Opinion

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Futures Literacy — Embracing Complexity and Using the Future

If policymakers want to address complexity, they must define and then use the future more effectively, argues futurist Riel Miller.

WHAT IS THE CHALLENGE? GETTING THE QUESTION RIGHT

The world is not more complicated or complex today than yesterday; when it comes to seeing and acting in any specific situation it is capacity that makes the difference, not the absolute number of permutations or even unfamiliarity. What seems complicated to a child may seem like child's play to an adult. In particular, what matters is the sophistication of our sense-making: our ability to discover, invent and construct the world around us.

To date, considerable effort has been made to improve sense-making capabilities. Policymakers call on familiar and intuitive methods of everyday experience (preparation and planning), as well as techniques (such as forecasting, horizon scanning, scenarios, expert opinions) considered adequate based on past perceptions of our needs and capacities. Nevertheless, the perceived proliferation of so-called "wicked problems" in recent times has added to a mounting sense of uncertainty, and called into question both the decision-making value of these business-as-usual approaches as well as their sufficiency in accounting for complexity in practice.

Recent advances in understanding complexity, uncertainty and emergence have opened up new ways of defining and using the future. The question is therefore not how to cope with a universe that seems to be getting more complex, but how to improve our ability to take advantage of the novel emergence that has always surrounded us.[1] We need to bring our capacity to use the future into alignment with both our perceptions of the complex, emergent reality around us, and our aspirations.

ANTICIPATORY SYSTEMS AND THE THREE DIMENSIONS OF THE FUTURE IN THE PRESENT[2]

In practical terms, embracing complexity means, at a minimum,[3] thinking about the future in terms of *anticipatory systems*, and being able to distinguish three types of future. It is failure to do so appropriately that more often than not muddles the sense-making processes supporting policy formation and implementation.

Since we live in an anticipatory universe,[4] characterised by time and motion, it is not surprising that many phenomena and organisations exhibit or contain anticipatory systems. Thus trees lose their leaves in anticipation of winter and humans plant crops in anticipation of hunger. Understanding the future from an anticipatory systems perspective takes into account animate and inanimate, conscious and unconscious mechanisms for integrating the non-existent future into the present.

Once the diversity of these "futures in the present" can be uncovered, the next step is to distinguish the three dimensions of such futures.

Contingency

Contingency futures are phenomena expressed within a system that emerge due to the intervention of an extra-systemic event. One can prepare for or pre-empt a contingency future, but when it happens, it arises from an exogenous force. This potential of the present rests on the threats or opportunities posed by external forces. Threats can take the form of predators or disasters such as tsunamis, earthquakes, pandemics or other wildcard events. Contingency futures can also be positive such as winning the lottery or having resources beneath desert sands suddenly become valuable.

Contingency futures can be imagined and even calculated probabilistically. Although statistics and odds are just informed guesses and "black swans" can pop up at any time, human beings have become fairly good at preparing for contingent futures. We use simulation and rehearsals (emergency drills) to generate adaptive capacities (open minds, transparency, good communications) that allow us to react to contingency futures that emerge from outside forces.

Optimisation

Optimisation futures are things we believe can be "caused" to happen in the future through premeditation and planning, generally in circumstances where the rules and resources are assumed to be fixed. The idea is to impose our will on the future —

imagining, if "all goes well", that we can "colonise" tomorrow so that it conforms to our desires and expectations. Here, the potential of the present is like a chess game, with many possible permutations and alternative paths, but the ends, means and rules of play are given. Farmers plant seeds with the expectation of a future crop, knowing full well that many factors can intervene in the meantime: from locusts and war to good weather and enough "hands" to bring in the harvest.

As with contingency futures, humans have become pretty good at managing optimisation futures. Even when efforts to shape the future may only be partially successful, we have generally offered the rationale that the end (e.g. having food to eat later in the year) justifies the means (imposing a plan).

Exploration-Discovery

However, the potential of the present goes beyond contingency and optimisation futures. A top-notch plan to improve the product line and beat the competition may be rendered entirely obsolete as novelty emerges. Toyota may beat GM because the way it plans its production of cars is better than that of GM, but the decline of the automotive era can leave both high and dry. Of course, emergence-driven systemic transformation need not be fatal, but the question is how to perceive it and use it. The first step is to recognise this distinctive category of the future.

Exploratory futures are those aspects of the present that need to be discovered. Exploration is about "seeing" the present differently; novelty and discontinuity are hallmarks. Exploratory futures are about identifying and making sense of phenomena that emerge like the Big Bang: part inspiration, part legacy, part chance, and part mystery. Exploring this dimension of the potential of the present is a delicate and ephemeral balancing act when compared to optimisation or contingency, and depends on the paradoxical, even contradictory task of building scaffolding that enables "rigorous imagining".

The danger is that formal, preconceived sources of inspiration, intended to enable discovery, are all too often exactly what snuffs it out. By insisting and imposing the patterns, words, and ideas of the past on the present, the new and not-yet-meaningful cannot be invented and brought into our sense-making processes. Exploration is not about the paths not taken — which are only the possibilities of the past brought to life by the present. Instead, it is about futures unimagined and hence a present that does not *yet* make sense.

Until recently, most deliberate systems for anticipating the future

have only addressed the first two dimensions of the future: both of which can be understood in ways that largely ignore complexity. It takes all three, incorporated into our anticipatory systems, to see the rich potential of the present.[5]

MAKING EXPLICIT OUR ASSUMPTIONS ABOUT THE FUTURE

There is nothing unusual about making explicit the "assumptions" underlying policy choices: this is just best practice. In general terms, a "good" policy process will have explicitly considered the nature of the model(s) being used (and hence its assumptions — including ones about the future), although the details of such an analysis may be in the background documentation rather than in the main text.

However, all too often the assumptions that underlie a model used to conduct a policy analysis are constrained (for a variety of reasons) to either:

(i) simple presentations of why the assumptions are considered "reasonable" simplifying depictions/predictions of "reality" in the present and future, or

(ii) descriptions of "givens" that are considered exogenous to the model — imposed by an outside force of some sort and usually assumed to apply in the future.

Such limitations do not pose much of a problem when it comes to "contingency" and "optimisation" futures, since in such cases the subject is already constrained by specific operational or current configurations of the system — no changes in the conditions of change need to be taken into account.

Such is *not* the case when trying to address complex phenomena rife with emergent novelty. These problems pose a design challenge — how to live with and use the creative novelty of the universe. The challenge is to find practical ways to use the future as part of the process of discovering and creating the present.

This is different than meeting the implicitly optimisation-oriented challenge posed by Douglass North when he pointed out that most of the models being used for policy analysis are ergodic,[6] failing to incorporate changes in the conditions of change. North was highlighting the fact that most policy analyses, rooted in attempts to estimate what will happen in the future, still fail to consider how the policy goal might change or be achieved differently under different conditions or when looked at in the light of other models.

Instead, we should abandon the effort to try to be so clever that we can choose the right model, find the right data, or make the best guess. There

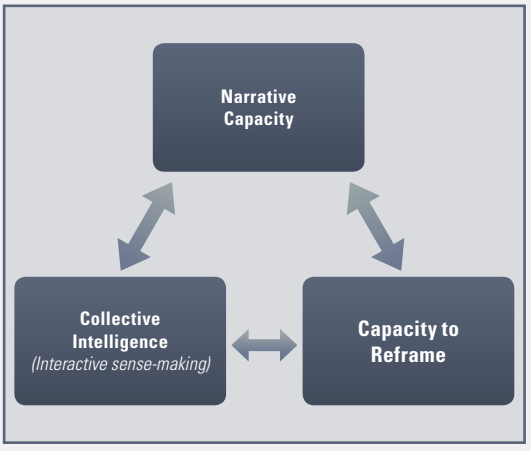
is no way to outsmart the complexity of reality; unforeseeable novelty is a certainty. Instead, the approach should be to try and develop the capacity to use the future in a range of different ways, and not be limited by prediction or by narrow conceptions of a desired future. It is about being Futures Literate.

FUTURES LITERACY AS THE CAPACITY FOR IMPROVISATION

A Futures Literate policymaker is able to identify and distinguish different forms of the "potential of the present"; to use the future in the same way that an accomplished reader can distinguish and invent (co-create) many meanings from a given text. As a specific approach, Futures Literacy (FL)[7] focuses on the capacity to discover and invent anticipatory assumptions. FL enhances the sophistication of our anticipatory systems.

Working through structured conversations that treat the future as an explicit part of shared sense-making, FL approaches complexity not by abandoning assumptions about the future, but by better understanding the different kinds of futures we use when we make decisions and enhancing the richness of each. FL encompasses traditional techniques for discovering what might happen in the future — contingency and optimisation futures that are depicted with the help of a vast range of familiar predictive and probabilistic methods. However, what makes FL distinctive is the integration of anticipatory systems and the different categories of the future into each phase of the action-research processes of sense-making and making sense.

FIGURE 1. FUTURES LITERACY AS A LEARNING PROCESS



As indicated in Figure 1, the foresight process must be designed using a threefold framework that pays equal attention to:

1. **Narrative** — developing sense-making frameworks and stories that are meaningful to the participants in the process and "targets" decision makers relevant to the process;
2. **Collective intelligence** — generating evidence through action research that uses imaginary futures to invent and create collaborative maps, enabling all participants to bring

their deep and specific knowledge into the "story";

3. **Reframing** — using "rigorous imagining" to develop and question the theories and models that define the variables and relationships, metrics and definitions being used to make sense of the present (note: pattern recognition/data mining is insufficient).

The point of FL is to become more adept at inventing imaginary futures: to use these futures to discern system boundaries, relationships and emergence; to invent and detect changes in the conditions of change; to rethink the assumptions we use to understand the present. The emphasis is on the imaginary: since the point is not to test present assumptions against some predictive future, but to use the future to question, unpack, invent what is going on and what is doable now.

By increasing our capacity to improvise and be spontaenous, live with permanent ambiguity and novelty, FL frees us up to go beyond the predictable, and enables us to embrace complexity.

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NOTES

1. Reality is not more or less emergent from one moment to the next, even if the dominance and stability of systems and hence degrees of openness and adaptation vary over time and context.
2. Adapted from: Miller, Riel, "Which Anticipatory System for University Foresight," Chapter 6 in *The For-Uni Blueprint: A Blueprint for Organizing Foresight in Universities, Executive Agency for Higher Education and Research Funding*, (Romania, 2010).
3. In my view, there are three necessary components to being able to effectively "use the future" for decision-making. Understanding all three is what I call being Futures Literate and entails a practical grasp of a) anticipatorysystems, b) the three ontological aspects of the future, and c) scientific sense-making capabilities. As a capacity, Futures Literacy provides a command of the "design principles" that can be applied constantly in order to use the future to embrace complexity.
4. For an exploration of this topic, and a discussion of "what is the future", see Special Issue: Anticipatory Systems and the Philosophical Foundations of Futures Studies, *Foresight*, Vol. 12, No. 3, Emerald, 2010.
5. This is a way of connecting a multi-ontology reality with a multi-epistemology design for action. See Aaltonen M., *The Third Lens: Multi-ontology Sense Making and Strategic Decision Making*, (Ashgate, 2007).
6. "Ergodic" describes a model or system that remains stable over time. To use the terminology of Karl Popper, an ergodic system is one in which there is no "change in the conditions of change".
7. Riel Miller, "Futures Literacy: A Hybrid Strategic Scenario Method", *Futures: The Journal of Policy, Planning and Future Studies*, 39 (Elsevier, May 2007), pp341-362, and "From Trends to Futures Literacy: Reclaiming the Future", *Centre for Strategic Education, Seminar Series Papers, No. 160* (Melbourne, Australia, December 2006).