particular he points out that: (a) Thom's theorem does not specify that singularities *must* occur in any particular model, but merely classifies any singularities that do occur; (b) even though Thom's theorem does not require restrictions on the dimensionality of the behaviour space, it does require that the parameter space must not be more than five-dimensional; and (c) as applied to dynamic models, catastrophe theory can only deal with "gradient-like" dynamics. Pol concludes by arguing that there are relatively few situations in theoretical economics that satisfy the restrictions necessary to apply the mathematics of catastrophe theory.

FISCHER & JAMMERNEGG investigate inflationary hysteresis using a modified catastrophe theory approach. An important modification is the analysis of stochastic rather than deterministic differential equations. Using the Livingston survey data set on inflationary expectations in the US, they apply a modified least-squares regression technique capable of estimating a multi modal density function. The article is an important example of an empirical test of a catastrophe model. It illustrates a fundamental difficulty with catastrophe theory, namely that Thom's theorem provides a *qualitative* (topological) classification of singularities – i.e. that, under certain conditions, a singularity must be topologically equivalent (diffeomorphic) to one of the "elementary catastrophes". A huge variety of relationships will satisfy this equivalence, and thus catastrophe theory provides little guidance on the specification of equations for estimation purposes.

HO & SAUNDERS apply catastrophe theory to an important policy issue – the regulation of banks. They note that most models of bank failure assume that the path towards bankruptcy or insolvency is a smooth one, not involving sudden change. This approach has led banking regulators to adopt a variety of early-warning indicators to help them identify potential problem banks. The authors argue that this approach is unlikely to be useful if bank failures are sudden and catastrophic jumps. Accordingly, they develop a catastrophe model in which, under reasonable behavioural assumptions, the probability of bank failure can jump suddenly, even with a continuous source of lender-of-last-resort loans. This model shows that, even if regulators intervene to aid banks with high perceived probabilities of failure, this will not be sufficient to prevent catastrophic jumps in the probability of failure. They go on to discuss which banks are most likely to fail, and the circumstances under which several banks might fail simultaneously.

GREGORY-ALLEN & HENDERSON also deal with the question of corporate bankruptcy. They review catastrophe theory and then provide an empirical test of a catastrophe model of bankruptcy. They construct a time series of stock returns for companies that have filed under the chapter 11 bankruptcy procedure. Under certain common conditions, the model predicts a structural shift in stock returns as the date of filing is approached. The authors' results confirm that such a shift does occur in a way that supports the catastrophe model, which they feel raises questions about some of the techniques commonly used in the analysis of bankruptcies.

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Catch-all parties

Burin, Frederic S. and Kurt L. Shell (editors), *Politics, Law and Social Change: Selected Essays of Otto Kirchheimer*, New York: Columbia University Press, 1969

Downs, Anthony, *An Economic Theory of Democracy*, New York: Harper and Row, 1957

Katz, Richard S. and Peter Mair, "Changing Models of Party Organization and Party Democracy: The Emergence of the Cartel Party", *Party Politics*, 1/1 (1995): 5–28

Kirchheimer, Otto, "The Transformation of the Western European Party System" in *Political Parties and Political Development*, edited by Joseph LaPalombara and Myron Weiner, Princeton, New Jersey: Princeton University Press, 1966

Koole, Ruud, "Cadre, Catch-all or Cartel? A Comment on the Notion of the Cartel Party", *Party Politics*, 2/4 (1996): 507–23

Mair, Peter (editor), *The West European Party System*, Oxford and New York: Oxford University Press, 1990

Mendilow, Jonathan, "Israel's Labor Alignment in the 1984 Elections: Catch-all Tactics in a Divided Society", *Comparative Politics*, 20 (1988): 443–60

Roper, Steven D., "The Romanian Party System and the Catch-all Party Phenomenon", *East European Quarterly*, 28/4 (1994): 519–32

Wolinetz, Steven B., "The Transformation of Western European Party Systems Revisited", *West European Politics*, 2 (1979): 4–28

KIRCHHEIMER originated the term "catch-all" for political parties, and remains influential as a touchstone. Focusing first on the historical development of different types of political organization, Kirchheimer observed that political parties were attempting to exchange effectiveness in depth for a wider audience and more immediate electoral success. By sketching out a number of claims about the changing functions performed by political parties, Kirchheimer sparked much subsequent debate. The article is strongest in identifying specific characteristics of catch-all parties, such as reduced ideological baggage, strengthened top leadership, downgraded role for individual party members, movement toward wider recruitment (instead of focusing on appeals to a core constituency), and secured access to a range of specific interest groups.

DOWNS helped provide the theoretical underpinnings for the concept of catch-all parties by positing that political parties attempt to maximize the number of votes they receive. By drawing an analogy between political organizations and economically rational entrepreneurs, Downs suggested that parties would change their platforms in order to attract voters.

The articles compiled in BURIN & SHELL further elaborate Kircheimer's thinking about the concept of catch-all parties. In particular, the essays in Part two of the volume – concerned with the transformation of democratic politics – consider party change and development. The same preoccupation caused WOLINETZ to usefully reconsider Kirchheimer's contribution in the light of further changes in party alignments in Western Europe.

MENDILOW and ROPER are two more recent examples of works that apply the concept of catch-all parties. Exploring

the operation of such parties in Israel, Mendilow posits that, in Western multiparty systems, they will suffer electoral losses unless they retrieve their ideological cargo. The article examines the decision taken by Israel's two largest parties (Alignment and Likud) to adopt catch-all tactics, and the consequences of that decision in the period leading up to the parliamentary elections of 1981 and some years beyond. ROPER, by contrast, focuses on the Romanian case to examine whether broad-based political organizations in Eastern Europe can be described as catch-all parties. In addition to explicating the theoretical relationship between transformations in the party system and the process of nation-building, the article elaborates on earlier work to suggest that catch-all parties have indeed emerged in Eastern Europe.

KATZ & MAIR represents perhaps the most important recent theoretical reconsideration of catch-all parties. The authors challenge the notion (based on the precipitous decline in party membership and related observations) that political parties are waning in influence. Instead, they argue, social scientists should conceive of various models of how parties relate to civil society and to the state. Within this typology, a new model has recently emerged: the cartel party. Cartel parties become agents of the state and collude with each other in employing state resources to ensure their own survival. The article argues that catch-all parties and other forms of political organization have been transformed into cartel parties. Rather than declining, political parties have simply changed form.

KOOLE responds to KATZ & MAIR by arguing that, instead of attempting to discern which kind of party (cadre, catch-all, or cartel) is dominant, it makes more sense to develop a typology that allows for different types to coexist, without assuming that a single model reigns supreme. The author questions both the conceptual clarity and the empirical validity of the notion of cartel parties. The relationship between civil society and the state that the cartel party model assumes may be too static, while at the same time the evidence is mixed about the extent to which parties collude to maintain their dominance.

Finally, MAIR usefully compiles abbreviated versions of the Kirchheimer and Wolinetz articles discussed above, along with other seminal works that analyse political parties and party systems.

WILLEM MAAS

See also Party politics

Causal relationship

Baumrind, Diana, "Specious Causal Attributions in the Social Sciences: The Reformulated Stepping-Stone Theory of Heroin Use as Exemplar", *Journal of Personality and Social Psychology*, 45/6 (1983): 1289–98
Blalock, H.M. Jr (editor), *Causal Models in Panel and Experimental Designs*, New York: Aldine, 1985
Cliff, Norman, "Some Cautions Concerning the Application of Causal Modeling Methods", *Multivariate Behavioral Research*, 18/1 (1983): 115–26
Finkel, Steven E., *Causal Analysis with Panel Data*, Thousand Oaks, California and London: Sage, 1995
Luecke, Daniel F. and Noel F. McGinn, "Regression Analyses and Education Production Functions: Can They Be Trusted?", *Harvard Educational Review*, 45/3 (1975): 325–50
Reichardt, Charles S. and Harry F. Gollob, "Satisfying the Constraints of Causal Modeling" in *Advances in Quasi-Experimental Design and Analysis*, edited by William M.K. Trochim, San Francisco: Jossey Bass, 1986
Sobel, Michael E., "Effect Analysis and Causation in Linear Structural Equation Models", *Psychometrika*, 55/3 (1990): 495–515

The standard for determining causal relations between variables is the controlled experiment in which an independent variable is manipulated to see the effect on a measured, dependent variable. In essence, when a researcher manipulates an independent variable and holds all other variables constant, any changes in the dependent variable can be causally attributed to the effects of the independent variable. BLALOCK has edited a very useful volume that deals with using causal models in experimental designs. Although researchers may habitually assume that causal interpretations emerge without ambiguity from experimental designs, Blalock's edited volume contains some useful caveats regarding interpretation. The creation of variables and the nature of the research design are discussed as important considerations. Further, Blalock's work includes a discussion of causal determination in panel designs involving repeated measurements over time. For this consideration, measurement issues and reliability predominate. This book is not overly technical and should be accessible to those with a modest background in research design and notation and in data analysis.

In recent years, researchers have begun to use statistical controls rather than experimental controls in an attempt to determine causal relations. Although researchers can use these statistical approaches to assess causation, CLIFF points out that they should do so with caution. He points out some of the limitations associated with these approaches. He makes four main points regarding drawing causal inferences based on statistical models. First, data do not confirm a statistical model; rather they merely fail to disconfirm it. This idea comes from Popper's philosophical analysis of the scientific method. A corollary idea is that, even if a proposed model is supported by research, there is an infinite number of others that will also do so. One's initial model may not be the most nearly veridical approach. Second, correlational data are fundamentally unsuitable for assessing causation. Unknown variables may actually influence the measured variables, the so-called third variable problem. Cliff states that one's confidence in causal statements can be enhanced through converging lines of evidence. The third main point that Cliff makes involves the fact that, simply because we develop a hypothetical construct, it does mean that our measurement of that construct is useful. The manifest variable and the construct will not be isomorphic; further, measurement of the manifest variable is subject to random error. Finally, when researchers use statistical models, they can test multiple models until they hit upon one that fits the data. The resulting *ex post facto* explanations may be due entirely to chance. Subsequently, if such conclusions are applied to social policies, the results may be problematic. In a very readable