

New paradigm economics¹

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	Old paradigm economics (OPE)	New paradigm economics (NPE)
1 ⁱ	- anti-pluralist (as in classical physics)	- pluralist (as in modern physics)
2 ⁱⁱ	- prioritizes mathematical deductivism	- recognizes that the ontology of much economic phenomena does not fit the requirements of mathematical deductivism
3 ⁱⁱⁱ	- beginning with a pure mathematical model, it gives economic entities definitions that make them isomorphic to those mathematical relations. (i.e., upside-down science)	- chooses its math, as in both classical and modern physics, on the basis of its isomorphism to real-world phenomena, including construction of real-world empirical models using real data (i.e., prioritizes the empirical over <i>apriorism</i>)
4 ^{iv}	- assumes markets converge toward equilibrium and that therefore theories should be framed around the concept of equilibrium	- recognizes the importance of markets that do not converge toward equilibrium and therefore encourages theory and model development not tied to the equilibrium concept
5 ^v	- assumes that when in equilibrium markets have cleared	- does not presume that equilibrium is a market clearing situation
6 ^{vi}	- assumes economic agents have stable preferences and on average behave in a maximizing manner consistent with the neoclassical definition of "rational"	- interested in real-world agent preferences and behavior, "rational" or not, and their macro consequences
7 ^{vii}	- assumes atomistic agents and seeks to explain all meso- and macro-economic phenomena in terms of micro phenomena	- regards agents as social beings, recognizes emergent properties and structures as fundamental to economic reality and thereby the need for a multidimensional ontology
8 ^{viii}	- relies on the ergodic axiom, i.e. reduces uncertainty to risk	- rejects the ergodic axiom, i.e. regards the existence of irreducible uncertainty as a ontological fact that should not be hidden
9 ^{ix}	- treats the planet ("resources") as a subset of the economy	- treats the economy as a subset of the planet and of its biosphere
10 ^x	- claims the possibility of a normative-positive distinction in a monist context	- recognizes that the application of any conceptual framework to a real-world economic situation contains a normative or ideological dimension

¹ This little piece is indebted to the hundreds of *new-paradigm economists* who have published papers in this journal.

ⁱ “Whether you can observe a thing or not depends on the theory which you use. It is theory which decides what can be observed.” [Albert Einstein] Conceptual frameworks and their formalizations attempt to create windows on aspects of the world to the exclusion of others. Pluralism in science generally and in NPE in particular is the belief that x windows, where $x > 1$, are preferable to only one window. NPE also recognizes that conceptualizations, including mathematical languages, shape their users’ perceptions. For example, economists who use only mathematical languages that do not include positive feedback processes, will see the economy very differently than economists who work with modes of mathematical expression that can accommodate such phenomena.

The NPE recognizes that traditionally fences have stood between economics’ various conceptual approaches. The NPE aims to lower these fences and ultimately, as in physics, to remove them altogether so as to form a common toolbox for understanding economic reality. Such progress entails a movement away from faith-based to empirical-based economics.

ⁱⁱ NPE recognizes that economic reality is characterised ontologically by the property of emergence, whereby there come to exist economic phenomena causally and ontologically irreducible to their components, as in new structures rather than merely new aggregations. This limits the usefulness, as primary methods of approach, of traditional mathematical deductivism and methodological individualism.

ⁱⁱⁱ There are two ways that mathematics can be used relative to an object of inquiry. One is to find or invent a mathematics that fits, i.e. is isomorphic to, the structures and processes of that object. For example, Newton’s project of creating classical mechanics was impeded until he invented a mathematics that was isomorphic to the structures he was identifying in the real-world. The other way of applying math or formalism is to make as needed assumptions so as to define elements and combinations of elements in one’s empirical realm of enquiry that are isomorphic to a particular mathematics. This of course is upside-down science. It is the math or formalism that determines what structures are going to be attributed to the real-world, rather than real-world structures determining what mathematics, if any, are capable of describing them. One finds in the original foundation texts of OPE, namely works of Jevons and Walras, the doctrine of upside-down science explicitly and prescriptively spelled out. This has continued to be OPE’s dominant approach to the use of mathematics. NPE, on the other hand, rejects upside-down science.

^{iv} OPE assumes that negative feedback and linear relations always dominate market movements, thereby leading markets toward equilibrium. NPE recognizes that positive feedback, especially in the new millennium, is often built into market and money supply systems, thereby making the concept of equilibrium at best irrelevant to understanding systems in process. This requires the development of new systems of analysis, informal and formal, with the latter requiring the application of branches of mathematics beyond the scope of OPE.

^v When the assumptions of OPE (for example, no institutional factors, no market imperfections, no absence of perfect information, no non-linearities, etc.) are dropped, in other words when real-world situations are considered, then equilibrium or steady-state situations are logically consistent with non-clearing markets, especially unemployment.

^{vi} OPE, with its upside-down methodology, assumes that individual agent behaviour conforms to that particular set of properties necessary for its equilibrium hypothesis to hold mathematically. NPE recognizes the importance of understanding the impact of numerous categories of economic decisions that violate OPE axioms and which increasingly characterise mainstream economic practice.

^{vii} Physics long ago abandoned doctrinal atomism and the requirement of reductive explanation in favour of an ontology in which fields and forces are also fundamental, mass interchangeable with energy and the properties of particles conditioned by their positional context. Despite its human-realm object of inquiry, OPE’s central core remains locked in the metaphysics of 17th century physics. NPE, awoken from “dogmatic slumbers”, radically updates economics’ ontology by including fundamentally non-atomistic dimensions and non-reductive explanation. It recognizes the usefulness of sometimes deploying social atomism as a conceptual framework through which to view the economy. But NPE emphasizes the importance, especially in our digital age, of having in our tool box conceptual windows that treat economic agents as social beings, including endogenous preference formations whose interactive structure is integral to the determination of demand.

^{viii} NPE rejects the assumption that there exists a predetermined economic reality that can be fully described by unchanging objective conditional probability functions. NPE favours models set in historical time, thereby generating non-ergodic stochastic processes. It holds that the OPE

methodology is not only ontologically illusionary but also facilitated, by keeping its approach hidden, the Global Financial Collapse.

^{ix} NPE regards the economy as dependent on the biosphere and as endangering the composition of its atmosphere, including out-of-control amplifying feedbacks. NPE encourages conceptualizations and analysis that:

1. include the Earth as a “living creature” (Plato),
2. recognize the danger of changing the composition of its atmosphere,
3. recognize the possibility of economic forces doing so, and analyze what is needed economically to prevent the ultimate catastrophe.

^x NPE opposes attempts to hide the fact that systems of conceptual analysis and applications of their results to real-world economic situations contain a normative or ideological dimension. What one can or cannot see in the world depends on the theoretical lens through which one looks at the world. Therefore different theoretical approaches offer different sets of choices, real or imagined, to be chosen and acted upon by human populations at large. Moreover, unlike in the physical sciences, in the social sciences, economics especially, the conceptual systems used can alter the objects of their enquiries by becoming part of the conceptual and belief systems through which humans conceive of themselves and of others and by which they make choices. These factors impose ethical obligations on the economics profession which the NPE acknowledges, whereas the OPE does not.

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