

Relationships with our futures: anticipation, post normality and scenarios

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Improving Scenario Methodology: Theory and
Practice

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Scenarios

Attempts to explore alternative states of being, separated from the present by some temporal movement and from each other by a turn in logic or reasoning.

“Cartesian
Anxiety”

Bernstein 1983

Looking ahead...

Purposeful as 'the future(s) of X'

Address uncertainty... tending toward risk
(Cf. F Knight)

Assume a significant level of ontological security (belief in certainty of knowledge) about the present and its relationship to the future

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Methodology: conceptual or theoretical basis for methods to discover and interpret knowledge

To come:

Anticipatory systems (Rosen)

Post-Normal Science (Funtowicz and Ravetz)

Intersubjectivity and Affect (e.g. Husserl, Appadurai)

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IGNORANCE

(an absence of known knowledge)

Generated exponentially from new knowledge

Contributes to a sense of uncertainty and frailty of what is known (ontology)

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Ontological ephemerality and frailty

Ontological "security":

Have a reliable sense of 'knowing' and therefore anticipatory capacity in relation to the environment and *resolutions of disharmony*

Asymmetric social knowledge production

Awareness of unrecognisable patterns and inter-connections

An unfounded confidence in (fallible) 'scientific' knowledge

A state of anxiety over "unknown unknowns"

Ontology: what we take as knowledge
Ephemeral short-lived, temporary

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Intersubjectivity

Psychological relation between people...
...shared (or partially shared) *divergences* of meaning

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Ontological tensions

Natural Worlds

Worlds of reified knowledge; conceptualised into submission and used as ordered centralising power

The inter-subjectivity of disciplines

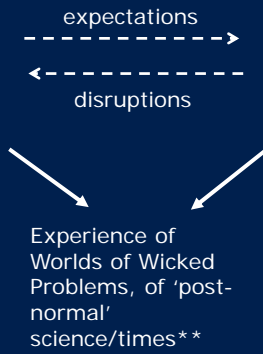
Explaining phenomena by causal extraction

Socio-cultural worlds

Worlds of dynamic information and agency; reified self-interest producing risk and uncertainty through open multiple performances

The inter-subjectivity of actors perspectives

Explanations 'attached' to phenomena themselves



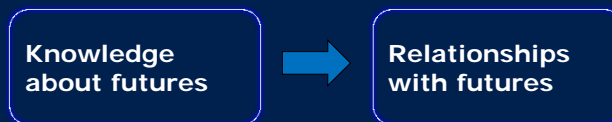
← **"contradictions"** **"chaos"** **"complexity"** →

** Ravetz, J. R. (1999), Ravetz, J R and Funtowicz, S O (1999), Sardar, Z (2010)

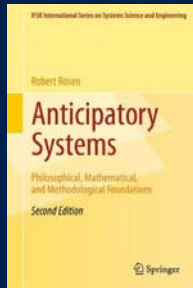
Re-adjusting perspectives

Natural Worlds:
what it means to control nature, as if humans had no intersubjectivity

Socio-cultural '*human*' worlds:
what it means to be human and massively intersubjective



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Foresight as anticipatory system

"An anticipatory system is a natural system that contains an internal predictive model of itself and of its environment, which allows it to change state at an instant in accord with the model's predictions pertaining to a later instant" (Rosen 1985, p341).

Rosen, R. (1985). *Anticipatory systems : philosophical, mathematical and methodological foundations*. Oxford: Pergamon.

Modeling Relations
- Relations between model, effector and whole system, which includes the model

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Anticipatory System (Rosen 1985, Louie 2010)

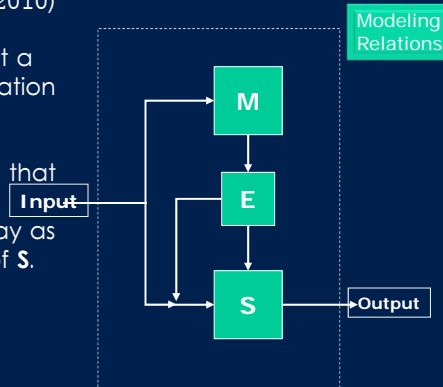
MS is a composite system

M is a predictive model – by looking at a present state of **M**, one obtains information pertaining to a future state of **S**.

M is equipped with a set **E** of effectors that operate either on **S** itself or on the environmental inputs to **S**, in such a way as to change the dynamical properties of **S**. An anticipatory system **S** entails the following:

S possesses a model subsystem **M**; there is an orthogonality between the model **M** and the collection of observables of **S** ~ **M**;

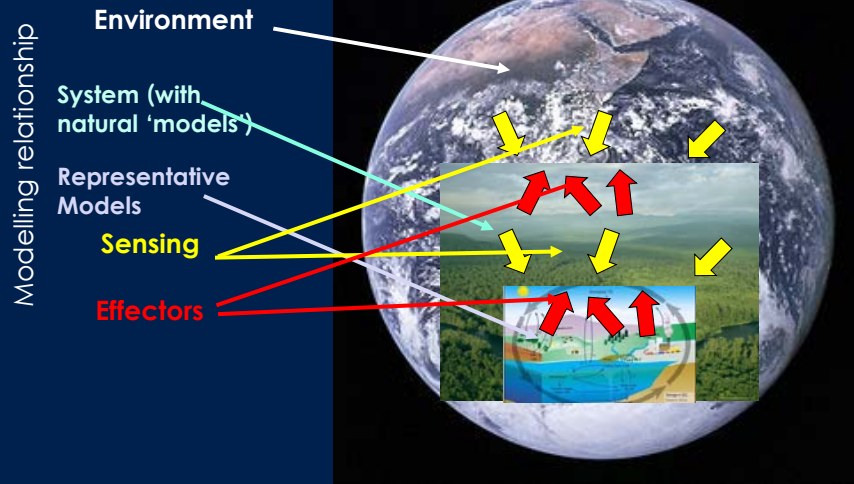
the rate of change (the adaptation) of observables of **S** ~ **M** depends on **M**; the effect of the model **M** creates a discrepancy – **S** would have behaved differently if **M** were absent.



"An **anticipatory system** is a **natural system** that contains an internal predictive model of itself and of its environment, which allows it to **change state at an instant** in accord with the model's predictions pertaining to a **later instant**" (Rosen 1985, p341).



Foresight as explicit anticipatory system



Foresight as anticipatory system

What are the modelling relationships?
Scenarios????

What are the effectors?

All systems, have a distinct quality called **organization** [which...] has to do with more than purely structural or material aspects. For example, organization includes all relations between material parts, relations between the effects of interactions of the material parts, and relations with time and environment, to name a few.

From: [https://en.wikipedia.org/wiki/Robert_Rosen_\(theoretical_biologist\)](https://en.wikipedia.org/wiki/Robert_Rosen_(theoretical_biologist))

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Frank H Knight "Risk, Uncertainty and Profit"

<http://www.econlib.org/library/Knight/knRUPCover.html>

Published 1921
Boston, MA: Hart,
Schaffner & Marx;
Houghton Mifflin Co.

Based on award-
winning dissertation
essay.

**"The net result of
the inquiry is by no
means a defense
of the existing
order. On the
contrary, it is
probably to
emphasize the
inherent defects of
free enterprise."
(Author's Preface)**

"the exact science of inference has little place in forming the opinions upon which decisions of conduct are based [...] We act upon estimates rather than inferences, upon "judgment" or "intuition," not reasoning, for the most part." (III.VII.36)

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Post Normal Science (science for policy)

The difference between normal and post-normal is [...] mainly epistemological, and related with 'situations where the lines between science and politics, facts and values, truth and perspective have become blurred' (Farrell, 2005, p. 3).

In these situations 'quality, explicitly comprising ethics and morality (...) become the organising principle of post-normal science because the old ideal of scientific truth is no longer attainable or relevant for policy' (Funtowicz & Ravetz, 1994, p. 204).

(Carrozza 2011)

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Post Normal Science (science for policy)

- **Irreducible complexity**, deep uncertainties, a plurality of legitimate perspectives, value dissent, high stakes, and decision urgency (Funtowicz & Ravetz, 1991, 1992, 1993a).
- **Uncertainty and values embedded** in technology require critical citizenship (Hauge et al)
- **Reflexivity** – continual reflective negotiation of normativity (Konig et al) through (Funtowicz and Ravetz)' concepts of "extended peer communities" and "extended facts"
- Quality, Reflexivity, Humility (Pereira et al)
- **Situational**: generating different uncertainties in scientific, social, institutional, proprietary , legal, moral domains

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Post Normal Science

(Funtowicz and Ravetz 1993, Ravetz 1999)

... complexity of policy problems corresponds to the complexity of the relevant knowledge. The maintenance and enhancement of **quality**, rather than the establishment of **truth**, is the key problem for science in the post-normal age.

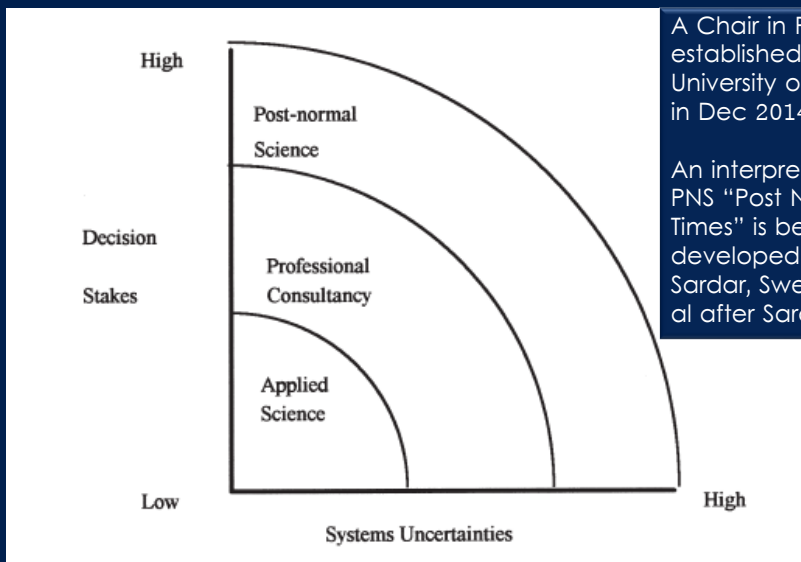
Accomplishing this requires [...*inter-alia*...] **mutual respect** among participants in a dialogue, and a recognition that no side necessarily has a monopoly of **truth or morality**"

Ravetz 1999, p653

An early but
still relevant
approach to
complexity...
and fallibility

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High stakes, high uncertainty



A Chair in PNS was established at University of Bergen in Dec 2014.

An interpretation of PNS "Post Normal Times" is being developed by Sardar, Sweeney et al after Sardar 2010.

Funtowicz and Ravetz 1993, p745
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Operationalising PNS as Post Normal Times

Sardar and Sweeney (2016)

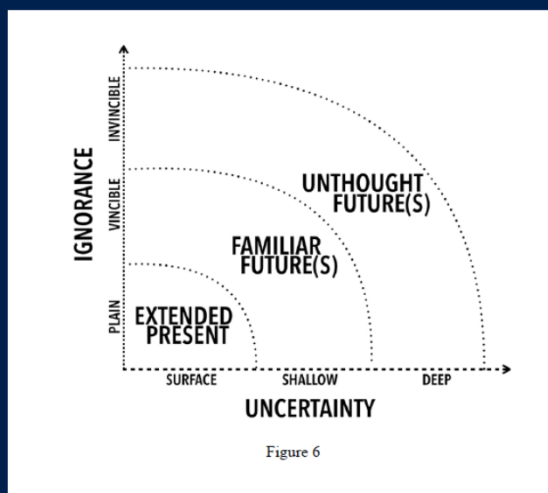
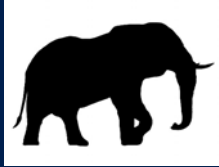


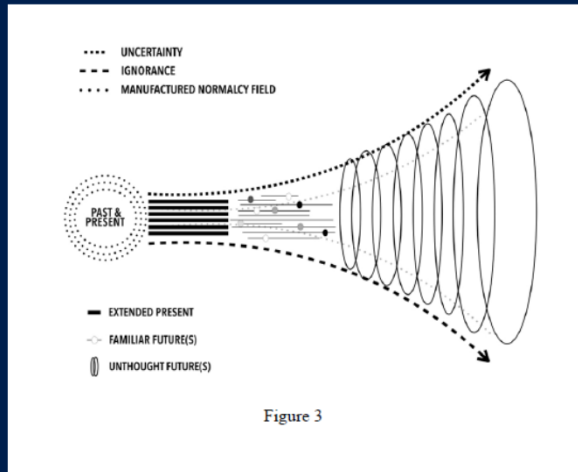
Figure 6

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Operationalising PNS as Post Normal Times

Sardar and Sweeny (2016)



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Dispositional realism

... "the world is an open system consisting of things possessing causal powers or potentialities and liabilities in virtue of their intrinsic structures..."

(Introduction to Bhaskar's *Realist Theory of Science* by Mervyn Hartwig (p xvii) in 2007 edition)

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Dispositions

“... states and dispositions may properly be said to be causes. This the possession of a reason conceived as a more or less long-standing disposition or orientation to act in a certain way, may itself be a cause.”

Bhaskar, PON 1978 p93

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Dispositions as a form of Anticipation

Disposition are not in themselves deterministic because the conditions in which they produce action are emergent, and therefore what is produced by dispositions is emergent.

Understanding the ontological manifestation of conditions and dispositions is important to understanding reasons and causes, i.e. what 'real' causal mechanisms are at work in a given situation.

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Intersubjectivity

Psychological relation between people...
...shared (or partially shared) *divergences* of meaning

Plays a role in establishing the truth of propositions, and constituting the so-called objectivity of objects.

Affect is a prime organizer of experience

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The Future as Cultural Fact*

"Three notable human preoccupations that shape the future as a cultural fact [...]

Affect
(emotions,
sensations
feelings...
imagination,
anticipation and
aspiration..."

"... We need not only to examine the **emotions** that accompany the future as a cultural form but also the **sensations** that it produces: awe, vertigo... [p237]"

*Arjun Appadurai (2013), The Future as Cultural Fact, Essays on the Global Condition, Verso

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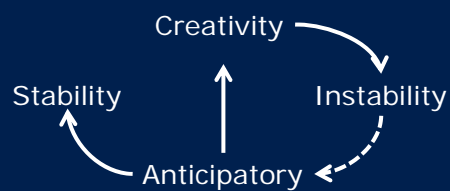
Anticipation as process...

... mediates (between) knowledge and action, and hence has causal power.

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Anticipation as causal ...

What if:



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Anticipation

Anticipation as part of the temporality of being *(Cf Heidegger)*

Anticipation gives absence meaning

Anticipation causes effects and stability

Values and the anticipation of value is central to the relational model.

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Re-adjusting perspectives

Ontological

Ethical

Knowledge about
futures



Relationships with
futures

Complexity
and Systems

Anticipatory process
Responsibility

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What kinds of 'foresight' knowledge in these parallel worlds?

Stable-Informational	Unstable- Creative	Anticipatory
<p>Cognitive: Reification of knowledge and wisdom; Zeitgeist of authoritative fixed points, powers and routines, changed through challenges to authority</p>	<p>Experienced: Reified mashing and quest for novelty of experiences Zeitgeist of heterodox relationships, regulated by (emergent) usable standards</p>	<p>Anticipated: Reified multiple simultaneous possibilities and quest for meta-patterns? Zeitgeist of emotions and sensations of discovery</p>

Knowledge (in)security:
Models of futures



1. Stability and variation: Scenarios as models of an evolving 'knowledge world'

**Generating
Representing
Curating
Narrating**



Knowledge / understanding

Constructed fallibilities?

- risk rather than uncertainties
- Conceptually and evaluatively framed in existing boundaries

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2. (Social) experiments as models of an emergent Creative World

**Acting
Failing
Connecting
Reconceiving**



**Practices, dispositions
modified boundary conditions**

Fallible constructions?

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3. Anticipated Futures

Imagination
Anticipation
Aspiration



Affect: emotions, sensations

Futures as cultural facts (Appadurai)

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The 'scenario' issue; Design of anticipatory capacity

"Organisation" as Anticipatory System

The modelling relationships

Cartesian (un)certainties

Affective / dispositional

Experimental practices

Construction of anticipations

Desires, expectations, prospects

Business models

Value models

Resilience models

Ethics and responsibility

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