

# CASE STUDIES AND PROCESS TRACING OUTLINE

Tommaso Pavone ([tpavone@princeton.edu](mailto:tpavone@princeton.edu))

Spring 2015

## THE QUALITATIVE-QUANTITATIVE DIVIDE (OR, KKV vs. EVERYONE)

**King, Keohane, and Verba, *Designing Social Inquiry* (1994)**

---

### 1. Qualitative researchers have much to learn from quantitative practices

- a. Looking to quantitative methods: nonstatistical research will produce more reliable results if researchers pay attention to the rules of scientific inference- rules that are sometimes more clearly stated in the style of quantitative research
- b. Four characteristics of scientific research:
  - i. The goal is inference- to make descriptive or explanatory inferences on the basis of empirical information about the world.
  - ii. The procedures are public- using explicit, codified, and public methods to generate and analyze data whose reliability can therefore be assessed
  - iii. The conclusions must be uncertain
  - iv. The content is the method- the content of science is its method and rules, not its subject matter
- c. Counterfactual analysis is essential for small-N studies: another way of dealing scientifically with rare, large-scale events: the mental construction of a course of events which is altered through modifications in one or more conditions. We then focus on the observable implications of each approach
- d. Principles of theory-building for qualitative research:
  - i. Choose theories that could be wrong (not theories that are clearly wrong).
  - ii. To make sure a theory is falsifiable, choose one that is capable of generating as many observable implications as possible.
  - iii. When articulating a theory, try to be as precise as possible

**1. Points of disagreement with King, Keohane, and Verba (1994)**

- a. KKV apply the same standards of quantitative research to qualitative research: KKV's tools are designed for use with quantitative data, and the book's fundamental advice to qualitative analysts is to use procedures in their own research that make a parallel contribution to valid inference.
  - i. KKV pays insufficient attention to the independent contributions of qualitative tools, sometimes too quickly subordinating them to a quantitative template.
  - ii. There is something wrong with quantitative researchers- who luxuriate in large numbers of observations and even the possibility under some circumstances of doing experiments- trying to impose a code of conduct, a morality, taken from their own experiences. The book even ends on a chapter on increasing the number of observations. Is this the best we can do for qualitative researchers, to recommend that they not be "small-N" researchers?
- b. Sometimes it is useful to study only "positive cases": KKV's warning against designs that lack variance on the dependent variable must be weighed against the analytic gains that can derive from closely analyzing positive cases of a given phenomenon, especially if little is known about it
- c. Sometimes, you can debunk a theory with a single case: It is not true, as KKV contend, that the single observation is not a useful technique for testing hypotheses or theories. (many examples of "most likely" cases debunking theories exist)
- d. KKV don't acknowledge the iterations between theory and data inherent in small-N research: KKV don't acknowledge that for qualitative researchers the refinement of theory and hypotheses through the iterated analysis of a given set of data is an essential research tool, and researchers lose other aspects of analytic leverage by not employing it.
- e. KKV don't recognize the leverage gained from within-case analysis: KKV need to recognize the valuable leverage in causal inference deriving from within-case analysis- which has been a long-standing focus in discussion of qualitative methods and is an important concern.
- f. KKV ignore the fact that explanation is distinct from causal thinking: explanation, say, via classification, does not entail causality.
- g. KKV ignore the contributions of centerpiece studies of comparative research: Many studies that KKV would deprecate as using poor methods have become centerpieces of comparative politics and are seen as persuasive because:
  - i. all of them test, relied upon, or proposed clear and precise theories

- ii. all focused on anomalies, either in the prevailing theories or in the world- cases that contradicted received beliefs or unexpected regularities

## 2. Points of agreement with KKV

- a. Both believe that selecting on the DV is often necessary in small-N research: Within the framework of nonrandom sampling, KKV is careful to avoid a piece of cliched advice that is often invoked in discussion of selection bias- don't select on the dependent variable. Instead, KKV argues that scholars who, for good reason, avoid random sampling and do select on the dependent variable should choose cases to reflect the full range of variation on that variable.
- b. Both believe that researchers should move beyond the uniqueness of cases by extracting analytically relevant features
- c. Both believe that researchers should strive to make their work replicable

## James Mahoney and Gary Goertz, *A Tale of Two Cultures* (2012)

---

### 1. Quantitative research and qualitative research belong to two different traditions

- a. Explaining outcomes of a single case: A core goal of qualitative research is to explain outcomes in individual cases. In qualitative research, a particular case that does not conform to the investigator's causal model is not simply ignored. Instead, the researcher seeks to identify the special factors that lead this case to follow a distinctive causal pattern. For quantitative research, the failure to explain particular cases is not a problem so long as the model provides good estimates of parameters for the population as a whole.
- b. Causation using necessary and sufficient cases: Qualitative researchers often think about causation in terms of necessary and/or sufficient causes. They think about causation in individual cases in terms of a necessary condition counterfactual: if not X, then not Y: X is a cause of Y because without X, Y would not have occurred. This uses logic and set theoretic terms.
  - i. With regards to picking cases where there is variance on the dependent variable, if the hypothesis under consideration postulates necessary causes, as is common in qualitative research, then this is not necessary.
- c. Boolean equations instead of regression equations: In qualitative research, the alternative to the typical regression equation is the set-theoretic Boolean model based on the INUS approach to causation
- d. Conjunctural causation: In the qualitative tradition, one often focuses primarily on the impact of combinations of variables and only occasionally focuses on the effects of individual variables (opposite for the quantitative tradition)

- e. A focus on specifying equifinality: the idea that there are multiple causal paths to the same outcome. What makes equifinality distinctive in qualitative work is the fact that there are only a few causal paths to a particular outcome. Each path is a specific conjunction of factors, but there are not very many of them. Within the more limited scope conditions of qualitative work, the goal is to identify all the causal paths present in the population.
- f. The centrality of scope conditions: In qualitative research, it is common for investigators to define the scope of their theories narrowly such that inferences are generalizable only to a limited set of cases (or the study under consideration). In quantitative research, scholars usually define their scope more broadly and seek to make generalizations about large numbers of cases
- g. Selecting on the dependent variable: Qualitative researchers usually start their research by selecting cases where the outcome of interest occurs. Quite commonly they also choose negative cases to test their theories. In quantitative research, researchers generally select cases without regard for their value on the dependent variable (in fact, ideally the selection is random on independent variables)
- h. Causal process observations: within-case analysis, which relies on causal-process observations, provides substantial leverage for causal inference even when the  $N = 1$ . Negative outcome cases for contrast can be good too.
- i. Unit heterogeneity: quantitative scholars generally make no assumptions that some pieces of evidence should count more heavily than others. They usually weigh a priori all observations equally. A single observation cannot lend decisive support or critically undermine a theory. Yet the exact opposite holds for qualitative researchers.
- j. Critical cases leveraging prior theoretical knowledge: For qualitative scholars all cases are not treated equal; some are more important than others. Researchers explicitly pursue most likely, least likely, and critical case study research designs. These assume prior theoretical knowledge that makes certain cases especially interesting and theoretically important
- k. Separating concepts from measurement: Some quantitative scholars would go so far as to say that a concept is defined by the indicators used to measure it, a position that qualitative researchers would almost never endorse

**James Mahoney, “After KKV: The New Methodology of Qualitative Research” (2010)**

---

**1. KKV vs. more recent approaches’ take on process tracing**

- a. KKV’s view is that process tracing is a good way to increase the number of observations that is unlikely to yield strong causal insights: KKV understand process tracing as the search for intervening variables that link an

independent variable with a dependent variable. They view uncovering these intervening steps as part of ... estimating the causal effect (if any) of an independent variable of interest... they advocate process tracing as potentially “very valuable” because it could “increase the number of theoretically relevant observations.” On the other hand, they suggest that process tracing is “unlikely to yield strong causal inference” and can only “promote descriptive generalizations and prepare the way for causal inference”

- b. The new methodology seeks process tracing as the concatenation of causal-process observations: Process tracing contributes to causal inference primarily through the discovery of CPOs. It is not a methodology whose strength derives mainly from DSOs. As Gerring observes, process tracing often generates noncomparable observations that cannot be assembled into a standardized rectangular data set but that are nonetheless extremely useful for causal inference.
  - i. A mechanism CPO “provides information about whether an intervening event posited by a theory is present. It is not primarily by expanding the size of the N that these CPOs increase leverage. Instead, the leverage they provide derives from the ability of individual observations to confirm or challenge a researcher’s prior expectations about what should occur.”

## 2. **The distinction between case studies and regression analysis**

- a. Case study research and statistical research are designed to do very different things. “Case studies seek to tell us why particular outcomes happened in specific cases; statistical studies try to estimate the average effects of variables of interest. Both are important issues, and they are related to one another, but for some topics one cannot pursue them at the same time. When scholars engage in multimethod research, therefore, they often pursue primarily either the comprehensive explanation of specific outcomes or the estimation of the average effects of variables of interest.”

## **SMALL N COMPARATIVE CASE STUDIES**

### **Harry Eckstein, “Case Study and Theory in Political Science” (1975)**

---

#### 1. **What is a case study?**

- a. Definition of a case: a phenomenon for which we report and interpret only a single measure on any pertinent variable

- b. Definition of a comparative case study: the study of numerous cases along the same lines, with a view to reporting and interpreting numerous measures on the same variables of different “individuals.”
  - c. Case studies are intensive and holistic: We seek to plunge within a case without curtailing the number of variables much
  - d. What is a case depends on the research question: A study of six elections in Britain may be, but need not be, an n=1 study. It might also be an n=6 study. It can also be an n = 120,000,000 study. it depends on whether the subject of study is electoral systems, elections, or voters
2. **How useful is the case study method at various stages of theory-building?**
- a. Case studies are most useful at the theory-testing stage: Case studies are valuable at all stages of the theory-building process, but most valuable at that stage of theory building where least value is generally attached to them: the stage at which candidate theories are “tested”
  - b. Case studies are most useful for studying macropolitical phenomena, like party systems, nation-states, or political cultures
  - c. A single case study can generate a generalizable theory:
3. **How is the case study best conducted**
- a. Not as interpretive studies: because these studies do not easily add up to reliable and valid statements of regularity about sets of cases, or even about a case in point
  - b. Not as theory-building, heuristic case studies: because proponents of these case studies see no more ambitious function to be served by case study, and they claim too much of these studies as a heuristic tool, especially compared to n = many studies.
  - c. As crucial case studies: If we have a theory, and we find that the theory's line (think of a regression line) passes through a point (the critical case study) or very close to it, this is far from insignificant

---

**Barbara Geddes, “How the Cases You Choose Affect the Answers You Get” (1990)**

1. **Against selecting on the dependent variable**

- a. Mistaken inferences that can occur through selecting on the DV:
  - i. Concluding that any characteristic that the selected cases share is a cause.
  - ii. Assuming that a relationship (or the absence of a relationship) between variables within the selected set of cases reflects relationships in the entire population
- b. Example: Labor repression and high economic growth in East Asia
  - i. Researchers who were interested in explaining why certain developing countries have grown more rapidly than others regularly selecting a

few successful then- developing countries for study, notably Taiwan, South Korea, Singapore, Brazil and Mexico. Since all of the countries shared a common characteristic—control/repression of labor—researchers concluded that repression of labor caused high economic growth

- ii. However, one cannot infer that the relationship holds for all developing countries since “selection of cases by virtue of their location in East Asia biases the sample just as surely as selection explicitly based on growth rates. This is so because, on average, growth rates in East Asia are unusually high.”

### **Stanley Lieberman, “Small Ns and Big Conclusions” (1992)**

---

#### **1. Small-N case studies require deterministic theories**

- a. Difficulties evaluating probabilistic theories with case studies: Except for probabilistic situations which approach 1 or 0 (in other words are almost deterministic), studies based on a small number of cases have difficulty in evaluating probabilistic theories
- b. The necessity of deterministic theories: The formal procedures used in small-N comparative, historical, and organizational analyses under consideration are all deterministic in their conception. Indeed, small-N studies cannot operate effectively under probabilistic assumptions, because then they would require much larger Ns to have any meaningful result.

#### **2. The Limitations of Mill’s Methods**

- a. Mill’s methods of agreement and disagreement only work when:
  - i. There is only one cause
  - ii. There are a deterministic set of forces
  - iii. There are no interaction effects
  - iv. There is confidence that all possible causes are measured
  - v. There are no measurement errors
  - vi. The same clean pattern would occur if data were obtained for all cases in the universe of relevant cases
- b. The foregoing means that Mill’s methods are usually inapplicable to small-N studies

### **Bent Flyvbjerg, “Five Misunderstandings About Case-Study Research” (2006)**

---

#### **1. Theoretical knowledge is more valuable than practical knowledge**

- a. Response: the case study produces the type of context dependent knowledge that research on learning shows to be necessary to allow people to develop

from rule-based beginners to virtuoso experts. For researchers, the closeness of the case study to real-life situations and its multiple wealth of details are important in two respects:

- i. It is important for the development of a nuanced view of reality, including the view that human behavior cannot be meaningfully understood as simply the rule-governed acts found at the lowest levels of the learning process and in much theory
- ii. cases are important for researchers' own learning processes in developing the skills needed to do good research

**2. One cannot generalize from a single case**

- a. Response: One can often generalize on the basis of a single case, and the case study may be central to scientific development via generalization as supplement or alternative to other methods. But formal generalization is overvalued as a source of scientific development, whereas “the force of example” is underestimated.
  - i. Atypical or extreme cases often reveal more information because they activate more actors and more basic mechanisms in the situation studied.
  - ii. The selection of materials provided the possibility to formulate a generalization characteristic of critical cases, a generalization of the sort “If it is valid for this case, it is valid for all (or many cases.” In its negative form, the generalization would be, “If it is not valid for this case, then it is not valid for any (or only few) cases.”

**3. Case studies can only help generate hypotheses**

- a. Response: Further, if one observation (or case study) does not fit with the proposition (or general theory), it is considered not valid generally and must therefore either be revised or rejected.

**4. The case study is biased towards verification**

- a. Response: The case study contains no greater bias toward verification of the researcher's preconceived notions than other methods of inquiry. On the contrary, experience indicates that the case study contains a greater bias toward falsification of preconceived notions than toward verification.

**5. It is problematically difficult to summarize specific case studies**

- a. Response: To the case study researcher, a particularly thick and hard to summarize narrative is not a problem. Rather, it is often a sign that the study has uncovered a particularly rich problematic. It is correct that summarizing case studies is often difficult, especially as concerns case process. It is less correct as regards case outcomes. The problems in summarizing case studies, however, are due more often to the properties of the reality studied than the case study as a research method.



**1. Lijphart (1971)’s early formulation**

- a. Case studies as the poor cousin of statistical analysis: If at all possible one should generally use the statistical (or even the experimental) method instead of the weaker comparative method. But often, due to time/resource constraints, the intensive comparative analysis of a few cases may be more promising than a more superficial statistical analysis of many cases.
- b. Case studies as mainly suited to theory-building: In such a situation, the most fruitful approach would be to regard the comparative analysis as the first stage of research, in which hypotheses are formulated, and statistical analysis as the second stage, in which these are tested in as large a sample as possible
- c. Ways to overcome the weakness of the comparative method:
  - i. Pick cases matched on many variables not central to the study (most similar case design)
  - ii. Select them so that the key variable varies, thereby allowing a more adequate assessment of its influence
  - iii. Reduce the number of variables by combining them or through theoretical parsimony

**2. Donald Campbell recants his dismissal of case studies in Campbell (1963)**

- a. The value of “pattern-matching”: Any given hypothesis about a case has implications for many facets of the case. By using the procedure of “pattern matching” to discover if these implications are realized, the analyst can multiply the opportunities, within what may initially have been viewed as a “single” case to test hypotheses (these can be captured with process tracing)

**3. Przeworski and Teune (1970) most different case approach**

- a. Most different systems design: Przeworski and Teune criticize Lijphart’s recommendation of comparing very few, extremely closely matched cases, saying there remains a problem of “overdetermination” in that this design will fail to eliminate many rival explanations, leaving the researcher with no criteria for choosing among them.
- b. They prefer instead a “most different” systems design, based on a set of cases as diverse as possible in which the analyst traces similar processes of change.

**4. Comparative Historical Analysis**

- a. Systematic comparison of cases across time: These studies have in common a commitment to systematic qualitative comparison that often involves a number of nations and evaluates each national case over a number of time periods.

**1. Combining cross-case Millian methods with within-case process tracing**

- a. Combining cross-case and within-case analysis:
  - i. “Process tracing is especially valuable for establishing the features of the events that compose individual sequences (e.g., their duration, order, and pace) as well as the extent and kind of causal mechanisms that exist among them.”
  - ii. “Cross-case methods (Millian methods, in particular) are used to evaluate whether the specific features of a sequence (e.g., the ordering of events within sequences) affect outcomes of interest in previously hypothesized ways.”
- b. Dismantling the separation between theory development and data collection: “This separation between the domains of discovery and confirmation is less crucial when one’s goal is to develop explanations that account for real world outcomes in specific historical cases or processes...In other words, when the researcher seeks to account for real world outcomes or explain an empirical puzzle as it crystallizes from the in-depth analysis of a small set of cases, processes, or sequences, the interplay between theory and evidence, between inductive and deductive modes of reasoning, is intensive.”

**2. Mill’s methods of agreement and difference**

- a. Mill’s method of agreement: Matches cases that share a given outcome, and it eliminates any potential causal factor that is not shared by these cases. The rationale of this eliminative procedure is that the factor is not necessary for the outcome.
- b. Mill’s method of difference: Compares a case in which the outcome is present to a case in which it is absent. If these cases share a given causal factor, that factor is eliminated as a potential explanation. The logic of this eliminative procedure is that the factor is not sufficient for the outcome
- c. Weaknesses of Millian methods in the absence of process-tracing: “Most simply, while these methods may be able to discover that an individual factor is not necessary/sufficient for an outcome, they cannot establish that a given condition is necessary/sufficient. Small-N researchers thus normally must combine Millian methods with process tracing or other within-case methods to make a positive case for causality.”

**3. Causal Processes**

- a. A sequence is a temporally ordered set of events.
- b. A process a process is a particular type of sequence in which the temporally ordered events belong to a single coherent pattern of activity
- c. The nature of the linkages between events can vary:
  - i. Each event may be understood as necessary for each subsequent event

- ii. Each event may be understood as probabilistically increasingly the likelihood of each subsequent event
- iii. Each event may be understood as parts of conditions that are sufficient for each subsequent event
- d. Pace vs. sequence-focused arguments
  - i. Sequence-focused: With ordered sequential arguments, the relative order of the events in a sequence is causally consequential for the outcome of interest
  - ii. Pace/duration-focused: Paced sequential arguments are similar to ordered sequences except that the speed and/or duration of events – not their timing relative to one another – is causally consequential

#### 4. Types of Causal Processes

- a. Reactive processes: early events in a sequence may produce a series of reactions and counteractions that do not move in a consistent direction. With a reactive process, early events are followed by backlashes and reversals of direction, which in turn may trigger further backlashes and reversals, such that the final outcome of the sequence may appear unrelated to early events in the sequence
- b. Self-reproducing processes: Here, the movement of initial events in particular direction induces subsequent events that move the process in the same direction. These may come in different forms:
  - i. Processes where the underlying process remains unchanged (“background constant conditions”)
  - ii. Processes that amplify (“self-reinforcing processes”)
  - iii. Processes that erode (“self-eroding processes”)

**James Mahoney and Dietrich Rueschemeyer, *Comparative Historical Analysis in the Social Sciences* (2003)**

---

#### 1. The logic of comparative analysis

- a. The central features: CHA defined by a concern with causal analysis, an emphasis on processes over time, and the use of systematic and contextualized comparison.
- b. CHA seeks causal explanations, not historical narrative: CHA is concerned with explanation and the identification of causal configurations that produce major outcomes of interest. As such, CHA does not include work that explicitly rejects causal analysis
- c. CHA seeks to uncover historical sequences/patterns: CHA researchers explicitly analyze historical sequences and takes seriously the unfolding of processes over time. Social revolutions, the commercialization of agriculture, or state formation are not static occurrences taking place at a

- single, fixed point; rather they are processes that unfold over time and in time
- d. Measurement and conceptual validity by studying context: Because CHA researchers usually know each of their cases well, they can measure variables in light of the broader context of each particular case, thereby achieving a higher level of conceptual and measurement validity than is often possible when a large number of cases are selected. This facilitates what Thelen (1995) calls “contextualized comparisons”

## **Robert Bates et al., *Analytic Narratives* (1998)**

---

### **1. What are analytic narratives?**

- a. They combine economic/political science analysis with the narrative form: “Our approach is narrative; it pays close attention to stories, accounts, and context. It is analytic in that it extracts explicit and formal lines of reasoning, which facilitate both exposition and explanation.”
- b. They leverage formal arguments where possible, built on the basis of qualitative insights:
  - i. “Where possible, we make use of formal arguments. In particular, we analyze games, since we find them useful in order to create and evaluate explanations of particular outcomes. We identify agents...”
  - ii. By reading documents, laboring through archives, interviewing, and surveying the secondary literature, we seek to understand the actors’ preferences, their perceptions, their evaluation of alternatives, the information they possess... We then seek to piece together the story that accounts for the outcome of interest.”
- c. From historical narrative and thick description to thin, rational-choice generalizations:
  - i. “We follow Alexander George in tracing the historical processes that characterized the unfolding of the events of concern... In the words of Richard Fenno (1990), we “soak and poke.” In the phrasing of Clifford Geertz (1973), we seek “thick” description... “
  - ii. “But we do not stop there. In an effort to move from apprehension to explanation, we move from “thick” accounts” to “thin” forms of reasoning. We seek to highlight and focus upon the logic of the processes that generate the phenomena we study. In doing so, we use rational choice theory. We find game theoretic models particularly useful ways of exploring the validity of narrative accounts.”
- d. Similarities and distinctions with within-case process-tracing:

- i. Similarities: “we move back and forth between interpretation and case materials, modifying the explanation in light of the data, which itself is viewed in new ways, given our evolving understanding.”
- ii. Distinction: “What differentiates our approach from the method of process tracing is a greater emphasis on theory.”

## **Peter Hall, “Aligning Ontology and Methodology in Comparative Research” (2003)**

### **1. The divergence between methodology and ontology**

- a. Methodology: “the means scholars employ to increase confidence that the inferences they make about the social and political world are valid”
- b. Ontology: “The fundamental assumptions scholars make about the nature of the social and political world and especially about the nature of causal relationships within that world... At a fundamental level, it is how we imagine the social world to be”
- c. Methodologies assume distinct ontologies: “Ontology is ultimately crucial to methodology because the appropriateness of a particular set of methods for a given problem turns on assumptions about the nature of the causal relationships they are meant to discover”
- d. The increasing divergence between the two:
  - i. There has been a postwar trend in comparative politics towards statistical methods, based on the standard regression model
  - ii. Over the same period, the ontologies of the field have moved in a different direction, toward theories, such as those based on path dependence or strategic interaction, whose conceptions of the causal structures underlying outcomes are at odds with the assumptions required for standard regression techniques and conventional comparative method

### **2. The flaws of the early comparative method (i.e. Lijphart 1971; Eckstein)**

- a. Lijphart’s misframing of the comparative method:
  - i. “Lijphart’s conception of the comparative method was deeply influenced by his framing of it. This framework led him to see the comparative method as one analogous to the statistical method and different from it largely because only a small number of cases are inspected. Again, the bases for that inspection are Mill’s methods of agreement and difference.”
  - ii. “As portrayed by Lijphart and most others, the comparative method is essentially correlational. It based inference about causal relations on covariation between a dependent variable and a small set of independent variables, and inspection of the cases is used primarily to determine the presence or value of such variables in them.”

- iii. “Construed in these terms, the comparative method is a distinctly fragile one for establishing causal inferences, fraught with problems of “omitted variable bias””
- b. Conflation of cases and observations:
  - i. Eckstein (1975) and Lijphart (1971) assumed that the only observations pertinent to the testing of a theory were those based on observations of a dependent variable and a few independent variables cited to explain it. From this perspective, where the outcome of interest was a system-level variable, the concept of a case could be assimilated to a single observation
    - 1. Instead, we must recall: “A single unit may provide only one observation on the principal outcome of interest, but it can yield a diverse array of other observations pertinent to the testing of a theory, including ones bearing on the causal processes specified by the theory”

### 3. **The weaknesses of regression analysis**

- a. Five causal relationships missed by regression analysis:
  - i. An increase in x causes an increase in y in some cases but not on others, where y is caused by an entirely different set of variables, w
  - ii. An increase in x is associated with an increase in y at one point in time but not at another point in time
  - iii. An increase in x causes an outcome y in some cases but an entirely different outcome in other cases
  - iv. An outcome y depends on the value of many other variables whose values are in turn jointly dependent on each other
  - v. Increases in x increase y and where increases in y also tend to increase x
- b. Unit homogeneity: regression assumes unit homogeneity, which is to say that, other things being equal, a change in the value of a causal variable x will produce a corresponding change in the value of the outcome variable y of the same magnitude across all the cases

### 4. **The new ontology of causation**

- a. A focus on sequencing and interactions: “Theories of strategic interaction and of path dependence both see the world not as a terrain marked by the operation of timeless causal regularities, but as a branching tree whose tips represent the outcomes of events that unfold over time... If this is true, the timing of a particular development can matter a great deal to its effect.”
- b. The declining emphasis on parsimony: If important political outcomes depend not on a few socioeconomic conditions but on complex chains of strategic interaction...parsimony is no longer seen as a key feature of explanation in political science, and views about what constitutes an acceptable mode of explanation have shifted toward the historical

## 5. The promise of small-N comparative case studies

- a. The correct understanding of the comparative method: “Instead of viewing comparison primarily as an exercise in correlating a few independent variables with a dependent variable, we should understand the comparative method as a technique in which inspection of this kind is combined with systematic process analysis of the cases.”
  - i. “Precisely because such research designs cover small numbers of cases, the researcher can investigate causal processes in each of them in detail, thereby assessing the relevant theories against especially diverse kinds of observations.”
- b. Systematic process analysis (or comparative historical case studies):
  - i. Step 1: Formulating a set of theories that identify the relevant causal factors and how they operate, along with a rationale for their operation generally couched as deductions from more general contentions about the world based both on previous observations and on axiomatic premises
  - ii. Step 2: the investigator should focus special attention on phenomena about which the predictions of the theories diverge. This is not simply a search for “intervening” variables. The point is to see if the multiple actions and statements of the actors at each stage of the causal process are consistent with the image of the world implied by each theory

## PROCESS TRACING AND CAUSAL MECHANISMS

### Henry Brady and David Collier, *Rethinking Social Inquiry* (2010)

---

#### 1. Causal inference via qualitative process-tracing

- a. It entails “thick” rather than “thin” analysis: “in the sense that analysts place great reliance on a detailed knowledge of cases. Indeed, some scholars consider thick analysis to be the single most important tool of the qualitative tradition.”
- b. It is more case-oriented than it is variable-oriented: “Of course, qualitative researchers do think in terms of variables, and quantitative researchers do deal with cases. The point is simply that qualitative researchers are more often immersed in the details of cases, and they build their concepts, their variables, and their causal understanding in part on the basis of this detailed knowledge.”
- c. It leverages “causal process observations” instead of “dataset observations”:
  - i. A causal process observation is a piece of data or information that provides information about a causal mechanism and social context.

- ii. A dataset observation is a score for a given case, in the form of a row in a rectangular dataset, and provides the basis for correlational inference amongst variables.
- d. It does not require many observations in light of a few, key observations: “A small number of causal-process observations, that seek to uncover critical turning points or moments of decision making, can play a valuable role in causal inference. Making an inference from a smoking gun does not require a large N in any traditional sense. However, it does require careful thinking about the logic of inference and a rich knowledge of context, which may in turn depend on many additional causal-process observations.”

**Derek Beach and Rasmus Pedersen, *Process Tracing Methods* (2013)**

---

**1. What is process tracing?**

- a. Definition: “Process tracing involves attempts to identify the intervening causal process- the causal chain and causal mechanism - between an independent variable (or variables) and the outcome of the dependent variable.”
- b. Process-tracing involves a mechanistic understanding of causality: “we are interested in the theoretical process whereby X produces Y and in particular in the transmission of what can be termed causal forces from X to Y... A mechanism can be infrequent. What is necessary is that X actually produces Y through a causal mechanism linking the two.”
  - i. Hence historical narrative absent an assessment of the underlying causal mechanisms (or where the mechanisms are black-boxed) does not constitute process tracing
- c. It tends to entail a deterministic understanding of causality: Following Mahoney (2008), “At the individual case level, the ex post (objective) probability of a specific outcome occurring is either 1 or 0; that is, either the outcome will occur or it will not... Single-case probabilities are meaningless.”
- d. It entails leveraging congruence methods: “Congruence methods are within-case studies where the similarities between the relative strength and duration of the hypothesized causes and observed effects are assessed”
- e. It entails leveraging process-tracing tests for causal inference:
  - i. Straw-in-the-wind tests: These have low disconfirmatory power and low confirmatory power. They entail investigating the presence of a condition that is neither necessary nor sufficient, but which may still be unlikely in the absence of the posited causal chain



- ii. Smoking-gun tests: These have high confirmatory power but low disconfirmatory power. They entail investigating the presence of a condition that is sufficient but not necessary.
- iii. Hoop tests: These have high disconfirmatory power, but low confirmatory power. They entail investigating the presence of a necessary but not sufficient condition.
- iv. Doubly-decisive tests: These have high disconfirmatory power and high confirmatory power. They entail investigating the presence of a necessary and sufficient condition.

## 2. Three types of Process-Tracing

- a. Theory-testing process tracing: “A causal mechanism is hypothesized to be present in a population of cases of a phenomenon. The researcher selects a single case where both X and Y are present, and the context allows the mechanism to operate. Here the goal is to evaluate whether evidence shows that the hypothesized causal mechanism linking X and Y was present and that it functioned as theorized.”
- b. Theory-building process tracing: “It starts with empirical material and uses a structured analysis of this material to detect a plausible hypothetical causal mechanism whereby X is linked to Y. This inductive, theory-building variant of process tracing is surprisingly neglected in the literature. We use it when we know of a correlation but don’t know the causal mechanism; or when we know an outcome but are unsure about the causes.”
- c. Explaining outcome process tracing: “Here the ambition is to craft a minimally sufficient explanation of a particular outcome, with sufficiency defined as an explanation that accounts for all of the important aspects of an outcome with no redundant parts being present.”
- d. This approach is less theory-driven and more case-centric: It “involves assuming that the social world is very complex, multifactored, and extremely context-specific. This complexity makes the ambition of producing knowledge that can be generalized across many cases difficult, if not impossible. So the ambition is to account for particularly puzzling outcomes without a generalizable theory.”

## David Collier, “Understanding Process Tracing” (2011)

---

### 1. The building blocks of process tracing

- a. Careful description: “Process tracing inherently analyzes trajectories of change and causation, but the analysis fails if the phenomena observed at each step in this trajectory are not adequately described. Hence, what in a sense is “static” description is a crucial building block in analyzing the processes being studied.”

- b. Sequence: “Process tracing gives close attention to sequences of independent, dependent, and intervening variables.” Hence “as a tool of causal inference, process tracing focuses on the unfolding of events or situations *over time*.”

## 2. Four process-tracing tests

- a. Straw-in-the-wind tests:
  - i. If passed: Affirms relevance of hypothesis, but does not confirm it
  - ii. If failed: Hypothesis is not eliminated, but is slightly weakened
  - iii. Test for: a neither necessary nor sufficient condition for the unfolding of the posited causal process
- b. Hoop tests:
  - i. If passed: Affirms relevance of the hypothesis, but does not confirm it.
  - ii. If failed: Hypothesis is eliminated
  - iii. Test for: a necessary but insufficient condition for the unfolding of the posited causal process
- c. Smoking-gun tests:
  - i. If passed: Confirms the hypothesis
  - ii. If failed: Hypothesis is not eliminated, but is somewhat weakened
  - iii. Test for: a sufficient but unnecessary condition for the unfolding of the posited causal process
- d. Doubly-decisive tests:
  - i. If passed: Confirms the hypothesis
  - ii. If failed: Eliminates the hypothesis
  - iii. Test for: a necessary and sufficient condition for the unfolding of the posited causal process

## Jon Elster, “A Plea for Mechanisms” (1998)

---

### 2. What is a mechanism?

- a. Definition: A mechanism is “an intermediate between laws and descriptions. Mechanisms are frequently occurring and easily recognizable causal patterns that are triggered under generally unknown conditions or with indeterminate consequences. They allow us to explain but not to predict.”
- b. Against law-like generalizations: “The plea for mechanisms is not an argument against law-like explanations, only against the idea that when such explanations fail, we must fall back on narrative and description.”
- c. It entails a different understanding of causation from correlational statistics: One cannot use statistical explanation to account for individual cases, although it is often used in that way. Also, it is particularly difficult in statistics to distinguish correlation from causation. Elster believes that the

mechanism approach provides yet another reason why statistical explanation tend to be weak and unreliable.

- d. There are often multiple mechanisms, sometimes in opposition, occurring in any given context: There may be two mechanisms at play in a particular situation that induce opposing effects. If we ignore these mechanisms and run a statistical analysis, we may conclude that there is no effect. To uncover the presence of these two opposed mechanisms, one has to go to a lower level of aggregation and look inside the black box.
  - i. For example: It has been observed that human beings are subject to two different and strong desires: the desire to be like others (conformism) and the desire to differ from others (anticonformism). If some individuals are strongly dominated by the former and others by the latter, the net effect may be very weak

### 3. Types of mechanisms

- a. Mechanisms that allow us to distinguish between two theories: when two plausible constructions, to be sorted out in a case study, would yield mutually exclusive observable implications (one can achieve separation of types).
- b. Mechanisms that do not distinguish between two theories: when two different mechanisms do not necessarily yield different observable implications (or their net effect is unclear), obfuscating separation of types attempts

### 4. Examples of mechanisms

- a. Endowment effect: past experience, whether good or bad, tends to impact present welfare (bad experience yields a bad memory, good experience a good memory).
- b. Contrast effect: past experience tends to act as a foil for present condition, impacting present welfare. A good experience in the past may lessen the impact of good experiences in the present, for example

## David Waldner, “Process Tracing and Causal Mechanisms” (2012)

---

### 1. The ontology of process-tracing

- a. Mechanistic: Process tracing is firmly linked to a mechanism-based understanding of causation: “Two events are linked if a mechanism triggered by the first event propagates causal influences in a way that ultimately generates the second event.”
  - i. A chain of events without causal mechanisms would be narrative history; mechanisms without events is a purely theoretical study, where the events might be formal models or informal, verbal presentations.

- b. Concatenation, not covariation: “Concatenation is the state of being linked together, as in a chain or linked series. One concatenates causally relevant events by enumerating the events constituting a process, identifying the underlying causal mechanisms generating those events, and hence linking constituent events into a robust causal chain that connects one or more independent variables to the outcome in question.”
  - i. Concatenation thus places a very heavy emphasis on claims of necessity, that a cause was necessary, sufficient, or both necessary & sufficient for an outcome to occur
- c. Internal validity over external validity: By relying on within-case analysis, process tracing privileges internal validity over external validity; in return for this constraint on generality, process tracing has the potential to generate relatively complete explanations.
- d. Process tracing thus trades off intensive study of one case for extensive study of many cases

## 2. Causal mechanisms

- a. Are invariant – they are not intervening variables: Mechanisms explain because they embody an invariant property- they occur with law-like regularity. In other words, they cannot be directly manipulated. Mechanisms explain the relationships between variables because they are not variables

## James Mahoney et al., “The Logic of Historical Explanation in the Social Sciences” (2009)

---

### 1. Deterministic historical explanation vs. probabilistic frequentist explanation

- a. Probabilistic frequentist explanation: These explanations that seek to estimate the average effects of variables within large populations of cases. In these latter works, causes are understood to make outcomes more likely on average; they are “probability raisers”
- b. Deterministic historical explanation: Researchers tend to view causes as necessary and/or sufficient for outcomes of interest. All of the major cross-case methods employed with historical explanation-the methods of agreement and difference, typological methods, counterfactual analysis, Boolean algebra, and fuzzy-set analysis-under- stand causes using ideas of necessity and/or sufficiency
- c. Why these different ontologies?
  - i. When one seeks to explain particular events, one almost naturally thinks in terms of necessary and sufficient causes.
  - ii. When one analyzes causal patterns in large populations, on the other hand, one more naturally views causes as factors that make outcomes more likely on average.

## 2. Deterministic Causes

- a. Necessary causes: A necessary cause entails the claim that an outcome would not have occurred if the cause had been absent, though the cause's presence did not guarantee the outcome. X is a necessary cause of Y if Y is a subset of X.
  - i. The best necessary causes for historical explanation are those that are not trivial, but are empirically rare: Necessary causes are more important to the extent that they are present only when the outcome is present. As this is increasingly true, the presence of a necessary cause increasingly predicts the presence of the outcome. That is, necessary causes become more important the more they approximate necessary and sufficient causes
- b. Sufficient causes: A sufficient cause is one whose presence inevitably leads to the outcome, though the outcome can occur through other means as well. X is a sufficient cause of Y if X is a subset of Y.
- c. Necessary and sufficient causes: X is a necessary and sufficient cause of Y if the set of X is identical to the set of Y. While these are logically possible, are rarely proposed in the social sciences. Indeed, it is hard to find any examples in the literature.
- d. INUS causes: "An insufficient but necessary part of a condition which is itself unnecessary but sufficient for the result." X is an INUS cause of Y if the overlapping set created by X and one or more other causal factors is a subset of Y.
- e. SUIN causes: "A sufficient but unnecessary part of a factor that is insufficient but necessary for an outcome." X is a SUIN cause of Y if Y is a subset of the joint space created by X when combined with one or more other causal factors