A Different Universe: Reinventing Physics from the Bottom Down
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In this book, Professor Robert Laughlin (2005) makes a strong case that all physical laws are emergent by drawing on numerous experimental facts in physics at the level of sub-atomic scale. He also coins the term The Emergent Age to indicate the crossroad at which the current scientific paradigm shift stands. The main theme of A Different Universe is to depict the end of reductionism that gives rise to positivism and replaces it with emergentism that characterizes the coming age of scientific revolution. If Professor Laughlin’s prophecy is correct, then the physical laws, including relativity theories, that physicists used to deem true are subject to severe intellectual challenges and are refutable.

In contrast to reductionism which breaks systems into smaller parts and attempts to construct a theory of everything by understanding how these parts work, emergentism argues that nature can only be understood through principles of organization. That is, more is different. This connotes the meaning of complexity, but whereas complexity theory tries to emulate how natural phenomena work, emergentism looks for the underlying mechanisms under which these phenomena come about. The difference is subtle, but important.

Planning is mainly concerned with phenomena at the level of human scale, but A Different Universe may provide a fresh insight into how we can build planning and urban theories. On the face of it, we may need to re-evaluate/rethink how cities work and how we should make plans accordingly. Cities are no doubt emergent phenomena, and scales matter. Spatial events come and go, and living in a
mega-city is apparently different in quality than living in a small village. Under the emergentist paradigm, one of the greatest challenges in science, thus planning, is to discover laws of emergence across all levels, not just how things work at a certain level. Both cities and planning may be emergent phenomena, and discovering the laws governing these two set of phenomena might prompt a paradigm shift in planning theory in itself, perhaps by replacing urban modeling and planning techniques based on the positivist point of view with those based on the coherentist one (Donaghy and Hopkins, 2006)

References


Laughlin R B, 2006, A Different Universe: Reinvening Physics from the Bottom Down (Basic Books, New York)