“The straight warp of necessity, not to be swerved from its ultimate course – its every alternating vibration, indeed, only tending to that; free will still free to ply her shuttle between given threads; and chance, though restrained it its play within the right lines of necessity, and sideways in its motions directed by free will, though thus prescribed to by both, chance by turns rules either, and has the last featuring blow at events.”

Herman Melville, Moby-Dick

Why does the future matter?

Keynes famously said: “In the long run we are all dead.” In this sense the future doesn’t matter. Although, we often try to haunt our children by attempting to impose our idea of what’s best into the future. Mostly such efforts to “colonize” the future don’t work. Things just turn out differently than expected or hoped for – for both good and bad. What’s more, if we’re any indication, there is little appetite in the present to abide by the strictures or expectations of past generations. And frankly who can blame us, what did past generations know about our situation now?

So if the future doesn’t matter for the future, why does it matter at all?

One reason, there are certainly others, is that the future matters because the way we imagine it plays a major role in the choices we make today. So, even though the future is unknowable, does not exist yet, and cannot be predicted, the way we imagine it still influences, often profoundly, what we do in the present – the future now.
Anticipatory systems

Anticipation is such a familiar activity that we often don’t think about it. Look at the cartoon of Bugs watching Elmer depicted below, it is clear that the clever rabbit is many steps ahead of the plodding hunter. Bugs has a better anticipatory system than Elmer.

A schematic representation of Bugs’ anticipatory system can be reduced to a subject (S), in this case Bugs, a model (M) of Bugs, and an effector system (E), which in this example is Bugs’ capacity (volition) to direct himself (S) to get out of his rabbit hole.

The input, that gets the whole process going, is when Bugs hears Elmer coming. This sound is a source of information, data that is fed into M – a model of Bugs and his survival. The model allows Bugs to speed up time, to imagine a point in the future, a little story about what Elmer might do when he arrives at the rabbit hole.

This imaginary, model generated story of the future is then transmitted (1) to Bugs’ effector system (E) leading to a decision and instructions (2) to Bugs’ legs (S) to get him out of the burrow right pronto – the output being that the object system (S - Bugs) can then look at Elmer when he fires the shotgun into Bugs’ burrow.

Of course Bugs is not a machine and he doesn’t think about the inputs, models, effectors, and outputs of his anticipatory system. He just does it. Also the mechanistic type drawing of a “system” compartmentalizes and sequences in ways that are much too neat, real anticipation is a much cloudier process with a myriad of inputs and outputs, conscious and unconscious perceptions and motivations.

The fine print: The idea of anticipatory systems and the schematic illustration of how such systems work is useful for thinking through a part of the process whereby the future enters into our actions. Depicting anticipation in this mechanistic linear fashion need not deny that almost all of the inputs and outputs, as well as the attributes and “functioning” of the model and effector systems, are constructed and shaped (reflexively) by our ways of seeing and through interactions. Myths, of good and evil spirits, ghosts and gods, combine with instinctive fight or flight reflexes in ways that are layered on our internal and external rules of what is good or safe or dangerous. What we do and how the future enters into it, is indeterminate and complex. What we grasp by thinking about anticipatory systems and a schematic process of the functioning of such systems is not just partial or incomplete, it is illusory. A necessary illusion perhaps, one that offers some comfort to our volitional capacities, regardless of reality’s ultimate indeterminacy (see the Annex).
Refining anticipatory systems

Okay, so the future matters because it is part of our anticipatory system, a system that influences our actions – what we do. Thus anticipation, the future, is the story that gets developed in a model of some subject that can then be projected forward in time to a moment that doesn’t exist but can still be imagined. This means that the way we generate the story or how the anticipatory model works is pretty important for the overall functioning of the system. [The effector system and the capacity of the subject to act on the effector system’s impulses matter too, but for now let’s concentrate on how the future enters into the picture].

Are there different kinds of future?

There are many ways to generate the stories that help us make sense of the future. Researchers in the field of Futures Studies have developed and catalogued a wide range, from familiar forecasting methods that offer a probabilistic story of tomorrow’s weather to the cold-war vintage expert polling technique named after the oracle of ancient Greece, Delphi. However, prior to producing any story there is a philosophical question, usually left implicit, “what is the future?”

Although at first blush the answer may seem self-evident, “it happens later”, the definition is highly dependent on a variety of assumptions and cultural-historical conditions. So, for instance, in places like the U.S. most people “greet” the future by looking forward, while in some other cultures the future arrives from behind as we look backwards into the past. Here, for the sake of brevity and to stick to the point, I offer a three dimensional categorization of the future in the present (since only the present exists).

Two of these categories of the potential of the present or “what might happen” - **contingency** and **optimization** – are quite familiar. Humans are fairly adept at using their anticipatory systems (models, effectors) to act on these two dimensions of the present. The third category is harder to pin down and we have much less experience with “being” **exploratory**. It takes all three to see the rich potential of the present – to be and become.

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2 Adam, Barbara, Future Matters: Action, Knowledge, Ethics,
3 These categories of the “potential of the present” rest on a set of prior hypotheses about the universe – see Annex A.
4 This is a way of connecting a multi-ontology reality with a multi-epistemology design for action. See Aaltonen, Mika, The Third Lens: Multi-ontology sense making and strategic decision making, Ashgate, 2007.
Contingency

Contingency futures are those aspects of the present that have the potential to happen due to an outside event. One can hope to prepare or pre-empt a contingency future but the potential for it to happen is not contingent on the phenomenon that is acted upon.

This potential of the present exists in the dangers and opportunities posed by outside forces, like predators (tigers, cars) that if one is not careful can kill you and that also take the form of emergencies (wildcard events – high impact, low probability) such as a tsunami, an earthquake, pandemics or, alternatively, good things like winning the lottery or the chance discovery of a suddenly valuable resource (oil, gold, lithium) beneath desolate sands or jungle (good for income, bad for preserving a culture in an unchanged state).

Be it a tsunami or winning the lottery, contingency futures can be imagined and even calculated probabilistically. Such as, on average the chance of being hit by a sports utility vehicle while sitting in a Starbucks coffee shop is less than if you are crossing the street. Although when I was in Berkley a few years ago an SUV did come flying through the door of the Starbucks coffee shop I was in, luckily causing only material damage. Still, statistics and odds, as any punter knows, are just informed guesses.

Yet, humans are fairly good at this kind of “approximation” story that helps us prepare for the unexpected outside force. Here again I have a personal anecdote about how my life was saved by a flight simulator. No, I didn’t pilot a plane based on my experiences landing computer generated bi-planes. Rather the pilot of the twin engine turbo-prop that I was in, on a stormy night in February heading out of Quebec City, explained after we’d landed safely, that if he hadn’t practiced in a flight simulator, just the week before, how to recover after losing an engine, that none of us would have lived to tell the tale.

When it comes to the contingent potential of the present, games, simulations, practice adapting, openness, stockpiling general purpose tools, etc. are what serve us best.
Optimization

Optimization futures are those aspects of the present that 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.

Here the potential of the present is like a chess game. There are many permutations, different paths to the goal, but the ends, means and rules of play are given. Farmers that plant seeds in the ground with the expectation of harvesting a crop in the future know that there are many phenomena that can intervene, from locusts and war to perfect weather and enough hands for the harvest. The play the game, using their best know how to get to the goal and fully aware that it is not certain.

Of course it is well known that pursuing a plan (a path of action decided in the past) cannot take into account much of what happens, the messy and complex parts of reality that are continually reminding us that goals, rules and resources are all open to change. But generally speaking, if the end is deemed sufficiently important, like planting grain so that there is food to eat later in the year, then proceeding as-if things will go as planned is deemed acceptable and often necessary.

For much of human history the end (survival) justified the means, including ignoring new information arising out of change and even changes in the conditions of change. Indeed as recent examples from the crisis exemplify more effective optimization still matters (superior reform), Toyota beats General Motors in planning to produce cars, but at the same time, the end of the automotive era signals that industrial organizations operate in a new context. The potential of the present goes beyond optimization.

Even for the most agile or flexible entity that displays strong resilience, able to sustain or preserve its “nature”, the assumption that the goals, resources and rules are given fails to encompass the emergent, spontaneous and serendipitous attributes of reality as it assembles from moment to moment. Which brings us to the third category of the potential of the present: exploration-discovery.
**Exploration-discovery**

Exploratory futures are those aspects of the present that cannot be known but can be conjured, in one way or another, either to reveal new patterns or to form part of the necessary, albeit not sufficient conditions for spontaneity. Here the potential of the future is really in being able to “see” the present differently because what one imagines in the future is different.

Novelty and discontinuity are the hallmarks of this dimension of the present – and in a way it only exists once it is seen. Unlike the tromp l’oeil images that is either a glass or two faces, depending on how you decide to look at it, these spontaneous phenomenon are not just waiting to be discovered but must happen in that mysterious bang that is part inspiration, part legacy, part chance and part mystery. The spontaneity of the present.

Exploring the potential of the present is a delicate and ephemeral balancing act when compared to optimization or contingency. As intimated by the famous Thomas Edison quote that “genius is one percent inspiration and ninety-nine percent perspiration,” explicit efforts to discover the potential of the present (without which it might not even come into existence) depend on the paradoxical, even contradictory task of building a scaffolding for the imagination.

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, ideas of the past on the present the non-existent cannot bang into existence. Exploration is not about the paths not taken, it is about the futures unimagined and hence the presents that never existed. No dance, no improvisation.
Context Makes a Difference: More or Less Contingency, Optimization and Exploration

Not all moments in the life of a person, an organization, or a community, are the same. There are times when the necessity of survival or ideology or chance either allow or impose simplification. When the goal is, for whatever reason, taken as given – surviving a pandemic or producing a given product, with fixed resources and accepted rules, then even if the situation is complicated the appropriate approach is one of simplification, simulation and comprehensive analysis. So a computer can eventually beat the best human chess player – the goal was clear, the resources set, the rules unalterable – and the computer could simulate millions of solutions a second in order to ultimately find the best one and win.

But many situations cannot and should not be reduced to a given goal, fixed resources and set rules. Much of the world around us is fundamentally indeterminate, and most of what we care about, like what happens to a person over the course of their life or the path a society actually ends up taking. Spontaneity, giving rise to its mercurial progeny chance, has the final say at events, as Melville pointed out in the quote from Moby Dick cited at the outset. Accepting the complexity of much of our world, particularly when the immediate question of survival is not constraining our willingness to let go, and choosing openness, particularly when it corresponds to our values, puts the burden on exploration.

Knowing when to think about the potential of the present and in what way is not just a luxury, the moment when we say “oh what the heck, let’s be open minded”. It is a necessity if we are not to confuse and destroy our desire to be free and creative.
History: Values and Means – Locating an Exploratory Learning Society

As the human desire and capacity to embrace complexity changes then so too does the mix of ways of thinking about the potential of the present. For decision making this is a fundamental question: what is the context for the decision? Is it a context where the organizational solution, the manageability is high or low? Are the actors and tools predetermined, invariable – the man is an employed worker in a factory using a given machine, a lathe, to produce what he is told to produce. Or is there a margin for co-creation, the openness of not knowing, discovering, inventing and transforming the man, the factory the lathe, into something previously unimagined? In this context the world becomes ambiguous and reflexive; it is emergent and undetermined.

This does not mean that all of reality becomes so open, nor that we can dispense with all layers of necessity and hierarchical management. The world around us is a mixture, an assemblage of contexts that coalesce moment by moment, swirling in clouds with different degrees of inertia and spontaneity, different durations and densities, different weights and connectedness. Into this mixture comes human volition; our desire to bring values and rigor to our complex reality. For a long time, particularly in the industrialized parts of the earth, we have been pretentious and successful, imposing our will on a pliable environment that is indifferent to our designs. Optimization and hierarchy worked well, the top-down flow of power, from conception to execution, from preconceived goals with fixed resources and set rules to implementation, prevailed.

Taking a different approach, one that does not abandon the aspiration of living according to our values and searching systematically for the “best” solutions, calls for a more heterarchical, exploratory way. A capacity to put learning, and the banal creativity with which every human is gifted, into practice by inventing stories that are able to discover and include spontaneity. A learning society where the gradual, almost always hard fought school of experience, puts wisdom at the core of being. One way to help make this doable is to take an approach I call “futures literacy”.

![Management/Optimization Contexts, Reflexivity and Freedom](image-url)
What is Futures Literacy?

Futures literacy (FL), like alpha-numeric literacy, is a capacity. It is the capacity to develop and tell anticipatory stories. FL is a practical tool, such as being able to read and write, that enhances the way we use M, the model, in our anticipatory systems. A futures’ literate person is able to recognize and recount different forms of the potential of the present, just the way an accomplished reader can distinguish fiction from non-fiction, a detective story from a romance novel.

But what is fundamental about FL is that it anchors the future in the act of creating the present. FL only exists within multi-ontology being, a capacity of anticipatory systems to assess and invent the contingency, optimization and exploratory stories that are the simultaneous dimensions of the potential of the present. FL is done through structured conversations that bring disparate elements, depth and breadth of knowledge and information into a partially shared sense-making framework.

Practicing and acquiring FL entails learning-by-doing processes that go through the typical phases of the learning curve. Level 1 is relatively easy, it calls for the development of a common discourse around values, expectations and the subject of conversation. Many catalysts work for this discussion, including foresight tools like scenarios and “real-time” Delphi. Level 2 is the steep part of the learning curve and calls for processes that build up structured imagining, with different rules (epistemologies) for the different dimensions (ontologies) of the potential of the present. Finally Level 3 closes the circle, ending the reflection as choice assembles reality in the “thickness” of the present.

One way to learn how to be futures literate is to engage in a hybrid strategic scenario process that moves step-by-step through the three levels of FL.5

Futures Literacy: Being with Multi-ontology Anticipatory Models

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Annex A: What is the future?

One way of defining the future is to make a few explicit assumptions about the universe:

- Spontaneity: The Big Bang is a constitutive attribute of the universe we are in now – in other words it is a fundamental attribute of this reality that something from nothing can just pop into existence (there are no dice). Note that this does not necessarily mean that there are no preconditions, just that such preconditions are necessary but not sufficient (call this ingredient with no prior existence, the mystery of the universe). A corollary of the original Big Bang is that everything in this universe is in motion – in space and in time. The existence of duration is a constitutive attribute of the future.

- The present is actionable: The present is that moment when things “happen” and time travel is impossible, which means you cannot act in the past or in the future, even though phenomena of the past can – in a variety of ways – have a “presence” in the present, as can what we imagine about the future (the impact of anticipatory models noted above). The future, however, is not actionable, nor is the past. There is an asymmetry between the past and future, the former offers legacies in the form of accumulated things, ideas, people, etc., while the latter does not (there is the legacy of past ways of thinking about the future, but that still isn’t the actionable future as an outcome of what happens).

- Indeterminacy. The present does not determine the future, which means that even if we had a perfectly complete data base of the nature and status of all phenomena in the present and a perfect model that could calculate all of the interactions, causes and consequences arising from phenomena, reality as it assembles moment by moment is composed of two additional elements – spontaneity (as per above, something from nothing – ah ha type discontinuous novelty) and chance (which is just a quantitative artifact that arises from the density of matter leading to collisions – this is not random except in so far as spontaneous choices, to take path a rather than path b, leads to a collision).

Given these three assumptions what is the future? I would use a term like “potentiality” – the future is potentially something, only we don’t and can’t know what. So, what then is the ontological or attribute of reality of the future in the present, if the present is defined as what exists – the “actionable” or “existential” phenomena of now? [A whole set of other ontological questions relate to now, but for now let’s focus on the future in the now]. I would argue that the future exists in the present as the three fold potential – of spontaneity (discovery-creativity where in the present spontaneity happens); of actionability (what we do with the future in mind); and of indeterminacy (chance or contingency). Logically these correspond to the three categories or ontological dimensions of the future in the present.

A few references:

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