2011). These are platforms to work out necessary structural changes to increase reflexively the quality of the network of enterprises related to the NHS, using the VSM as a heuristic, to respond to COVID-19.

ECMs offer different strategies to manage an enterprise's complexity. As already said, new scientific models and technologies are changing the nature of these enterprises. From the point of view of attenuating the pandemic, effective people's distancing policies have been driven by scientific models at the same time that the construction of new health facilities has been driven by increasing structural complexity supported by new logistic technologies. In these cases, key business functions such as finance and personnel have remained centralized, reducing the scope for entrepreneurship at lower structural levels. In this example, at a first glance, the unfolding of complexity is likely to be skewed towards the top. In other words, the scope for local autonomy appears to be restricted by the required services and their technologies. However, as discussed elsewhere, this needs not be so. Similarly, these local enterprises might well be networks of more specialized enterprises, whose viability is equally necessary, and so forth.

These examples highlight that the amplification and attenuation of an enterprise's complexity is driving the emergence of an ECM. In the NHS's case, it is clear as advanced before that in addition to the amplification of

its activities, it needs attenuators of environmental complexity. Without effective means to reduce undesirable local variations as a result of people's behaviours (e.g., people's weak response to distancing to 2 m.), that is, as a result of weak amplification of government's policies to attenuate local communities' behaviours, the overall performance of the NHS and society may suffer (e.g., more infections and deaths). This latter aspect shows that developing mechanisms for organizational cohesion, which respect the autonomy of suppliers and also increase trust between them, are necessary for services good performance. Furthermore, it needs to manage relationships between subcontractors, customers and a range of other agents. The more the NHS and its regional and local units enable direct interactions among local suppliers and between these and people in the community, the more environmental variety will be absorbed in the environment itself, reducing the residual variety that the government and the NHS need to manage directly. Similarly, there are a range of variety operators that the *extended* NHS needs designing in order to evolve towards an effective ECM. It needs making viable its own enterprise transformation, that is, its orthogonal transformation *vis-à-vis* those transformations of the hospitals and care services constituting the organizational system it leads. It needs capacity to create, design and implement networks (i.e., its own primary activities) to support local clinical services, which are the platform for the ECM own learning. These platforms are its strength and also its Achilles heel. It offers the strength of the great flexibility to reconfigure resources and develop new capabilities should the circumstances so require, but it has the challenge of building up trusting relationships with distributed enterprises which use different quality and coordination standards and make, among other aspects, more difficult complying with safety and security requirements.

Based on the above considerations, supported by variety engineering, the Viplan Methodology suggests managing people's current situation of lockdown towards a better management of complexity. Beyond the excessive centralisation of decisions at the level of the UK's government, it is necessary to consider more targeted measures under *local organizational systems*, constituted

by decentralized local health authorities, local care homes and other service authorities and local enterprises integrating *their own responses*. I'm proposing to discuss the integrated use of variety attenuators and amplifiers in the communities, including the introduction of iPhone tracking apps to enable people to manage their own interactions without centralization. In other words, getting out of the lockdown requires considering together variety attenuators of community aspects such as age, health profile, geography and sophistication of local services and variety amplifiers like levels of testing in the community and also sophistication of local services, to really be able to isolate cases and more effectively identify where transmission is happening to support with reduced risk getting out of the current lockdown.

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