

Three Maps for Navigating the Ocean of Alternative Futures

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Abstract

This paper presents three maps or extended metaphors of the human future: as a hemisphere, as a bamboo thicket, and as fish in a river.

The hemispherical model, inspired by Inayatullah's Causal Layered Analysis, plots drivers of change on four levels of successively greater inertia: events, intentions, values, and worldview. The thesis here is that events are influenced by intentions, intentions by values, and values by worldview. Events change constantly; intentions change every few years; values change perhaps over ten years, and new worldviews, being a permanent characteristic of individuals, emerge once in a generation. Because each successive level changes more slowly, the general direction that a human future will take - if not its precise details - can be known in advance.

The "bamboo thicket" map reveals the collectivity of human futures by displaying the interlinking of holonic systems. As the future of an entity is mediated through the future of its neighbours, studying the actors through which this mediation occurs is an aid to anticipating the entity's future.

The "fish in the river" map places futures as three independent dimensions: time, uncertainty, and striving. An entity can be represented in this river-space in multiple ways, through the perceptions (actual or believed) of related actors or stakeholders.

The implication of using this approach to multiple maps is that, by switching their attention between the different view-points illustrated in these maps, participants in futures workshops are helped to attain greater insight into the shared aspects of their futures.

Introduction

In the same way that the three-dimensional sphere of the Earth is mapped onto two dimensions using a variety of projections (such as equal-area, equal-angle, and equal-distance), various ways of seeing into the future might also be regarded as projections. By analysing possibilities from various angles, we can be enabled to synthesize alternative futures more clearly.

This paper describes three types of maps, expressing futures as:

1. a hemisphere;
2. a bamboo thicket.
3. fish in a river;

Some readers might prefer to think of these as metaphors - but because they are very extended metaphors, I refer to them as maps. Whether maps or metaphors, their purpose is to stretch our thinking: comparing them with our perceived surroundings can help us to work out our location and direction.

The value of metaphor in imagining the future was examined by Judge¹, who goes on to consider linguistic

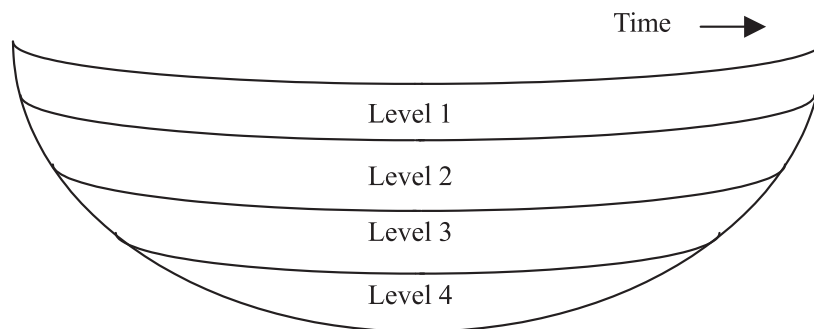
traps that can influence the ways in which people think of the future, both constraining and enlarging. King² demonstrated that maps themselves can become a force for historical change, creating and changing the reality that they claim to portray. The action research approach I have been taking in recent futures workshops is intended to help find ways of using metaphors and maps to expand participants' views of their possible futures.

This paper is presented from an avowedly anthropocentric viewpoint: the futures it consid-

ers are human futures, not (say) the futures of the planet. It's not that the latter are unimportant, nor that there's no interaction between the human and the physical, but my starting point is that the futures of people are mostly mediated by the beliefs and actions of other people.

1. Mapping the Future as a Hemisphere

Inspired by Inayatullah's Causal Layered Analysis^{3,4} I envisioned a hemispherical way of



viewing the future, in four levels:

Think of this as the southern half of the world. (The northern hemisphere wasn't quite suitable, as explained below.) On this hemisphere, time progresses: from left to right on the diagram. Around the equator, change is rapid, but at each successively lower level, change becomes slower, and inertia and time-lag increase. Though many people define the future only in terms of events, the theory behind this map is that change (and thus the future) happens at various levels, but different levels change at different rates.

Why four levels?

Like Inayatullah⁵ I have distinguished four layers. Slaughter⁶ mentioned three layers, Hollinshead⁷ distinguishes seven, Boulding⁸ names nine, and in TQM, Mizuno⁹ uses five - but all our purposes and contexts are slightly different. The actual number is arbitrary, but four levels are sufficient to make the point.

Inertia and trends

One reason for envisioning the four levels as a hemisphere is to use an Earth-like metaphor. A person who is standing at the equator is spinning at some 2000 kilometres an hour, but near the South Pole, the movement is extremely slow. The lower the level, the slower the change - and the more delayed its effect. So in terms of this hemispherical model, a "trend" corresponds to a change in the strength of a force at a particular level. Using multiple levels allows us to disaggregate trends into four types: trends in events, in motives, in values, and in worldviews. Trends have a quality of inertia, equivalent to mental baggage: they are slow to gather momentum, and equally difficult to stop or divert. The deeper the level, the greater the lag.

Level 1: events

The top level of the hemisphere, at the equator, is the time-bound world of events. Though not the same as the "litany" of

..... **THREE MAPS FOR NAVIGATING THE OCEAN OF FUTURE**

Inayatullah's CLA, it shares the shallowness of that concept. If it's lack of time (and interest) that causes the litany, it's time itself that's the framework for these events. This is the quantitative view of history: as with a class of children reciting "1945, atomic bomb dropped on Hiroshima." It tells us when, but not why.

Though one event can directly cause another (one example, relevant to Kure, is that a major earthquake might cause a tsunami, severely damaging that city) most events in the hemispherical model affect other events only by mediation through the human brain. In other words, most "events" are social constructions. They can thus be of different scales, nested inside one another. For example, "atomic bomb dropped on Hiroshima" is part of the larger event "World War II." The more significant an event, the lower its position in the first level, and the more liable it is to reinterpretation.

If events seem to occur at random, without a discernible pattern, perhaps it is because they are being driven by forces that emanate from lower levels of the hemisphere. I distinguish three levels of these forces, provisionally labelled intentions, values, and instinct.

Level 2: Short term forces; intentions

Much that happens in human affairs is not an event that can be precisely placed in time. Thus the next level down contains the proximate causes of the events in level 1. These causes could be variously described as forces, trends, drivers, actors' motives, or (in the language of conflict management¹⁰) triggers and inhibitors. Their common property is that they respond to events, and thus tend to last for only a few years.

Perhaps the most suitable label for this group of forces is "intentions" - either individual or organizational. This springs from a constructionist viewpoint, with which not everybody might agree. This level also involves the problematization of the assignment of cause: in other words, the interest is not so much in "A causes B" but more in why participants believe that to be true. The word "cause" here is used in the sense of "influence," not the mathematical sense of "if and only if."

Also in the second level, though less obvi-

ously an intention, is the way in which events seem to make other events happen, through inertia or what has been labelled "path dependence"¹¹ - for example the use of the QWERTY keyboard. The "intention" here (stretching the label somewhat) is reluctance to change a habit.

Level 3: Medium-term forces; values

If intentions influence events, what influences those intentions? Here we must look at deeper social factors, such as values, expectations, and hopes. For example, in *The Bridge on the Drina*, the novelist Ivo Andric¹² describes how the construction of a railway to Bosnia in the late 19th century enabled people to travel to Vienna (capital of the Austro-Hungarian empire) for study. In Vienna, students learned that self-determination might be possible, and brought these new values back to Bosnia by train. The revolutionary movement germinated, and eventually Archduke Ferdinand was shot, which supplied an excuse for beginning World War I.^{13,14}

Thus the shooting of Ferdinand was level 1 (an event), helped along by the development of railways and of international study (lower level 1), which increased the awareness of students (level 2), which in turn fanned the force of nationalism (level 3). Of course, this is an oversimplification: no human event ever happens for a single reason.

In this layered model, events are influenced by intentions, and intentions are influenced by values. The layers become successively deeper, and less accessible to inspection. That's why the diagram is of the southern hemisphere, not the northern: the metaphor of depth doesn't fit, because the "deepest" forces would be in the sky.

At the third level, which roughly corresponds to Inayatullah's "worldview" level, change is slower still. Notice, that as we go down from level to level (as if deeper into the earth) we gradually leave cognitive processes behind, slipping from the heights of the cerebral cortex to the instinctive reactions of the mid-brain.

Level 4: Long term forces; instinct

To discover the sources of the third level, we need to descend to the fourth level, which

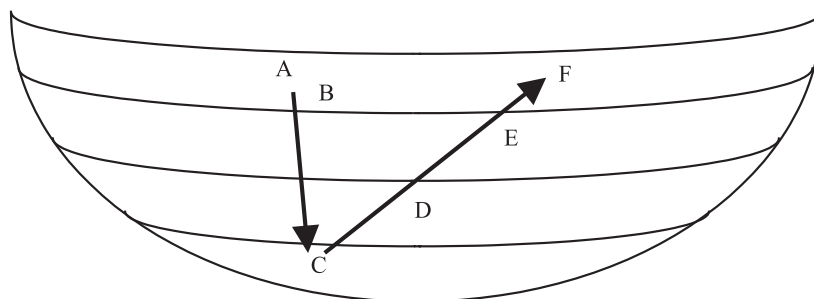
changes more slowly still. At this level, people find it hard to change their way of thinking - even if they want to. On our hemisphere, we're now down at the South Pole. Substantial change must wait for the next generation to be born, and to collectively evolve a new set of values during its education. For individuals, level 4 might be labelled "instinct"; for collectivities, "world-view" is not quite strong enough. This level involves the collective unconscious¹⁵, tacit understanding¹⁶, and perhaps what Bloom¹⁷ calls the "global brain."

For example, in the context of the "former Yugoslavia" how did those ancient animosities break out so quickly in 1991-92, when several parts of the country split away? Perhaps Level 4 corresponds to a level of autonomic arousal so deep that it's scarcely capable of change by individuals. "Things learned with their mother's milk" perhaps: such as fear of the secret intentions towards one's own group among the Other - which in the former Yugoslavia practises a different religion, and writes with a different alphabet.

Interrelationships of the four levels

I submit that in the human world, events do not directly influence other events, but that their influences are mediated through lower levels of the hemisphere, and return through V-shaped paths of various depth (i.e. of impact) and width (i.e. duration).

This proposition can be illustrated by a widely known example: the terrorist attacks on the US in September 2001. These came to public notice as a series of events (shown as A in the diagram below), which coalesced into a group of events referred to as "9-11" (B), which, through the news media, caused an unusually strong impact on many Americans at level 4: fear (C) that their homeland could be attacked on a large scale. The unusual penetration of an event directly to level 4 brought about social disquiet (D) that set in motion political processes (E) for further events (F), such as a military attack on Afghanistan, and sporadic attacks on mosques in the US.



Just as the initial attacks had their own genesis (the result of a previous V) the outcomes of war in Afghanistan have spawned a new set of consequences: a subsequent V, to the right of position F above. Note that reactions from lower levels have more diffuse effects than reactions from upper levels: something that penetrates to level 4 (as did the 2001 terrorist attacks on the psyche of Americans) is likely to have wider-ranging effects than a V that penetrates only to, say, level 2.

In the hemispherical map, the deepest level is not easy to uncover, but when looking at the ways in which recent events have influenced

other events, describing V-shaped paths gives participants more insight into the drivers at the deepest levels.

The ladder of "five whys and five hows" used in Total Quality Management¹⁸ expresses the idea that the ultimate purpose of any action can be revealed by successively asking "why", while the achievement of any purpose can be revealed by successively asking "how". A "why" question in one direction on this ladder is equivalent to a "how" question in the other direction. For example:

"Why did the US attack Afghanistan?" - "To rid the world of terrorists."

..... THREE MAPS FOR NAVIGATING THE OCEAN OF FUTURE

"How did the US rid the world of terrorists?" - "By attacking Afghanistan."

As that example demonstrates, Mizuno's ladder is useful for revealing fallacies in thinking, but is simplistic in positing only one How for each Why, and vice versa.

Since the hemisphere map relates events and their causes, rather than actions and purposes, the TQM ladder can be converted into a set of scaffolding, with multiple ladders. When considering events and their causes (instead of actions and their purposes), "why" and "how" have almost the same meaning: they both seek explanations by going backwards in time. So instead of moving up and down through the layers of the hemisphere by asking "why" and "how", we need to ask "what could have caused that?" and "what could flow from that?" The intention here is to focus on the layers, more than on the progression of time - though that is always associated, to some extent.

2. Mapping the Future as a Bamboo Thicket

One factor is glossed over in the hemispherical map: its implication might be that anybody can choose their individual future, and that everybody's future can be different. Though this is a sub-text that emanates from books on strategic planning, it's also true that these books tend to originate in North America, and people in that part of the world have an uniquely positive perspective on the power of individuals to determine their own future. This was demonstrated in a recent international survey of public opinion¹⁹, in which 65% of U.S. respondents disagreed that "success in life is pretty much determined by forces outside our control." The average figure for the other 42 countries surveyed (apart from Canada, at 63%) was 37%.

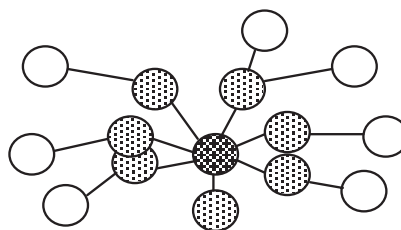
To simplify the above discussion, I implied that futures were a property of individuals. Of course, any human construct can have a future, including organizations, regions, industries, technologies, ideas, and behaviours. A convenient way of subsuming all these constructs, as well as their subsets and supersets, is Koestler's²⁰

concept of holons: approximately equivalent to a broadening of the concept of human systems²¹. Any holon can be regarded as simultaneously a component of a larger holon, and an aggregation of smaller holons.

Inayatullah²² lists 16 metaphors for the future. As if that wasn't enough, and having already added a revolving hemisphere and fish in a river, I propose yet another: the bamboo thicket. Imagine each holon as a bamboo stalk. At any point in the life of plant, the stalks in a bamboo thicket are in a particular spatial relationship to one another. As the plant grows, the relationships diverge slightly. The bamboo stalks will bend away from other vegetation to reach light, but toward it for shelter. The effect is that, because the stalks themselves crowd out some light but share common roots, each stalk will grow more or less in parallel with its neighbours.

In this map, corresponding forces draw people simultaneously together and apart. How can a bamboo thicket be a map? Well, if a cross-section of the stalks in the thicket is taken at several (vertical) intervals, this will record a history of the changes in the relationships between stalks. In practical terms the individual stalks represent holons (as people, organizations, geographical areas, or other types of systems,) each exerting some type of pressure on the central holon (the one whose future is being focused on). The larger parallel is that of related systems impinging on one another. Thus to anticipate the future of the central group, we can perform hemispherical and dimensional analyses of each adjacent group that impinges on it - i.e. its neighbours in the bamboo thicket.

The following diagram illustrates the cross-section through a bamboo thicket, showing the holon under study, its immediate neighbours, and their neighbours. The lines indicate primary influences.



This bamboo-thicket metaphor acknowledges that human futures are, for the most part, mediated by the futures of adjacent humans, as demonstrated by (for example) Tainter's²³ study of the collapse of ancient civilizations. With the recent increase in globalization, however defined²⁴, the futures of all societies are becoming increasingly intertwined, in ways that are obvious with hindsight, but not readily predictable without a consideration of related holons and their chains of influence. It is helpful in this regard to pay close attention to the links between the holons: the routes through which a holon may be affected by its neighbour. Extending Pawson and Tilley's²⁵ concept of concepts/ mechanisms/ outcomes, the context in this case is the set of holons, the outcomes are possible futures, and the mechanisms are the paths through which one holon's future impacts on its neighbours. The intentions and expectations of these neighbouring holons can thus have a major influence on the central holon.

3. Mapping the Future as Fish in a River

A third way to map the future is as a set of dimensions. Broadening the dictionary definition of "future," we can see that the term is used in several ways. For example, McDermott²⁶ offers five interpretations of the future (time, challenge, destination, answer, and judgement) - though these are not dimensions that can vary independently of each other. Because dimensions have no starting points, they apply to the past as well as to the future: the focus is on change rather than the future per se. Also, dimensions are inherently measurable, unlike the concepts on the hemisphere.

Van de Ven and Poole²⁷, in a mammoth review of the literature of change management distinguished what they called "four motors of change" - principles or theories by which change occurs. These were:

1. life-cycle models
2. evolutionary models
3. dialectical models (similar to Slaughter's²⁸ "transformative cycle")
4. goal-directed models

Adapting the ideas of Van de Ven and Poole, I found it possible to describe the future in terms of three dimensions: time, progress, and uncertainty. Any imaginable future could be expressed as a three-dimensional coordinate made up of a particular date, a particular level of progress toward a goal, and a particular degree of uncertainty.

Though such a "pure" dimensional conceptualization might be considered mathematically elegant by some, I discovered when conducting futures workshops that participants found it difficult to place themselves in such an abstract space. Re-expressing the dimensions as a metaphor of fish in a river helped them to more clearly visualize the implications.

3.1 The dimension of time

The first dimension is the "calendar future." Its unit is time. This is the world of events and dates, e.g. World War II, 1939-1945. On reflection, the calendar is the unit of historical time, but the future is a human construction - so why measure this different concept with the same units? It may be that psychological time, rather than calendar time, is a better measure. It might still be expressed in years, but my 2010 might be your 2020. Using the metaphor of fish in a river, time is the downstream flow, however that is measured.

3.2 The dimension of progress

Time (dimension 1) may pass, but the goal might not be achieved. Perhaps the end of the war seems as far away as ever, or an organization's aim of 90% market share becomes meaningless because technology changes. For example, the Australian Telecom 2000 report²⁹ envisaged that by 2000, 98% of households would have a telephone. Though the forecast was very close to the eventual outcome, by 2000 the concept of household penetration had become meaningless. The unit had changed: with the advent of mobile phones, a telephone is no longer the property of a household but of an individual.

Conversely, organizations (and people) that do not strive to attain a specified outcome may be continuously fulfilling their aims. If the organi-

..... THREE MAPS FOR NAVIGATING THE OCEAN OF FUTURE

zation's de facto purpose is "comfortable survival" and the individual's is to have a rewarding family life, these aims (if reached) can be semi-permanent. Thus progress or the achievement of goals need not be connected to the calendar. One may change, but not the other.

The goal-directed model mentioned above may apply to a single entity, but when others are involved (e.g. competitors), one entity may meet its goals only at the expense of others. Thus, to include multiple entities, the goal-directed dimension of the future can be broadened to include the dialectical process. All of this can be subsumed under the name of "striving," or perhaps even "progress."

Note that the four evolutionary models of Van de Ven and Poole³⁰ are based on natural selection. This is different from the evolutionary futures model set out by Mannermaa³¹, which expresses evolution in terms of emergence, based on chaos theory.

In the river of time, progress corresponds to the fish's attempts to reach the far side of the river, where food is currently most plentiful.

3.3 The dimension of uncertainty

When looking into the future, there's usually some associated uncertainty: particularly with events, but also with other levels on the hemisphere. In fact, uncertainty can even apply to past events. Therefore a second dimension is the degree of uncertainty. It's quantifiable in the sense that it can be placed on a scale of 0% to 100%, though in practice the actual amount of uncertainty is incapable of precise expression.

For the fish in the river, uncertainty corresponds to depth, and its attendant darkness.

3.4 What might a fourth dimension be?

So the calendar is ticking along, the level of uncertainty is determined, and your striving may be successful - but does this exhaust the possibilities of the future? To put it another way: if time stopped, uncertainty was fixed, and there was no striving, would there still be a way for futures to vary? In the river, are our fish left with any degrees of freedom?

A remaining source of variation might be an imagined future: of hopes, expectations, dreams,

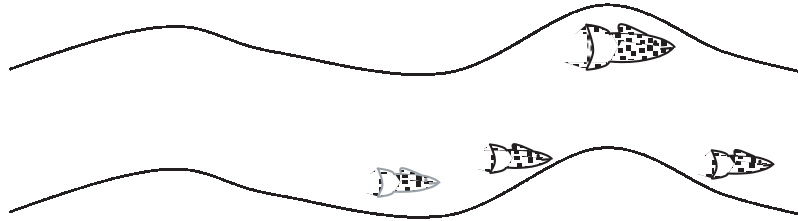
and images - corresponding in some ways to the third or fourth layer of the hemispherical map. It would be a tacit dimension, near-impossible to express in words, with intuitive or spiritual qualities. Here I think of children half-planning, half-fantasizing their adult lives. Though they may attach dates and purpose to these ideas, the images themselves form the future: where is the future, if not in our heads? (Cf. Polak³².) Such images, even when people do not consciously strive to attain them, can act as a powerful beacon, leading them toward a particular kind of future, as expressed in the example of the hope for Serbian independence in the early 20th century.

Wilber³³, in his discussion of the "pre/trans fallacy", distinguishes between the pre-rational and the trans-rational: though both these ways of thinking are non-rational, they are very different in the developmental level implied: the pre-rational mode is atavistic, childlike, egotistical. Wilber's trans-rational level is intuitive rather than instinctual, concerned with preserving humanity rather than one's own body. In Wilber's terms, the fourth dimension of the future would be trans-rational rather than pre-rational. For a fish in the river, this dimension might be evident in its orientation, rather than its position. When it is looking upstream, a fish will have a different view of the future from when it looks downstream.

3.5 Mapping fish in the river

In the river of future, the passage of time corresponds to the downstream flow. (You must imagine this as a fast-flowing river, with weak fish, unable to swim far upstream.) The second dimension, progress, corresponds to movement across the river. The third dimension, uncertainty, increases with depth in the river (it can be denoted on a map by darkness of shading). The fish itself can represent any entity whose future can be plotted, including a person, a family, an organization, an industry, a physical object, an ecosystem, an activity, or an idea - and any of these can be in the context of a specific place or time-scale.

Each fish in the map corresponds to a different perspective of the entity under study. For



example, if the entity is an organization, each fish would be a related holon's perception of that entity, or how stakeholders see it in relation to themselves: is it ahead of them or behind them in the river? Is it striving more or less than they are? And how certain is their view? Because these dimensions are clearly separated, it is possible to plot a wide range of perspectives about the entity under study.

For the sake of simplicity, the above map shows a single fish, but I have found it more useful to plot a number of fish, each corresponding to a different perspective of the entity under study. For example, if the entity is an organization, each fish would be a related holon's perceived view of that entity, or how stakeholders see it in relation to themselves: is it ahead of them or behind them in the river? Is it striving more or less than they are? And how certain is their view? Because these dimensions are clearly labelled, it is possible to plot a wide range of perspectives about the entity under study.

To some extent, this "fish in the river" map is the opposite of the "bamboo thicket" map. The latter views related holons from the point of view of the central entity, while the former views the central entity from the viewpoint of the related holons. Unlike the bamboo thicket map, though, the fish in the river map plots not impinging forces but external perspectives - or at least internal views of these.

Conclusion

In summary, these three maps of the future are complementary. They are different ways of seeing what may lie ahead. In accordance with the multiple perspectives concept developed by Linstone³⁴, adopting different perspectives of the future can help people develop greater awareness of the possible futures in which they are holons. The practical use of these maps is for

working through these approaches when the future of an entity is being considered. Creating multiple maps helps the participants to overcome their pre-conceptions and unconscious assumptions, helping them create more thoroughly developed scenarios of possible futures.

As part of a process of developing a more participative approach to scenario planning³⁵, I am conducting action research with a wide range of different types of holon, along the lines described by Ramos³⁶. As the development process evolves, I am finding it helpful to have participants develop these three types of map, as well as several others not described in this paper (such as one derived from the program logic models used in the evaluation of social services). Alternating between the different views seems to help participants to consider a more comprehensive range of scenarios for their futures, and different perspectives on the holon itself.

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Notes

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..... THREE MAPS FOR NAVIGATING THE OCEAN OF FUTURE

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