

How Do We Make Sense of the Future?

An Analysis of Futures Research Methodology – V2.0

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Abstract

This paper focuses on how to create value and meaning for users of the AC/UNU Millennium project's "Futures Research Methodology – V 2.0" report. Sensemaking is presented as a possible framework for achieving this objective, and supplements the efforts already invested in this direction by the "Futures Research Methodology – V 2.0". The rationale for this supplement will also be presented. When applied the "Futures Research Methodology – V 2.0" shows, in general, some interesting features characteristic of the implementation of knowledge systems. In particular, the emergence of effects that are beyond the initial – but not the final – scope of the system. Sensemaking addresses the challenge of understanding and retrieving such dissipation from the knowledge system, and aims to bring it within a manageable range. In this way the article particularly addresses the shift that results from understanding and managing complexity. It puts forth a demonstration of these effects on futures research methods, and shows how foresight and hindsight may be used to gain insight into the present.

Making Sense of the Future, Past and Present

Perhaps the biggest challenge any human being or organisation faces is how to make sense of their lives, and how to find meaning and direction for their activities. Taking a sensemaking approach to our subject means that we assume that humans and reality can sometimes be orderly and sometimes chaotic.

Sensemaking happens when sensible, meaningful explanations are built, evidence is extracted and then linked to already existing structures, i.e. mental models, historical events, artefacts – or as in the case of this article – to a purposeful use of methods, especially constructed to do so. (March & Olsen 1976; Weick 1995; Porac & Thomas & Baden-Fuller 1989; Hopkinson 2001; Dervin et al. 2002)

If we are unable to place a piece of information in context, the meaning of that information is lost. Hence,

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the ways we imagine the future, understand the past and come to grips with the present are extremely valuable in providing continuity and direction for our lives. Sensemaking is rooted in time and space, and occurs at the intersection of three horizons: the past, present, and future. Often we talk about three different domains of knowledge related to these three time horizons – namely, foresight, hindsight and insight.

Foresight may fruitfully be understood as our ability to use and create futures knowledge, but also to imagine possible futures. If we turn our focus to the past, we discover events and event-structures that are common elements throughout history. Some methods pay a lot of attention to historicity and the historical accounts of events. Hindsight is about understanding the history of an individual, or an organisation, or a system, in effect the "hows", and "whys" of how we today arrived at what we are. Only when researchers put these two together do we achieve insight, which can be further defined as insightful knowledge for present decision-making. After all, what we have are historical descriptions and futures scenarios. If one of these falls short of what it should be then our present decision-making ability will be lacking too. (Aaltonen 2003) In fact, seeing alternative futures as *candidate containers for managing historical content under the constraints of the present* is the mindset of foresight, hindsight and insight: a mindset that not only takes from sensemaking, as a management perspective, but represents a theoretical contribution to the field.

Sensemaking is also gap-bridging, because by moving theoretically and analytically across time and space we bridge gaps inherent in the human condition. Within "Futures Research Methodology – V 2.0" each method will give a different answer to our need to make sense of our future. Additionally, each method will suggest different kinds of gap-bridging actions. Thus there are many ways to make sense. Sensemaking is accomplished by verbalisations that involve information, knowledge, cognition, thoughts, and conclusions. Some methods also include in their definitions of sensemaking attitudes, beliefs, values, and emotions. However,

fewer methods include intuition, memories, stories, and narratives. (Dervin et al. 2002)

As human beings we construct, and are constructed by the different systems we live in, our networks of friends, the organisations we know, the parts of society we are engaged with et cetera. Such interaction takes place in an open process with passing closures. The landscape where this evolutionary process takes place undergoes and sets in motion continuous change created by actors and their actions, which subsequently affects all other actors and their actions, in brief; we work and play in co-active environments. In such conditions, the landscape has co-evolutionary features, not just its evolutionary ones. In co-evolving landscapes, the adaptive moves of one actor impact upon and change the landscapes of that actor's co-evolutionary associates. Some methods take these adaptive moves into account, others do not.

Foresight, hindsight and insight are necessary to make this evolutionary process more explicit. This stylised dance – prospecting, retrospection and reflection – is the waltzing three-step behind the fits and starts of the sensemaking process. We interpret things based on our perceptions of the future as well as our earlier experiences. In this way the future and past meet in the present. Consequently, methods can be very influential in directing our present behaviour and choices. The methods, or the choice not to use any method at all, carry vast consequences. Do we seek out information, and if we do, what kind of information? Alternatively, are we simply driven by our dreams and fears? (Sanders 2001; Dervin et al. 2002)

Even if we understand our world in terms of complex adaptive systems consisting of a large number of agents, it still would make sense to talk about foresight, hindsight and insight, and it should have some implications for the way we think and practice strategy. In fact, the objective of the foresight, hindsight and insight framework is to support us in perceiving, retrieving and enfolding effects that are beyond the initial – but not the final – scope of a system (Shaw 1997), which thereby becomes

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complex, adaptive and authoritative rather than disrupted, fragmented and authoritarian. (Arendt 2001) In fact, the foresight, hindsight and insight approach to sensemaking may be construed at the agent level: i.e., to define agent behaviour according to its own elementary principles of located interaction, logic and rationality.

The kinds of issues and events taken into consideration, the kind of knowledge processed, and the kind of process chosen, are important criteria that shape our understanding of the situation. The foresight, hindsight and insight sensemaking method highlights the factors that influence how an organisation is structured in the future. These are, how much the organisation can be built by itself, and with what processes will organisation build itself so that it may influence and guide future action. (Ansoff 1975; Arbnor & Bjerke 1997; Stacey & Griffin & Shaw 2000) More generally, the use of a futures research method in a change environment, a system such as an organisation or an enterprise, picks up on what dissipates from the system. (Bennett 1988) In that it goes beyond current strategy and practice and returns to them with the foresight, hindsight and insight sensemaking method. In the "Futures Research Methodology – V 2.0" framework, the foresight, hindsight and insight approach, which is to perceive, retrieve and interact with what goes on in the shadow systems of the organisation (Shaw 1997) aims at *embedding* foresight, hindsight and insight. This is achieved by considering alternative futures as *candidate containers for managing historical content under the constraints of the present*. Thus it is possible to avoid the conceptualisation of *embedding* as an "extra job" or, an *add on* and hence it can be brought into the core of methodological reflexivity in futures research.

In brief, we pinpoint that sensemaking asserts that a person's, a group's or an organisation's understanding of a situation, rather than the situation's objective properties shapes the way that a person, group or organisation acts in the situation. (Czarniawska 1997, 1999) The implicit or explicit use of the methods of scanning, framing, interpreting also construct a con-

ception of the situation at hand. In effect, sensemaking, by preceding decision-making, plays a significant role in framing the range, reach and depth of forthcoming decisions. (Woodside 2001) As cognitive scientists suggest, the way individuals and organisations make sense of and act within their environments is tied to their cognitive frameworks through the properties of the methods they use. (Abelson 1976; Fiske & Taylor 1991; Bogner & Barr 2000)

Data – Futures Research Methodology – V2.0

The terms metatheory, methodology, method, and substantive theory are used in this article to clarify the differences in the level of analysis. Dervin et al. (2002) define them in following way:

- "Metatheory: Presumptions which provide general perspectives or ways of looking based on assumptions about the nature of reality and human beings (ontology), the nature of knowing (epistemology), the purposes of theory and research (teleology), value and ethics (axiology), and the nature of power (ideology).
- Methodology: Reflexive analysis and development of the 'hows' of theorizing, observing, analyzing, interpreting.
- Method: The specific 'hows' - techniques, guided implicitly or explicitly by methodological considerations.
- Substantive theory: Inductively and/or deductively derived concepts (which define phenomena) and propositions (which suggest how and under what conditions concepts are thought to be connected); sometimes called unit theory."

"Futures Research Methodology – V 2.0" ¹ presents a wide selection of futures research methods. These methods convey their specific concepts, assumptions and properties. This article provides an analysis of their methods, and will create theoretical knowledge, that according to a previous definition could be called metatheoretical with respect to data.

"Futures Research Methodology – V 2.0" is the second version of the series. It is edited by

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Jerome C. Glenn and Theodore J. Gordon for the American Council/United Nation University's Millennium Project.

"Futures Research Methodology – V 2.0" presents itself in the following way: "The purpose of the futures methodology is to systematically explore, create and test both possible and desirable futures to improve decisions." The data are not only helpful in our attempt to develop a better understanding of possible futures, but it also gives us a historical perspective into the development of the research area by some of the most influential participants in it. This is demonstrated by the fact that most of the chapters are written by the inventor of the method or by a significant contributor to method's evolution.

The Model of Analysis

The matrix in Figure 1 seeks to describe the landscape where "Futures Research

Methodology – V 2.0" is used, and the variety and distribution of the methods related to the described qualities. The picture identifies four distinct types of landscapes, two of which – engineering approaches and systems thinking – have a long history, are widely used, and currently dominate thinking and practice in strategic management. The other two – mathematical complexity and social complexity – are not yet widely used, and they represent both a contrasting and a complementary view of how the future emerges.² The differences in the basic assumptions between these four approaches can be clarified as such: The vertical dimension looks at the nature of our possible understanding of the system, and the horizontal at the means of controlling or directing that system. In the vertical dimension design is contrasted with emergence, so while engineering approaches and systems thinking represent design, mathematical complexity and social complexity represent more emergent processes.

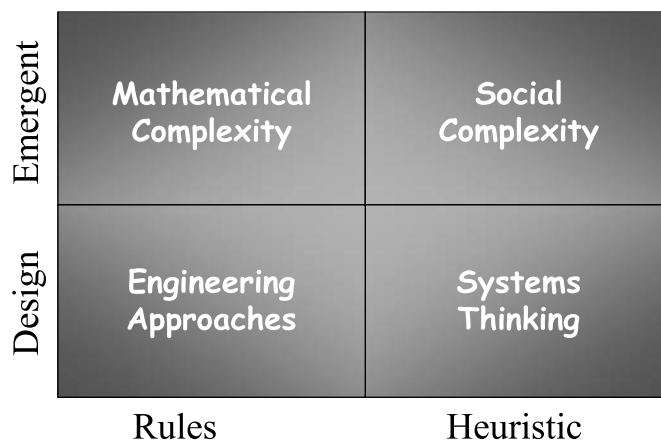


Figure 1. A model of analysis

Narrative: Figure 1 provides the point of departure for our analysis. It classifies "Futures Research Methodology – V 2.0" according to two qualities: the nature of the possible understanding of the system in the vertical axis, and the means of directing that system on the horizontal axis.

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How sensemaking is accomplished, and what kind of solutions are provided by moving across time and space is at the heart of our model of analysis. By design, we mean the ability of a manager, leadership group, expert or researcher to stand outside the system and design the system as a whole. With emergent systems it is assumed that the system cannot be understood or managed as a whole by a manager, leadership group, expert, researcher or by anyone at all. This is because the system emerges through the interactions of the agents (people, processes, technology, government etc.) that act on local knowledge and their own principles. In the horizontal dimension we contrast rules (which could be restated as "process") which remove ambiguity; with heuristics (which could be restated as "values") that provide direction with a degree of ambiguity that allows for adaptations to different and changing contexts. There is a design element to emergent systems, but not in the same way as earlier understood because there are unlimited possibilities for influencing the evolution of such systems and, as such, they can not be led by single agents.

An Analysis of "Futures Research Methodology – V 2.0"

Analysis Part I – The Embedded Qualities of "Futures Research Methodology – V 2.0"

Analysing "Futures Research Methodology – V 2.0" is a great challenge. How is it possible to find any general properties that could be attached to the diversity of methods? No wonder "no agreement exists on the proper way to organize futures methods." Several assumptions embedded in various methods differ from each other: What is the nature of reality? Is it orderly or chaotic? What is the nature of human beings? Are they rational or muddled? What is the nature of knowing? Is it objective or non-objective? Furthermore, what suffices as an explanation of how reality works? What kinds of causalities are assumed to exist? How is the movement from a past as understood in the present and then applied towards a future considered? (Arbnor & Bjerke 1997; Stacey 2001; Dervin et al. 2002)

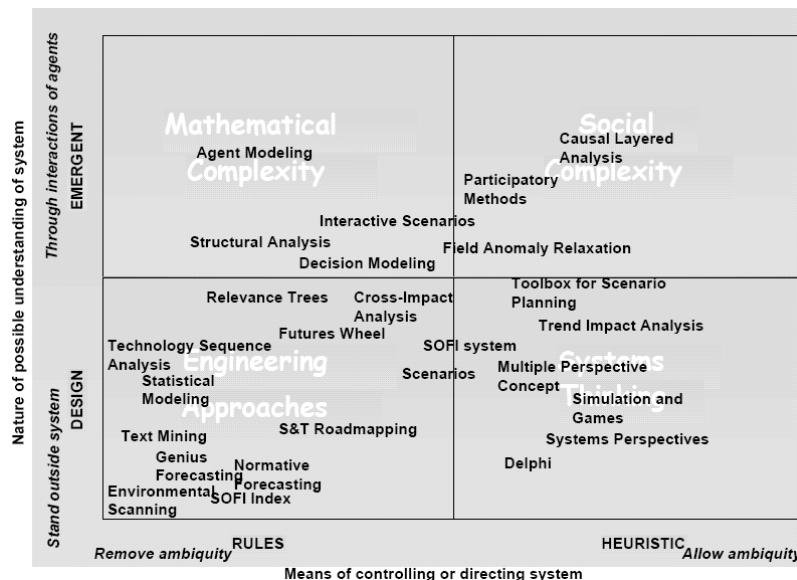


Figure 2. The embedded attributes of the methods in "Futures Research Methodology – V 2.0"

Narrative: Futures research methods placed in the model of analysis is the first part of our analysis. It reveals simultaneously the appropriate qualities of each futures research method, and the whole methodology.

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The sensemaking model works as an effective communication tool that aims at delivering a large amount of information about the "Futures Research Methodology – V 2.0", and the properties of the methods in "Futures Research Methodology – V 2.0".³ The model however, does not give any explanation of how popular or how frequently used a particular method is, and the indications of the qualities of the methods are relative, not general.

The analysis reveals that most of the methods presented in "Futures Research Methodology – V 2.0" are designed to remove ambiguity and they concentrate on knowing, or to be more precise, on removing ambiguity from the decision-making process. Most of methods are also used outside the system in order to bring new information inside the system. Other types of frequently used methods are those that seek to create an awareness of possible futures, plus knowledge of the about things they convey. The embedded conception of causality, of how things happen, is that there is an agent, capable of figuring out the causalities and able to design intervention that leads to a desirable future.

There are methods that rely, even if implicitly, on different causal assumptions about how things happen. The methods placed in the upper half of the model share the belief that things happen through the (local) interactions of agents. The movement towards a future is seen to depend on other actors, while the adaptive moves of a single actor influence other agents' strategies by creating new possibilities and constraints. However, if we examine the number of methods that are situated in the upper part of the model, it is apparent that this approach is not as popular among futurists as the previous one. However, some methods are made with the aim of removing ambiguity and simulating emergent possibilities. The smallest number of methods lies in the social complexity corner. Those methods that try to provide direction with a degree of ambiguity and in a not always orderly environment are few.

In "Futures Research Methodology – V 2.0", Environmental Scanning is divided into six sub-methods: Expert Panels, Database

Literature Reviews, Internet Searches, Hard-Copy Literature Reviews, Essays on Issues by Experts, and Key Person Tracking and Conferencing Monitoring. Expert Panels, if analysed separately, would clearly be placed more towards social complexity than the five other methods under the Environmental Scanning grouping.

Statistical Modelling consists of twelve methods: Time Series Analysis, Curve Fitting, Averaging Methods, Exponential Smoothing, Exploratory or Causal Analysis, Multiple Regression Analysis, Forward-Stepwise Regression Analysis, Polynomial-Regression Analysis, Autocorrelation Analysis, Simultaneous Equations, Input-Output, and Simulation Modelling. By the skilful use of the methods presented in Statistical Modelling an analysis can be directed towards systems thinking, but in the case of some methods, e.g. Simultaneous Equation, Input-Output and Simulation Modelling the focus shifts more towards mathematical complexity.

Participatory Methods present six methods: Focus Groups and Opinion Polling, Charrette, Syncon, Public Delphi, Future Search Conference, and Groupware. There are differences in the use of these methods. Focus and Future Search Conferences are used for less than one hundred people in one location. Groupware is used also for less than one hundred people, but can be carried out in multiple locations. Charrette and Syncon are used for groups larger than one hundred people in one location, Public Delphi and Option Polling work well with large groups in multiple locations. Nevertheless, all these methods include a large number of people in the process.

Normative Forecasting has a variety of techniques too: Genius Forecasting, Science Fiction, Survey Techniques, Methods of Exhaustion, and Scenarios. These methods are placed according to the main method, as a common denominator, in Figure 3. Variations between the methods here are significant. Genius forecasting can involve perhaps only one person, Science Fiction could be considered an irregularly used method in the realm of engineering approaches. Survey techniques are

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used to remove ambiguity, while Methods of Exhaustion tend towards mathematical complexity and Scenarios obviously towards systems thinking.

Michel Godet's Toolbox for Scenario Planning contains several elements, many of them already analysed by themselves in the analysis. Earlier presented elements are Delphi, Structural Analysis, the Mactor Method, Relevance Trees, Morphological Analysis, and Cross-Impact Analysis. The toolbox is a holistic method and understood as one method even if it contains many methods.

In this brief survey of "Futures Research Methodology – V 2.0" we have not been concerned with constraints: we have considered constraints as though they belong to realities in which ideas of possible alternative futures are seated, rather than to the realm of methodology as such. This changes, however, when we cease to consider futures research methods as methodologies *per se* and look at them as though they were *scenarios* of futures research.

Making sense of how futures research methods communicate when used, therefore is our next step: while the application of methodologies belongs to the future, the implementation of scenarios belongs to the present.

Our research question in the next section is therefore: how much of our past experience of working with groups could – and should – be accommodated into futures research method in use? Additionally: how can we then work more effectively and productively within those constraints?

Analysis Part II - A Topological Approach to Futures Research Method in Use

The rationale for landscaping futures research methods is to improve the conditions for their use within the strategy where they can be developed. The concept of "landscaping" is here used to define the endeavour of at once classifying futures research methods and representing their inter-relations in a *field*. (Lewin 1996)

Landscaping, in the present understanding, creates a negotiation-space for the logic of *classification* (Ragin 1987) and the logic of

sense. (Deleuze 1969) On the one hand, futures methods *vary* in how they establish a meaningful dialogue between ideas and evidence. (Ragin 1987) On the other hand, by virtue of being locatable on a *surface*, varieties of research methods become connectable in ways relevant to sensemaking. (Deleuze 1969)

Facilitating the classification of an item while locating it in a topology, thus, relates in non-trivial way to futures research methodology. It represents a way of double-looping data. If properly framed, the act of locating and classifying an item is transformed into an instance of double-looped learning. (Argyris & Schön 1978) It is therefore critical that the topological surface be understood as a spatial metaphor for an extension in *time*.

Of course, representing futures research method in use as though they were series – or, strings – of research activities is a rash simplification. However, it allows us to clearly conceive the polar opposite of a series that is, the non-linear structuring of research activities in which constraints are taken into account. Constraints are here seen as both soliciting *effort* and eliciting *resistance*.⁴ As any effort in group-work demands structuring, so resistance in group-processes demands sensemaking. (Weick 1995, 2001) Therefore we propose a model for futures research method in use in which past experiences from working with groups, in the action theory tradition, can be managed.

In other words, we are creating a meta-scenario: a scenario for scenario building in a context of application (e.g., a research, innovation, development or strategy *project*). We wish to approach and analyse what Ian Hacking calls "interactive kinds" (Massumi 2002): "logical categories that feed-back into and transform the reality that they describe." That is, the dynamic unity of feedback and feed-forward, or the double becoming (Massumi 2002) of *futures-research-methods-in-use*, considered (1) as complex logical entities, (2) in context. Our ambition is analytical and practical.

A Definition of the Variable Types

The futures research method in use method in terms of:

- (1) Whether the application of the method is *embedded* in the described use of the method.
- (2) Whether the application of the method is reflectively *adaptive* to an environment.
- (3) Whether the application of the method entails a *specialist* approach and, concomitantly, represents an *eclectic* research activity.
- (4) Whether the application of the method entails a *generalist* approach and, concomitantly, represents a *holistic* research activity.
- (5) Whether the application of the method within a wider framework is *coalescent* with other futures research methods.

(1) *Embedded*

We suggest that the use of the "Futures Research Methodology – V 2.0" be considered as *embedded* in the method. Thus, it is reflectively embedded into the environment of its future application and it is possible to respond to resistance in group work by shifting to an alternative framework while remaining within the same approach (i.e., the method is driven by a single model). The systems and structural approaches are two examples of this inherent possibility of a futures research method in use. In such cases, the internal repertoire of the methodology becomes a "requisite variety" (Ashby 1956) in the context of its application.

(2) *Adaptive*

We suggest that a futures research method in use be considered as reflectively *adaptive* to an environment, e.g. a social, technical and natural environment, whenever it is intrinsic to a futures research method in use that it should be responsive to an environment. This is clearly the case with *simulation*. But it is also the case with methods in which emergent patterns that are generated serve as a direct input to the foresight, scenario, forecast, etc.

(3) *Eclectic*

We suggest that a futures research method in use be considered as an eclectic response to an environment, whenever its application requires the practitioner to *specialise* in that method. Either this is due to the level of technical proficiency in applied comput-

ing, or it is due to the requirements of the knowledge domain.

(4) *Holistic*

We suggest that a futures research method in use be considered as a holistic method, whenever its application requires that the practitioner should relate to the environment as a *generalist*. The generalist approach should not be misunderstood as "vague". It is just as case-specific as the eclectic methods are, but it follows a comparative rather than exclusionist itinerary in the environment, or field, of application.

(5) *Coalescent*

Finally, we suggest that a futures research method in use be considered as a coalescent method whenever it provides a larger environment inside which other methods can "talk". This adequacy of a "Futures Research Methodology – V 2.0" as a host environment for *dialogic inquiry* (T. Barth 2004) depends on its capacity to host and proceed despite differences that are not only technical but include an element of struggle⁵ and/or resistance. This is a meta-variable type because it iterates the comparative vs. exclusionist directions at the level of method, and constitutes, as a futures research method in use, a *search model* (e.g., *modus operandi*).

In the chart, the variables defined above are treated as diacritical features of "Futures Research Methodology – V 2.0". Though they are written in Boolean code, the values 1 and 0 should be understood as:

- 1 = meaningful

- 0 = meaningless

The rationale for substituting the values "true" (1) and "not true" (0) with the values "meaningful" (1) and "meaningless" (0) will appear in more detail in the following. For now, it will suffice to note that the "presence"/"absence" of the above variable traits; embedded, adaptive, eclectic, holistic and coalescent, cannot serve to qualify a futures research method in use. This is because futures research methods in use are specifically designed to deal and interact with issues that are by definition *not* part of the present (but are *very* incompletely characterised as "absent"). Instead, we should distinguish between the

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resistance and *response* that a futures research method in use generates and has to deal with (e.g., dissipation in the complex system of a group process and its extended realm).

At this juncture, the relevance of the complexity, disruption and sensemaking agenda appears in full. If we define sensemaking as the result of the nonzero-sum between *resistance* and *response* in the project environment of a futures research method in use, then the challenge is to identify a *threshold* such that

- (a) *resistance* in a group process passes from a focal to a distributed/diverted state, and;
- (b) *response* passes from a distributed/diverted to a focal state in that group process.

In this way, it is possible to use *futures* as a management asset that allows a situation and its agents to contain past experiences under the constraints of the present. By implication a futures research method in use can be characterised as meaningful or meaningless according to the variable types defined above, depending on whether or not a threshold is defined in a method for a particular variable type (embedded, adaptive, eclectic, holistic and coalescent). When a threshold is defined with regard to a variable type in a particular method, then the method scores "1" on that variable type. If the threshold is not defined, then it scores "0".

By focussing on the threshold we are clearly involving the futures research method in use in the larger group process to which it intends to contribute, rather than insisting on claiming a position of "spectatorship" for scientific

methodologies. It also brings us to the importance of underscoring the point of focussing specifically on resistance, since working on resistance in the wider project environment, beyond the methodology, has a number of important implications for how we perceive, understand and work with peoples' *responses*. It also has implications for how we work *conjointly* with resistance and response as intrinsic and generative aspects of knowledge *communication*.

In the communicative framework, i.e. working with applied foresight, hindsight and insight sensemaking as a management approach to the threshold, the responses may in some important aspects be considered as part of the drivers. This is fairly obvious, considering that we are interested in the emergent output called *learning*. And it is particularly important if one wishes to avoid the classical source of failure in managing scenarios after futures research activities have come to term, i.e. those of conflating and confusing final targets (e.g., implementation and enactment) with intermediary targets (e.g., recommendations and scoring). For instance, for the purpose of effectively comparing ongoing practices benchmark the best past practice. Accordingly, our intention with the Boolean scores, as reformulated within the framework of sensemaking, is to propose an agenda of heuristics that may facilitate knowledge sharing among futures researchers in ongoing futures research projects:

	Integr. Comp. and Forwards of FOM variable types:	A Tool for Scenario Planning	The Multiple Perspectives Concept	State of the Future Index (SOFI) Method	Text Mining for Technology Foresight	Field Anomaly Release (FAR) Method	Genius Forecasting Vision	Reference Trees and Morphological Analysis	Technology Sequence Analysis	Interactive scenarios	Scenario	Statistical Analysis	Decision Modeling	The Systems Perspective	Trend Impact Analysis	Cross Impact Analysis	Structural Modelling	The Futures Wheel	The Futures Methodology - V2.0	Futures Research Methodology - Saming	Emmenter's Method
(1) embedded	0	1	1	1	1	0	0	1	1	0	1	1	0	0	1	0	1	0	0	0	1
(2) adaptive	0	1	0	0	1	1	0	1	1	1	0	1	1	0	1	0	0	1	1	1	1
(3) eclectic	0	0	1	1	0	0	1	0	1	1	1	0	1	1	1	0	0	1	1	1	0
(4) holistic	0	1	1	1	1	0	1	1	0	1	1	1	0	1	0	1	1	0	1	1	0
(5) coalscent	1	0	0	0	0	0	0	1	1	1	1	0	0	0	1	1	1	0	0	1	1

Futures Research Methods in Use

Figure 3. The Boolean logic analysis of futures research methods in use

Narrative: Figure 3 represents the second part of our "Futures Research Methodology - V2.0" analysis. Futures research methods in use are analysed by Boolean logic analysis using the five main variable types: embedded, adaptive, eclectic, holistic, and coalescent.

The next objective is to extend the compilation of the "Futures Research Methodology – V2.0" that motivated the analysis in part I, by outlining a model prototype for the portfolio management of futures research method in use, as a single but complex domain for lifelong learning (Habib, *forthcoming*) through knowledge sharing. For the purpose of this outline, a topological concept for landscaping the methodologies is proposed.

The Definition of the Topology

The two following tasks serve to define the purpose of the topological space:

- (1) It should serve to accommodate "Futures Research Methodology – V 2.0" inside a gross – single-looped – classification.
- (2) It should serve to accommodate the variable types [above].
- (3) The ensuing double-looped classification of

"Futures Research Methodology – V 2.0" should be; (a) more refined than the gross classification; (b) it should be different by virtue of reflecting the dynamic properties of the approaches.

When we accommodate the variable types into our topology, however, we need to show how the landscape is generated, and how its dynamic features are reflected in a visual representation. Since the topology results from a projection of dynamic properties onto a space, which is an approach that ventures a response to both resistance and effort, it can not be modelled by a strip as it needs *two* dimensions. Firstly it is necessary to (1) construct a representation of a classificatory *extension* and *distribution*. Then a perception of the *intention* of each item i.e., what it is about (Searle 1983), in a co-active environment, or field has to be built. (Lewin 1996)

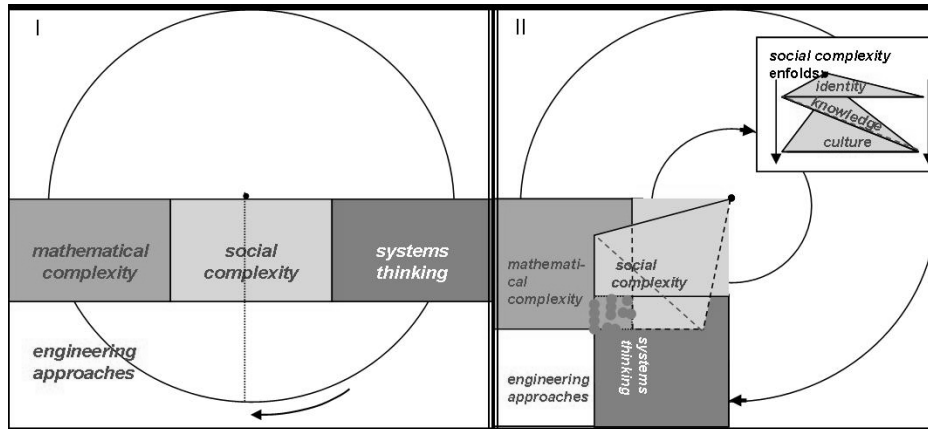


Figure 4. A Topological Approach to "Futures Research Methodology – V 2.0"

Narrative: The strip is used to represent a series of discursive frameworks (mathematical complexity, social complexity and systems approaches) placing the engineering approach outside, as a more pragmatic and heuristic approach. The strip is then folded to encompass the pragmatic and heuristic framework and subsequently folded to model a structure of layers in the social complexity frame. With the FRMU the social frame communicates with the entire topological space.

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This convoluted area – i.e., the *fold* proper (Deleuze 1969) – models the problematic of *social complexity* that emerges from the management of dissipation (Bennett 1988) that the sensemaking approach elicits and manages at the threshold, and retrieves and integrates into the prospected co-active space of futures research.

When folded, the social complexity quadrant models a shift between three layers:

- (1) The identity layer (vectored towards the overlap with the systems thinking quadrant).
- (2) The knowledge layer (vectored towards the hybrid area in the central quadrant).
- (3) The culture layer (vectored towards the overlap with the mathematical complexity quadrant).

The concept of "disordered systems" ⁶ (F. Barth 1992) is used as a framework to manage the dissipation, or the *effects* of "Futures Research Methodology – V 2.0" that are beyond the initial scope, but not the final scope of use included in the futures research method in use. From that, the central quadrant, at the core of the figure is constructed. The disordered system is defined by dynamics that engage understanding: i.e., *the knowledge of the structural "impurities" – or, heterogeneity – of a "disordered system" determines the understanding of how the system behaves due to the impact of influence from outside.* This is used as a conceptual framework to model patterns of political behaviour in *complex societies*. Here it is also used as a framework for the "coalescent" *variable type*. In doing so, it allows us to conceptualise how samples from a number of methodologies may be combined in a modelling effort carried out inside one methodological framework (which, for this reason, is "coalescent" rather than "holistic", or simply comparative).

In the present setting, it will suffice to point out these issues to underscore the critical importance of futures research. Given our understanding of futures research method in use in the action research framework, the *distinctiveness* of the futures research agenda lies in the clarity of the objective in the various approaches to develop a *participatory* construction theory grounded in the activities and knowledge domains of organisations. With the problematic areas pointed out above, this may serve to underscore the urgency of futures research in the contemporary setting, to *make sense of organisations*.⁷

The urgency of futures research in the context of making sense of organisations is of course recursive in making sense of futures research. We accordingly wish to emphasise the distinctiveness of the "coalescent" variable type inside the "holistic" variable type. The distinctiveness of the "coalescent" variable type is that the need to structure resistance by sensemaking is explicit in it and is beyond the need for strategy to structure effort. In the spatial projection of our topology this gesture is conveyed by the metaphor of the central quadrant, which comprises:

- (1) The hybrid area in which "mathematical complexity" and "systems thinking" overlap;
- (2) The "social complexity" area overlap with the two previous quadrants delimited by the knowledge fold (figure 4);
- (3) The two quadrants; systems and math, which are contiguous or, adjacent to the "engineering approaches" square below.

If we simplify the "folded strip" without losing its critical features, we may now plot the full set of items (futures research methods) according to the values displayed in figure 3.

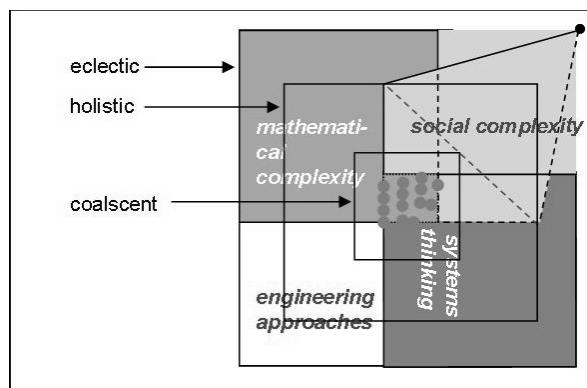


Figure 5. The Construction of Topological Space for a Boolean Logic Analysis

Narrative: The folded figure is now reworked as a diagram that may be read as a 2X2 matrix with boundary overlaps charting the embedded and adaptive variable types, and a concentric structure indicating the eclectic, holistic and coalescent variable types. These two structures represent the extensional and the intentional dimensions of the methodologies we wish to classify according to an ordinal classification. In this way a topological space is constructed in which the cardinal classification in figure 3 may be fitted.

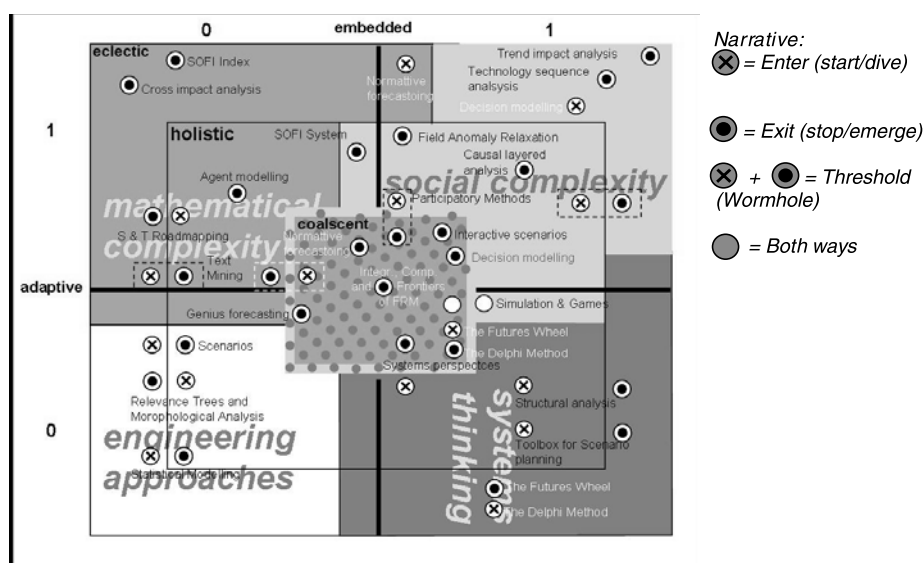


Figure 6. The Concluding Matrix: Embedded properties of the futures research methods in use

The concluding matrix charts possible alternative itineraries in the topological space. In use the differently vectored futures research methods start and stop in different locations of the topological space. The possible connections

within and between the futures research methods become comprehensible (rather like the elements of a bicycle chain) and thus enable the charting of futures methods as extensional rather than intentional constructs.

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Conclusions

Methodology

The core idea for this paper is that there are effects due to the applying of methods and implementing of systems that are beyond the initial but not the final scope of organisations, knowledge systems and futures research methodologies. The neutral determination of this phenomenon is "dissipation". The negative modus of dissipation is "disruption" and its manageable modus is "emergence". This is not a value judgement, since disruption can be used strategically on troublesome path-dependencies (March & Olsen *supra*). Whereas values and meanings, as emergent properties of systems, may be rooted in *search models* at the agent level that are part of that problem. In sum, working with foresight, hindsight and insight sensemaking implies working both with emergence and disruption, and embedding foresight, hindsight and insight by working down at the level of agent search models and changing them.

By moving across time and space the management of dissipation makes a difference. This clearly appears in the discussion of the need for foresight, hindsight and insight, and from the two ways of building and arguing the 2X2 matrixes in the paper, found in the sections on the "Futures Research Methodology – V 2.0" and futures research method in use, respectively.

The futures research method in use track argues for a concentric dimension to the 2X2 matrix, in which the core area brings futures research methods in use of the *coalescent* variable type into the equation. That is futures research methods in use that appear to manage dissipation and include any requisite variety of other futures research methods in use as search models (e.g., *opus operatum*). More generally, the qualities of each futures research method in use derive at least partly from the assumptions of the basic nature or workings of organisational life. The answers to these assumptions reveal three important properties of each method:

- (1) How the method stands with respect to whether, or how much, managers are or

should be in control?

- (2) How ordered or chaotic the landscape where the actions take place is or will be?
- (3) What are the means offered for building the future?

Theory

Linear thinking and researchers and strategists who act on it tend at once to simplify the obvious and complicate the non-trivial when searching for the correct answers.

Therefore, it would be more pertinent to assess those issues that are not under our control. Not the known, but the unknown. Not certainty, but uncertainty. Not the linear, but the non-linear and improve those methods that work with those assumptions and in those landscapes, and simultaneously create new methods to better depict and imagine new futures where conditions are not stable and linear. This would create more sensitivity and innovation, especially if an organisation uses multiple methods in its foresight.

Some examples of possible combinations, plus a system for creating new ones is presented and described by Gordon and Glenn (2003). "One could explore a new combination by asking in each cell of this matrix: How can the methods in the first column create new and improved uses of the methods listed in the top row of the matrix X. A third dimension of the matrix could list new conditions or technologies, such as globalisation, nano-technology, virtual reality, ubiquitous computing, etc." Of course knowing the existing ones and understanding their properties is a prerequisite for this kind of work.

There is a need for methods that help to manage and make sense of future, and there is a need to provide the means for direction without directing. There are places for methods that break down systems and solve them analytically. Albeit this is true in some circumstances, most of our everyday life is non-linear and therefore it can not be solved by using linear models.

Concomitantly, the challenge lies in how to foster or, to be more exact, to understand what the present methods in use are and how

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should new methods be developed, in order to foster flexibility, fluidity, and novelty. A similar challenge also lies ahead for improving existing methods, finding more accurate ones, and removing ambiguity whilst fostering stability. (C.f. Boisot 2003; Middleton-Kelly 2003)

It is perhaps correct to claim that the methods presented in the lower left-hand corner in Figure 1 are, or have become, well known. They are also relatively easy to use. In the upper left-hand corner the methods are much more sophisticated and they often need some mathematical background and programming skills. Despite their sophistication, there are some serious doubts concerning their ability to offer anything more than engineering approaches. In the lower right-hand corner, systems approaches, handles ambiguity better than the more design-orientated approaches, offers more stability than emergent approaches, but only works well in conditions where there is a limited number of interactions and the system can be designed. In the upper right-hand corner, social complexity, is presented as a not yet completely explored field of possibility, because it has the capability to deal with emergent, non linear phenomena, and create explanations and an understanding of direction without controlling the system. (c.f. Snowden 2004)

Strategy

Dervin et al. (2002) ask: What are the different strategies people use to construct and deconstruct their worlds? What are the different ways in which humans conform to and resist order? Whose voices are the weakest? How many alternative voices must speak to provide a framework within which people can make their own sense? How can journalistic, scientific, and other systematic products be designed so that speakers can speak from the experimental and phenomenological contexts of their own world and so ensure that their voices are not taken out of context and made unintelligible? How can humans learn to accept challenges to authority and power even on a small scale, in well-intentioned contexts and thus allow alternative voices to speak? Is it possible to bracket power? Can the deconstruction

of power be systematically incorporated into systems, or is "systematic deconstruction" an oxymoron? How does one present a diversity of voices without sinking into solipsism? How does one use incomplete information and ideas informatively?

All this requires that we improve our ability to use and combine existing tools, but also that we develop theoretical and methodological tools very different from those we use now. It is a promise founded on the possibility of incorporating complexity and chaos into our understanding of the sensemaking processes of past, present and future.

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Notes

1. "Futures Research Methodology – V 2.0" was chosen as the data, because it is tangible and available to many readers, therefore the choices of the writers can be implied; supported and criticized; complemented and denied by readers. (C.f. Latche 2000)
2. Acknowledgements are due to the comments and work of Dave Snowden of the Cynefin Centre, c.f. "Innovation as an objective of knowledge management. Part I the landscape of management." (2004)
3. A special thank you is given to the people at the Finland Futures Research Centre, and the Finland Futures Society, and AC/UNU Millennium Project Helsinki Node who assisted in the analysis.
4. C.f., Michel Godet's Tool Box.
5. The "Toolbox for Scenario planning" by Michel Godet, for instance, is holistic due to its grounding in structural analysis, but it is

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not coalescent: as it explains the struggle dimension, but does not proceed according to it (e.g. in contexts of actual application). In contrast, the "Integration, Comparisons, and Frontiers of Futures Research" by Gordon & Glenn is coalescent. This is part of a wider understanding of exclusionist strategies: schools, institutes, problem domains. (Wallerstein 1991, 1996)

6. The concept of "disordered system" is derived from structural geology, and further developed in social anthropology.
7. The use of the money standard is a case in point: unless theoretical futures becomes part of management methods, the value of money is likely to become impervious to the changes in what you can get for money: i.e., the uses of money as value measure, a medium of exchange and a means of payment define realms of activity, at all times, the inter-relations between which depend on our will and ability to construct futures.

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