Diversity and Complexity

Description

Tweet

by Scott Page, 2011. Available on Google Books Princeton University Press, 14/07/2011 â?? 296 pages

Abstract: This book provides an introduction to the role of diversity in complex adaptive systems. A complex systemâ??such as an economy or a tropical ecosystemâ??consists of interacting adaptive entities that produce dynamic patterns and structures. Diversity plays a different role in a complex system than it does in an equilibrium system, where it often merely produces variation around the mean for performance measures. In complex adaptive systems, diversity makes fundamental contributions to system performance. Scott Page gives a concise primer on how diversity happens, how it is maintained, and how it affects complex systems. He explains how diversity underpins system level robustness, allowing for multiple responses to external shocks and internal adaptations; how it provides the seeds for large events by creating outliers that fuel tipping points; and how it drives novelty and innovation. Page looks at the different kinds of diversityâ??variations within and across types, and distinct community compositions and interaction structuresâ??and covers the evolution of diversity within complex systems and the factors that determine the amount of maintained diversity within a system.Provides a concise and accessible introduction. Shows how diversity underpins robustness and fuels tipping points .Covers all types of diversity. The essential primer on diversity in complex adaptive systems.

RD Comment: This book is very useful for thinking about the measurement of diversity. In 2000 I wrote a paper â??Does Empowerment Start At Home? And If So, How Will We Recognise It?â?• in which I argued thatâ?¦

> â??At the population level, **diversity of behaviour can be seen as a gross indicator of agency** (of the ability to make choices), *relative* to homogenous behaviour by the same set of people. Diversity of behaviour suggests there is a range of possibilities which individuals can pursue. At the other extreme is standardisation of behaviour, which we often associate with limited choice. The most notable example being perhaps that of an army. An army is a highly organised structure where individuality is not encouraged, and where standardised and predictable behaviour is very important. Like the term â??NGOâ?• or â??non-profitâ?•, diversity is defined by something that it is not â?? a condition where there is no common constraint, which would otherwise lead to a homogeneity of response. Homogeneity of behaviour may arise from various sources of constraint. A flood may force all farmers in a large area to move their animals to the high ground. Everybodyâ??s responses are the same, when compared to what they would be doing on normal day. At a certain time of the year all farmers may be planting the same crop. Here homogeneity of practice may reflect common constraints arising from a combination of sources: the nature of the physical environment, and the nature of particular local economies. Constraints on diversity can also arise within the assisting organisation. Credit programs can impose rules on loan use, specific repayment schedules and loan terms, as well as limiting when access to credit is available, or how quickly approval will be give.â?•

See alsoâ?¦

- Pageâ??s 2006 book â??The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools, and Societiesâ??
- Scott Page on Leveraging Diversity on YouTube, in 2010
- Scott Page on Resilience (part 1), (part 2) (part 3) (part 4) (part 5) on YouTube, in 2009

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1. Books
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1. complexity
2. diversity
3. measurement

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