GOOD SCIENTIFIC CONDUCT IN POST-NORMAL SCIENCE

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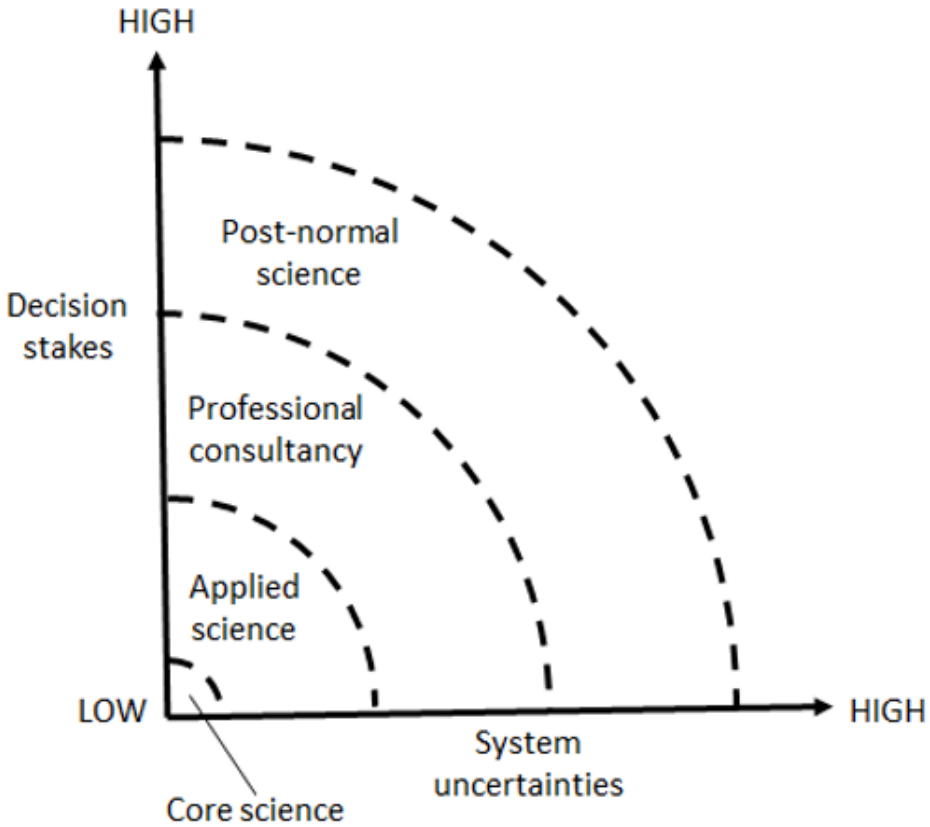


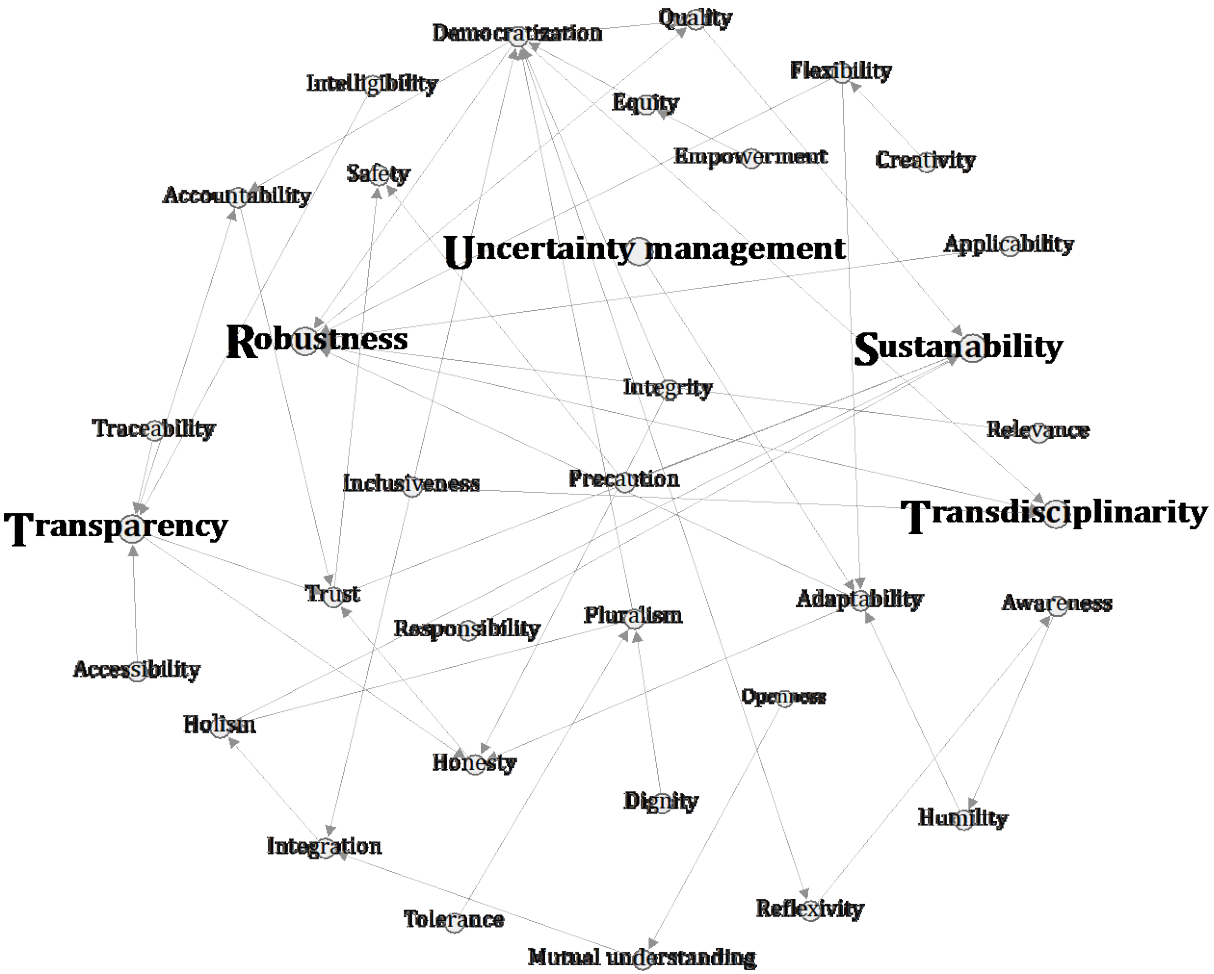
Figure 1: The Post-Normal Science Diagram. (Based on Funtowicz and Ravetz 1993). The diagram distinguishes between the four types of scientific practices: Core science, applied science, professional consultancy and post-normal science. In the post-normal framework the practice and products or results of these four segments of science differ with regard to two parameters. One is the degree of certainty with which questions can be answered or problems solved. This parameter is represented on the horizontal axis of the diagram, which is labeled 'system uncertainties.' The term *systems uncertainties* conveys the idea that science is concerned with problem-solving of different kinds in managing an inherently complex reality rather than with the discovery of facts. The other parameter, represented on the vertical axis, relates to the ethical complexities accompanying research in the area at stake. This parameter, on this post-normal science diagram, is called 'decision stakes.' *Decision stakes* label the various costs, benefits, and value commitments that are involved through the various stakeholders in the issue at hand.

	Normal science		Engineering as consultancy	Post-normal science
	Core science	Applied science		
Goal	Satisfy scientists' curiosity	Support organizations' missions	Satisfy clients' needs	Facilitate political decision-making
Quality assessment	Peer-review	Relative to stakeholders (e.g., manufacturers vs. consumers)	Fulfill clients' specifications / expectations	Extended peer community
Problem-solving strategy	Puzzle-solving		Personal judgment based on experience	Philosophical (epistemological and ethical) judgment
Ethical issues	Scientific misconduct	Misuse of science and technology	Loyalty to clients, compliance with legislation	Ethical dilemmas related to technological risk
Uncertainty management	Technical risk assessment		Methodological uncertainty management	Epistemological analysis of patterns of ignorance

CUDOS

TRUST

THE ETHOS OF PNS



MISCONDUCT IN PNS

Norm	Misconduct
Transparency	Hiding interests and intentions
Robustness	Extended peer-community NOT involved
Uncertainty management	Neglecting uncertainties
Sustainability	Short-term perspective
Trans-disciplinarity	One-dimensional approach