Article	Type	Research Problem	Research Question(s)	Key Assumptions	Methods	Data	Independent Variables	Dependent Variable(s)	Key Findings	Description of Findings	Contribution	Limitations (acknowledged)	Future Research	My Reflections
Simon (1969) Chp 2&7	Conceptual (book)	Classical economics treats firm decision making as unproblematic, since this is abstracted to what a rational actor would do to maximise profits under known conditions. However, this is a gross simplification of the complexity that exists both within and outside of the firm.	What are the limits of rationality? What is complexity? How can complexity help us understand the existence, evolution and adaptation of organizations?	Organizations are complex adaptive systems; Bounded rationality and limitations to adaptability; Environmental change is exogenous; We can't understand the purpose or process of an artifact (mind, firm etc.) independent of its context (external environment which provides its objective and raison etre).	Holistic vs. reductionist argument: Understanding an artifact's purpose can be done from a holistic perspective (e.g. firm as a black box); understanding how it adapts can be done via feedback and attention to composite parts	Illustrative examples from psychology, electrical and mechanical engineering, etc.	Environmental complexity (chaos, turbulence, market imperfections, uncertainties); Cognitive and organizational limitations (bounded rationality, irreducibility, internal alignment ("fit")	Satisficing behaviour (procedural rationality), bounded search, path dependent, myopic evolution	Organizations (and the human mind) as complex systems need not be fully reducible to serve similar purposes. Organizations only partly address their purpose in their external environment due to their inherent limitations (they can *never* behave rationally). The same starting point can produce significantly different outcomes over time	Illustrate using metaphor (e.g. computer). Shows how computational tools and methods can assist in addressing (managing) complexity, one can *never* fully understand it, and hence one is always satisficing rather than optimizing	Organizations never fully "optimize", but pursue local optima (in accordance with starting point), procedural rationality and satisficing behaviour under complexity. Complexity exists at all levels (e.g. the mind, the unit, the organization, the market etc.) and is never fully reducible; Evolution is path dependent and myopic			
Milgrom & Roberts (1995)	Conceptual with empirical illustration	We have little understanding of the relationship between strategy and structure, as well as the notion of "fit"	Why should strategy and structure "fit" one another? Why is fit hard to achieve?	Firms engage in aggregate profit-maximizing (optimizing) behaviour, but face game-theory logic within the organization. Supermodularity across functions is therefore important - actions are complementary if increasing one gives an incentive to increase the other => Complementarity hence enables alignment of incentives and fit	Conceptual model, applied to two empirical illustrations (one at the industry level and one at the firm level)	(1) Industry-level example (formal modelling): move from mass production to lean/flexible production; (2) Firm-level example (informal analysis): Lincoln Electric	Strategic complementarities and supermodularity	Fit between strategy and structure	Complementarities across actions enables overall fit (and hence aggregate performance). Supermodularity means that incentives align across divisions, and complementarity (simultaneous adaptation) can be achieved. Difficulty in changing even *one* aspect of strategy can cause a deviation from complementarity and fit. This is why firm strategies are so hard to imitate (complexity and causal ambiguity)	Illustration of the model using two empirical illustrations	An organization is more than the sum of its parts. This is why firm strategies are so hard to imitate (must imitate and align all complementary attributes). Also provides an explanation for why isolated strategic changes leads to lower performance.		Does the strength of complementary linkages matter? (addressed to some extent by Levinthal)	
Levinthal (1997)	Conceptual	We know that both population selection pressures and organizational-level adaptation both influence firm survival. However, we lack an understanding of how these two interact.	Why does firm heterogeneity persist? How do population selection and firm-level adaptation processes interact? What does this mean for organization structure and survival over time?	Environmental imprinting at founding; survival of the fittest; bounded rationality; bounded information (noise in search); K increases over time; environment is determined by aggregate firm characteristics; environmental change is exogenous	Conceptual model and simulations	Simulation using N=10 and population=100	K (degree of firm-level epistatic interaction)	The influence and interaction of selection and adaptation processes on firm survival	Tightly-coupled firms need to take long jumps after significant environmental change, although they will have greter difficulty in doing so. Loosely coupled firms can locally adapt.	Described through a simulation with progressive integration of further assumptions and different time periods	(1) There is no single "optimal structure" in rugged landscapes; (2) Interaction and influence adaptation and selection over time depends on firm and environmental characteristics; (3) Firms' reaction to exogenous shocks should depend on K, and how coupled/decoupled they are			
Rivkin (2000)	Conceptual	Firm strategies are difficult to imitate, even when they are well-known (e.g. low causal ambiguity). However, some firms are able to either deter imitation or sustain higher rents from the "same" strategy over long periods. We lack an explanation for this	What prevents the imitation of well-known, winning business strategies? (How does strategic complexity deter imitation?)	Complexity = number of strategic elements and their interaction. Imitation is pursued via search heuristics and learning (incremental improvement, follow-the leader or hybrid search strategies); Bound-out RBV and IO assumptions (e.g. zero search and adaptation costs, no risk of strategic retaliation etc.)	Conceptual model and simulations	Simulations with various values for N and K to show differences	Number of critical strategic attributes (N) and the degree to which one attribute influences others (K)	Nature of the environmental landscape; type of search strategy that will lead to successful imitation	Higher values of either/both N and K increase complexity and make strategies harder to imitate. Incomplete imitation is severely penalized if K is high. Higher N increases search time. Higher K increases the number and distance between peaks, but reduces the average height and attractiveness of peaks. Complexity significantly reduces the effectiveness and timeliness of incremental improvement, follow-the-leader, and hybrid imitation strategies	Show through formulae how increased N and K increase both search time and the nature of the environmental landscape in ways that make successful imitation far more difficult and time consuming	Contributes an alternate view on *sustainable competitive advantage* to RBV and IO (i.e. that complexity provides a significant barrier to limitaiton). RBV criterion of single resource inimitability is not essential to sustained competitive advantage if strategies are sufficiently complex.			
Siggelkow (2001)	Empirical	There is insufficient understanding of the distinction and interaction between internal and external fit. Firm-level inertiainhibits adaptation to environmental changes, however this has not been looked at from a systems (complexity) perspective	How does internal and external fit mediate the relationship between environmental change and ensuing firm change?	External fit = height of a particular point on the landscape; Internal fit = peak in the landscape; Managers position themselves on the landscape via "mental maps" that may or may not update after changes. Tighter initial internal fit => greater inertia; iteration and case confirmation with management and industry experts. Different degrees of change (e.g. significant vs. incomplete)	Proposed process model and illustrative case study	Liz Claiborne case study. Face-to-face interviews, followed by telephone interviews with management team and founder; 900 media and industry articles, analyst reports, company documents; iteration and case confirmation with management and industry experts	Nature of environmental change at t1 (e.g. fit-preserving or fit-destroying) and consequent response (extent of organizational change)	Internal and external fit at t2; firm performance	Firms face significant obstacles to adaptation in the face of fit-conserving change (retained consistency in internal logic but decrease in external fit). Incomplete change under complexity leads to further problems with external fit	(1) Introduction and description of process model/theoretical framework; (2) Case Methods(3) Case Description (history, first period, second period) (4) Explanation of the case in terms of the framework and conclusion	*Cognitive* (as well as structural and psychological) perspective on the type of response (or lack of response) to environmental change. Conceptual and analytical distinction between internal and external fit.		How do managers create and sustain mental models of their landscapes? What types of misrepresentations are more costly?	