**Sketches of a Diachronic Macroeconomics**

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1. Macroeconomics is the study of patterns of a system
	1. How to characterize the *patterns* or *statistical observables* in a way that reflects the generating process? Issues:
		1. True process captured is the data collection process
		2. Whatever the underlying process being captured, our ability to discern it is only as good as our inferential methods
		3. Public choice issues in indicator creation may muddy the waters when it comes to using indicators as inputs/outputs of policy models (Devereaux upcoming)
	2. Indicator <= InferentialModel(Collection(Data))
	3. Only searching under the streetlamp: the problem with the presumption of equilibrium
		1. Suppose macroeconomic patterns and their concomitant indicators refer not to equilibrium states but to something like ecological loci. Then the processes that produce ecological local (often complex and interconnected) will not be adequately represented by an equilibrium state.
	4. Measures of social health and wellbeing
		1. If GDP <=/= “social welfare,” what is a good/better proxy for social health and wellbeing? Is there such a proxy? What are the drawbacks of a “dashboard” system of many indicators being tracked in “real time”?
			1. Public choice issues of how indicators oar
		2. Network system variables like topological/Kolmogorov complexity, robustness/stability, average path length, presence of microstructures, clustering coefficient, etc only tell us so much about the system
2. Diachronic versus synchronic macroeconomics
	1. Diachronic: Characterized by change
		1. A **diachronic** macroeconomics is inherently non-equilibrium-based
		2. *Time* is a parameter, *equilibrium* is not assumed as the system end-state, *agents* and their *connections* are units of analysis, the turbulent *topology* of the social landscape is both a means and end of agent action (agents act within a landscape and their actions tend to change the landscape)
	2. Synchronic: Characterized by unchangingness
		1. A **synchronic** macroeconomics is inherently equilibrium-based
3. The diachronic macroeconomist
	1. A macrosystems ecologist? (MSE) (Heffernan et al 2014: [http://onlinelibrary.wiley.com/doi/10.1890/130017/full)](http://onlinelibrary.wiley.com/doi/10.1890/130017/full%29)
	2. *Not* a physicist, engineer, or architect

**Diachronic Macroeconomics: a chart**

|  |  |  |
| --- | --- | --- |
|  | Diachronic | Synchronic |
| Units of analysis | Agents, connections, plans, institutions | Agents and connections |
| State | Non-predetermined | At equilibrium |
| Dynamics | In the process of being calculated (turbulent) | Pre-calculated (steady) |
| Society[[1]](#footnote-1) | Creative and coordinative | Mechanical and pre-coordinated |
| Policy[[2]](#footnote-2) | Bottom-up (gardener) | Top-down (engineer) |
| Patterns | Ecological loci | Equilibria |
| Indicators | Constructed | Derived |
| Generative processes[[3]](#footnote-3) | Complex | Simple |
| Methodology[[4]](#footnote-4) | Open, constructive | Closed, non-constructive |
| Evolution[[5]](#footnote-5) | Non-ergodic | Ergodic |
| Political institutions | Entangled | Rationally optimized |
| Computation[[6]](#footnote-6) | A scarce resource | Infinite supply |
| Agents | Problem-solvers | Solution appliers |
| Connections | Networks | Utility |
| Agent interactions | Coupled | Decoupled[[7]](#footnote-7) |
| Knowledge | Local, belief-based, institutional, tacit | Common and pervasive |
| Models | Guides, toys, sketches | Representations of processes |
| Learning | Biased search, trial-and-error, experiential, institutional, normative, biased errors | Search, experiential: Bayesian, mean zero error |
| Uncertainty | Radical, Knightian | Mean zero error |
| Dynamics | Turbulent, nonlinear | Stochastic, deterministic |

1. Wagner (2012) [↑](#footnote-ref-1)
2. See in particular Colander and Kupers (2014), Velupillai (2007), [↑](#footnote-ref-2)
3. Helbing & Kirman (2011); Axtell (2005) [↑](#footnote-ref-3)
4. Velupillai (2012) [↑](#footnote-ref-4)
5. Koppl et al (2015) [↑](#footnote-ref-5)
6. Das (2004) [↑](#footnote-ref-6)
7. Li, N., & Marden, J. R. (2014). Decoupling coupled constraints through utility design. *IEEE Transactions on Automatic Control*, *59*(8), 2289-2294. [↑](#footnote-ref-7)