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Gary Goertz: Social Science Concepts: A User's Guide

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Introduction

To define a thing, is to select from among the whole of its properties those which shall be understood to be designated and declared by its name; the properties must be very well known to us before we can be competent to determine which of them are fittest to be chosen for this purpose.

Every proposition consists of two names [concepts]: and every proposition affirms or denies one of these names, of the other. . . . Here, therefore, we find a new reason why the signification of names, and the relation generally, between names and the things signified by them, must occupy the preliminary stage of the inquiry we are engaged in.

J. S. Mill

JOHN STUART MILL BEGAN his *System of Logic* with a “book” devoted to concepts. Starting with concepts was a logical choice since they are some of the main building blocks for constructing theoretical propositions. Propositional logic involves the proper manipulation of symbols. For this to have usefulness in science these symbols need to be given substantive content. In this book I show how one can construct substantive concepts and discuss the implications for empirical (qualitative and quantitative) research of different concept structures.

In spite of the primordial importance of concepts, they have received relatively little attention over the years by social scientists.¹ Giovanni Sartori and David Collier stand out as the dominating figures in the work on concepts. Yet the contrast with the massive literature on quantitative measures, indicators, scales, and the like cannot be more extreme. Hence we have a paradox: as Mill noted, concepts are a central part of our theories, yet researchers, apart from Sartori and

¹One might inquire about the definition of a concept. Instead of giving a definition (see Adcock 1998 for a survey), I prefer to define them implicitly through a discussion of how to construct them. This is roughly analogous to geometric primitives like point and line which are defined via theorems about them.

Collier, have focused very little attention on social science concepts per se (though see Ragin 2000).

This paradox has arisen in part from the deep differences between quantitative and qualitative scholars. As a matter of the sociology of social science (at least in political science and sociology), qualitative scholars have been most concerned with concepts—which are generally seen as nonmathematical and deal with substantive issues—while quantitative researchers have focused on scaling, indicators, reliability, and other issues dealing with producing good quantitative measures.

In this book I straddle this gap (or chasm if you prefer) between the qualitative scholars' concern for substantively valid concepts and the quantitative scholars' interest in good numerical measures. As the title of this volume indicates, it will not be a balanced treatment: it will focus on concepts. However, I develop the methodological and mathematical implications of concepts for the design and building of quantitative measures. As Lazarsfeld and Barton said decades ago:

[B]efore we can investigate the presence or absence of some attribute . . . or before we can rank objects or measure them in terms of some variable, *we must form the concept of that variable*. (1951, 155, my emphasis)

While we all pay lip service to the mantra that theory should guide methodology, it is often the case that the cart is leading the horse. Symptomatic of this is the Jagers and Gurr discussion of the polity concept of democracy (1995).² Their analysis of the concept of democracy is in fact located in the section entitled “Operationalizing Democracy”: clearly the focus is on the quantitative measure, not on the concept. In contrast, I shall spend a lot of time on the various conceptualizations of democracy, and only afterward will I analyze the downstream consequences for quantitative measures.

Given the division between quantitative and qualitative scholars it is hard for anyone to keep her attention focused on both at the same time. Goertz's Second Law³ says:

The amount of attention devoted to a concept is inversely related to the attention devoted to the quantitative measure.

²This article is by far the most cited of those published by the *Journal of Peace Research* (Gleditsch, Metelits, and Strand 2003).

³Goertz's First Law is that necessary condition hypotheses can be found for all important social and political phenomena (Goertz 2003).

The contrast between Collier and Bollen on democracy illustrates this law in action. Collier and Mahon (1993) provide an insightful analysis of the concept(s) of democracy, but give little guidance on how one might put these ideas into quantitative action. Bollen has made major contributions to the literature on the quantitative measures of democracy, but his discussions of the concept of democracy rarely exceed a few sentences.

This book thus tries to violate Goertz's Second Law. I analyze in detail the major ways one can build concepts, but I do not stop there. I continue the analysis by examining how different concept structures have important methodological implications for the construction of quantitative measures. For example, as chapter 4 on democracy shows, to be faithful to one's concepts implies measures quite different from those that one finds in the quantitative literature on democracy indicators, scales, etc.

The publication of the book by King, Keohane, and Verba (1994) relaunched the debate about the distinctiveness, or lack thereof, of qualitative methods. The formation in 2003 of the Qualitative Methods section of the American Political Science Association was one response to the King et al. challenge. This new section has created three awards, one of which is the Giovanni Sartori Book Award. Going back to Sartori's famous 1970 article, one finds that much of it is an attack on quantitative methods. In contrast, I shall take concepts very seriously, but at the same time I shall develop formal and mathematical models of how most qualitative theorists construct concepts. My analysis thus cuts both ways: it finds that some of Sartori's claims must be seriously qualified; it also finds that many quantitative measures do not fit well with the concepts they are supposed to reflect.

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Much of the literature on concepts takes what I call a semantic approach (Sartori 1970, 1984; Gerring 1997). Sartori typifies this way of thinking about concepts. For example, the first half of his essay (1984) deals with a semantic analysis of words such as "state" or "état." From a more philosophical perspective, concepts are related to definitions; in fact there is no real difference between defining a word and providing an analysis of a concept (Robinson 1950). To ask questions like "what do you mean by democracy?" is to invite the interlocutor to provide a definition. The answer does not really differ from the response to the question "what is your concept of democracy?"

In contrast, this volumes argues that a concept involves a theoretical and empirical analysis of the object or phenomenon referred to by the word. A good concept draws distinctions that are important in the behavior of the object. The central attributes that a definition refers to are those that prove relevant for hypotheses, explanations, and causal mechanisms. In a theoretical and empirical view of scientific concepts their semantics change as our understanding of the phenomenon changes. Take the example of “copper”: the very definition or concept of copper has changed, reflecting new knowledge generated by chemists.

Indicative of a more literary and philosophical approach, Sartori (1984) starts with the classic problem of translation. Should *état* in French be translated as “state” or “government” in English?⁴ Another classic chestnut is the translation of the Italian Renaissance concept of *virtù*. Notice that my standard examples are not problematic in this sense: the concept of copper in English does not differ from *cuiivre* in French. This is because English and French chemists have the same atomic theory of copper. The debate over the definition of corporatism, for example, is not about its definition per se, but about the phenomenon (real life) of corporatism.

Lurking in the background is the issue of nominalism versus realism. At the level of semantic signs, there is no debate; the words, signs, or symbols we use to designate phenomena are arbitrary. For example, Babbie in his popular textbook on social research (2001) expounds an extreme nominalist view regarding concepts. He puts himself in the Red Queen’s camp on the issue of meaning and what determines it. More generally, all those who focus purely on semantic issues are liable to end up seeing definitions as arbitrary. If the concept is not intimately related to the empirical analysis of a phenomenon then there is nothing to which one can anchor the concept, and everything becomes a matter of who is in charge of the definition. For example, communist countries were often called people’s “democratic” republics; this usage was an abuse of political and semantic power. If we were to change our definition of democracy to accommodate these countries then our hypotheses about democracy would have to change as well. Likewise, we cannot divorce our concept of corporatism from how corporatism fits into theories, as either an independent or dependent variable.

⁴One should note that *gouvernement* is a French word as well.

The alternative to the nominalist view of concepts can be called, not surprisingly, the realist perspective on concepts and definitions. This distinction goes back at least to Locke, but probably all the way to Aristotle. Both philosophers distinguished between “essential” and “superficial” characteristics of an object. Change in essential characteristics constituted a change in kind, while changes in superficial traits—“nominal” in Locke’s terminology—did not result in a change in kind. For example, a change in a democratic regime from presidential to parliamentary does not entail a change from a democratic to authoritarian regime. However, take away essential properties, say, civil rights, and the regime changes its fundamental character. To go back to chemistry, a change in temperature of an element does not mean a change in its classification in the chemical table, while a change in the number of electrons does.

Concepts are theories about ontology: they are theories about the fundamental constitutive elements of a phenomenon. While many quantitative scholars may find the term “ontological” provocative and many interpretativists may object to my usage, I use the term in a straightforward way to designate the core characteristics of a phenomenon and their interrelationships. For example, we can ask about what constitutes a welfare state. Typically, these are states that provide goods and services like unemployment insurance, medical services, retirement benefits, and the like. To *be* a welfare state *is* to provide these goods and services.

In short, I propose a causal, ontological, and realist view of concepts. It is an ontological view because it focuses on what constitutes a phenomenon. It is causal because it identifies ontological attributes that play a key role in causal hypotheses, explanations, and mechanisms. It is realist because it involves an empirical analysis of the phenomenon. My approach stresses that concept analysis involves ascertaining the constitutive characteristics of a phenomenon that have central causal powers. These causal powers and their related causal mechanisms play a role in our theories. A purely semantic analysis of concepts, words, and their definitions is never adequate by itself

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A core theme running throughout this volume is that the structure of concepts is crucial. As the literature on scales, indicators, and the like illustrates, there are many ways to construct a quantitative measure.

Apart from the few key articles by Collier and his colleagues there is little or no discussion on the different ways one can construct concepts.

I stress that most important concepts we use are *multidimensional* and *multilevel* in nature. For example, Sartori's (1970) article talks about high-, medium-, and low-level categories while Collier and Mahon (1993) use the terminology of primary and secondary categories. I prefer to use the framework of "three-level" concepts.

The most important level theoretically is usually the concept as used in theoretical propositions, such as "corporatism," "democracy," or "welfare state." This I refer to as the *basic level*. It is "basic" in the sense of Eleanor Rosch and her colleagues; it is cognitively central. It is the noun to which we attach adjectives (Collier and Levitsky 1997) such as parliamentary *democracy* or democratic *corporatism*. The basic level is what we use in theoretical propositions.

The next level down from the basic level is what I call the *secondary level*. For example, when we say that democracy consists of civil rights, competitive elections, and so forth, we are descending to the secondary level to give the constitutive dimensions of the basic-level democracy concept. It is when we move down to the secondary level that the multidimensional character of concepts appears. The secondary-level dimensions form much of the ontological analysis of concepts. They also play a central role in causal mechanisms of various sorts.

The next level down I call the *indicator/data level*. Alternatively, it could be called the operationalization level. At this level we get specific enough that data can be gathered, which permits us to categorize—either dichotomously or on a more fine-grained scale—whether or not a specific phenomenon, individual, or event falls under the concept.

In summary, we can dissect and analyze concepts by (1) how many levels they have, (2) how many dimensions each level has, and (3) what is the substantive content of each of the dimensions at each level.

Table 1.1 illustrates that most of the prominent efforts to conceptualize democracy have a three-level character. With the partial exception of Coppedge and Reinicke, all see democracy as a multidimensional, multilevel concept. Because democracy is a complex concept it is important to analyze its component parts. Typically, one includes secondary-level dimensions like "competition" (i.e., for office) and "participation" (i.e., voting) in what it means to be a democracy. The secondary-level dimensions remain part of the theoretical edifice, but they are concrete enough to be operationalized by the indicator/data

level. The third indicator/data level is where we get down to actual empirical data. For example, typically there are multiple indicators of secondary-level factors like participation and competition. These indicators are the variables that are actually coded for and form the bases of quantitative measures.

The second aspect of concept structure that I explore is how components at one level are combined or structured to produce dimensions at the next higher level. The basic-level concept of democracy is constituted by multiple secondary-level dimensions: how are these dimensions “combined” to arrive at the basic-level concept?

Throughout this book I continually contrast two different structural principles for constructing multidimensional and multilevel concepts. The first goes back to Aristotle and builds concepts using the structure of necessary and sufficient conditions. In classic philosophical logic to define a concept is to give the conditions necessary and sufficient for something to fit into the category. Each of these necessary conditions is a secondary-level dimension: the structural glue that binds the secondary-level dimensions together to form the basic level is the mathematics of necessary and sufficient conditions.

The necessary and sufficient condition view of concepts was so standard that Sartori (1970) just assumes it. However, developments in philosophy, logic, and cognitive psychology have shown that there are other ways to construct concepts. I shall focus on the “family resemblance” concept structure which is in many ways the polar opposite of the necessary and sufficient condition one. In their groundbreaking article Collier and Mahon (1993) introduced the idea of family resemblance concepts into the political science literature. The family resemblance structure can be seen as the opposite of the necessary and sufficient condition one because it contains no necessary conditions. All one needs is enough resemblance on secondary-level dimensions to be part of the family. For example, in chapter 6 I discuss two concepts used in the study of international conflict. The concept of a “crisis” according to the International Crisis Behavior group (Brecher, Wilkenfeld, and Moser 1988) uses the classic necessary and sufficient condition approach to concepts, while the idea of a “militarized interstate dispute” (Jones, Bremer, and Singer 1995) uses a family resemblance-like approach.

The qualitative literature on concepts is best formalized mathematically by set theory or logic. For example, to construct concepts with necessary and sufficient conditions or family resemblance means that

TABLE 1.1
Some Concepts and Measures of Democracy

<i>Creator</i>	<i>Secondary Level</i>	<i>Indicator/Data Level</i>	<i>Method of Aggregation</i>
Alvarez et al. 1996	Contestation	Multiple parties	Multiplicative
		Executive turnover	
	Offices	Election executive Election legislature	
Arat 1991	Participation	Executive selection	Multiplicative at secondary
		Legislative selection	
		Legislative effectiveness	Additive at indicator
		Competitiveness of nominations	
	Competitiveness	Party legitimacy	
	Coerciveness	Party competition	
Bollen and Grandjean 1981	Political liberties	Press freedom	Additive at secondary
		Freedom of group opposition	
		Government sanctions	Factor analysis at indicator
	Popular sovereignty	Fairness of elections	
		Executive selection Legislative selection	

Coppedge & Reinicke 1991	Contestation	Free and fair elections Freedom of expression Freedom of organization Pluralism in media	Guttman scale
Gastil 1978–	Political rights Civil rights	9 components 13 components	Additive
Hadenius 1992	Elections Political freedoms	Suffrage Elected offices Meaningful elections Freedom of organization Freedom of expression Freedom from coercion	Additive at secondary Additive/multiplicative at indicator
Jagers and Gurr 1995	Constraints on executive Competitiveness participation Executive recruitment	Constraints on chief executive Competitiveness of participation Regulation of participation Competitiveness of recruitment Openness of executive recruitment	Additive
Vanhanen 1990	Competition Participation	Election results Voters/total population	Multiplicative

one is implicitly using the mathematics of logic. I will argue that these formal tools are the natural way to model my two core concept structures. We shall see that the logical AND typifies the necessary and sufficient condition structure while the logical OR is the natural way to model the family resemblance structure. Fuzzy logic will also play a key role in this volume in extending the traditional view of logic as dichotomous to the domain of continuous variables.

Chapter 2 in many ways forms the core of this volume. I lay out the basic three-level view of concepts and discuss the main issues surrounding how multidimensional and multilevel concepts can and have been constructed, focusing on the necessary and sufficient condition and family resemblance concept structures. I suggest that most complex and abstract concepts have in fact this three-level structure. The basic and secondary levels are really the theory of the concept, while the indicator/data level is the connection to measures and data collection.

Central to the Sartori and Collier literature on concepts is a concern with “conceptual stretching.” Conceptual stretching occurs when concepts are loosened up so that they apply to additional cases. In the philosophical literature this is the contrast between *extension* and *intension*. The classic principle was that as we loosen the concept (i.e., decrease intension) we increase its extension (number of empirical cases). One aspect then to concept structure is its coverage or permissiveness. Chapter 3 treats Sartori and Collier’s concern about how the structure of the concept relates to its empirical coverage.

Sartori (1970) borrowed from philosophical logic the basic principle that as intension decreases extension increases: as concepts become more permissive by requiring fewer attributes, they cover more cases. What Sartori assumed without discussion was that concepts were constructed with necessary and sufficient conditions. However, what chapter 3 shows is that if one adopts the family resemblance framework then in fact increasing intension (adding more attributes) can *increase* extension. The key point is that concept structure has important downstream consequences on the empirical coverage of the concept.

Ideal type concepts are most distinguishable by their extension of zero: normally “ideal” means in practice that empirical examples are extremely rare or nonexistent. Here again we see the concern with the relationship between intension and extension. The ideal type concept focuses attention on the extreme end of the concept continuum. How

do we define the extreme end point? How useful is it to have an end point with no empirical observations? In spite of the widespread use of ideal types, it is almost impossible to find a methodological discussion of them. The theoretical and methodological tools developed in chapter 2 allow me to systematically analyze the ideal type concept in chapter 3.

Chapter 2 provides the mathematical tools to formalize the necessary and sufficient condition and family resemblance concept structures. With this methodology in hand, one can ask about quantitative measures (I consider dichotomous codings as quantitative). Chapter 4 on democracy illustrates the consequences of clarity about concept structure for the building of quantitative measures. There I show that almost everyone, which is a large number of people, conceptualizes democracy in terms of necessary and sufficient conditions, but at the same time almost no quantitative measures use the mathematics of logic appropriate to the concept. Instead the inappropriate mathematics of addition, average, and correlation are almost universally adopted (e.g., see table 1.1). I take the popular polity data on democracy (Jagers and Gurr 1995) and show that if one constructs a quantitative measure that reflects the polity scholars' own concept of democracy then one arrives at a quantitative measure that is quite different from the one developed by Gurr and his colleagues. I use the example of democracy to stress that theory, that is, concepts, should drive methodology: we must first think clearly about the substance and structure of our concepts and then we can begin to think about how to validly operationalize that theory into a quantitative measure.

Since most complex concepts are three level, we need to ask about the degree to which the quantitative measure reflects the concept structure. In fact there are two structural questions: (1) how to combine indicators to form the secondary-level dimensions and (2) how to combine secondary-level dimensions to get the basic-level concept. The key issue in the context of this introduction is that almost all scholars use the necessary and sufficient condition structure to combine secondary-level dimensions into the final democracy concept. All of the quantitative measures use either addition or correlation. *However, none of these is the appropriate mathematical formalization of the necessary and sufficient condition structure.*

Chapter 2 proposes that the necessary and sufficient condition and family resemblance conceptual approaches represent two poles of a continuum. As with all complex concepts themselves, we can ask if

there is some underlying unidimensional continuum which lies between these two anchor points.

Chapter 5 shows that one can think of different concept structures in terms of *substitutability* (Most and Starr 1989). Necessary conditions can be defined as those that do not permit substitutes. In contrast, the family resemblance approach is characterized by the fact that the absence of one characteristic can be substituted for by the presence of others. The continuum that connects the necessary and sufficient condition and family resemblance poles is thus the degree to which substitutability is possible.

Chapter 5 examines a field where scholars have claimed that one concept structure is most appropriate. The literature on the democratic or liberal peace has focused on the hypothesis that democracies do not fight wars with each other. This literature—along with the international conflict literature in general—must deal with the problem of concept structure because international conflicts have two or more parties. The question arises about what should be the concept of say, democracy, for a dyad. We have democracy scores for each party to the conflict, but it is not clear how to aggregate the democracy scores of the two parties to construct a measure for the dyad as a whole. Hence we have the same problem as in structuring the secondary-level dimensions to form the basic-level concept.

After Dixon first proposed the weakest-link idea in 1993, scholars quickly arrived at a consensus that it was the appropriate measure of dyadic democracy. The argument is that the constraints on waging war between two countries are determined by the less democratic of the pair, i.e., the weakest link. The weakest-link measure uses the necessary and sufficient condition concept structure. Each link of the chain is necessary: the strength of one link cannot substitute for the weakness of another. Thus the weakest-link claim can be translated into one concerning substitutability and concept structure. If the weakest-link hypothesis is correct then the more substitutable the dyadic measure of democracy the less it should be correlated with international military conflict. Chapter 5 employs measures of dyadic democracy that vary in their degree of substitutability. It examines whether in statistical fact the weakest link is better than other alternative concept structures that involve more substitutability, such as the maximum or the mean.

Chapter 5 provides a concrete extended example of how concepts have causal theories embedded in them. The weakest-link measure

was a concrete expression of a theory about the interaction between democratic countries. This embedded hypothesis is assumed when the measure is used to test the democratic peace with basic-level variables. The standard basic-level hypothesis is between a military conflict dependent variable (e.g., militarized disputes or crises) and a dyadic democracy independent variable. The weakest link is used to make up that basic-level, dyadic democracy independent variable which is then correlated with the dependent conflict variable.

More generally, a survey of the conflict literature shows that about one-third of the typical conflict variables have embedded hypotheses in them. This survey also shows that for some other variables scholars have preferred, implicitly, the family resemblance concept structure which allows for complete substitutability. For example, when coding multiple alliance commitments between two states, one takes the strongest one. In terms of substitutability, the strongest commitment compensates completely for the weaker ones. In summary, causal hypotheses embedded in concepts are pervasive in the quantitative conflict literature.

Part I of this volume examines the theoretical, structural, formal, and empirical aspects of concept building. Chapter 2 discusses the three-level framework and the prototypical family resemblance and necessary and sufficient condition concept structures. Chapter 3 deals with how structure relates to empirical coverage (i.e., extension). Chapter 4 illustrates the downstream consequences of concept structure and theory for quantitative measures. Chapter 5 shows how important theoretical propositions are embedded in concepts and how they can be empirically tested. These chapters illustrate with many concrete examples the causal, ontological, and empirical nature of concept building.

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I stress the central role of causal theory throughout my analysis of concepts. This is not novel in and of itself, but the kind of theorizing I discuss is hard to find. In particular, to understand how my analysis differs from the quantitative standard it is useful to consider the theoretical and substantive context within which theories of measurement have developed. This is particularly important for political scientists and sociologists since the early history of the measurement of concepts occurs in psychology and educational testing.

The problem in psychology was to get some numerical means of capturing some very abstract—and unmeasured—concept like “intelligence” or “authoritarian personality.” In terms of my three-level framework “unmeasured” refers to the basic and secondary levels of the concept, while “measured” refers to the indicator/data level. Typically the indicators in the psychological literature are responses to items on pencil and paper tests. Factor analytic techniques responded to the need for ways to make inferences about unmeasured concepts like intelligence based on its external manifestations such as responses to problems.

Lazarsfeld and Blalock were among the key players in importing the factor analytic approach to concepts into political science and sociology. For example, Blalock’s 1982 volume *Conceptualization and Measurement in the Social Sciences* expresses very well the factor analytic approach to concepts and measurement (see also Bollen 1989). Lazarsfeld (1966) provides a nice history of how he and others took the basic insights of psychological methodologies and applied them to social and political phenomena.

My approach to concepts differs in a number of fundamental ways, partially because of my focus on concepts and partially because of my interest in substantive concepts like corporatism, democracy, crisis, militarized disputes, and so on. My point is not to say that the factor analytic approach is wrong, but that there are issues it overlooks, that there are other approaches to concepts, and that one should and can vary the approach according to the substantive phenomenon under study.

First, the factor analytic approach argues that there is a *causal* relationship between the basic or secondary level and the indicator level: the latent variable causes the indicator. This is basically the disease-symptom model of phenomena: the disease causes the symptoms, not vice versa. In the factor analytic approach one is concerned that the indicators may have different causes, some of which may not be the one that the researcher is focusing on. So one cannot think of the factor analytic approach as just being about correlations; it implies a real causal model between the latent, unmeasured variables and the indicators: “The position taken . . . is that indicator variables can usually be linked to underlying or unmeasured concepts by postulating causal models in which one’s assumptions are made explicit. In some simple causal situations, as where correlations among indicators are assumed to be produced by a single underlying variable, operational

procedures such as factor analysis can be used to obtain empirical estimates of the unmeasured variable” (Blalock 1968, 6).⁵

Second, in contrast, I discuss the *ontological*—noncausal—view of concepts. Here the basic- and secondary-level dimensions are not causes but *constitute* what the phenomenon *is*. For example, to have competitive elections is not a symptom of democracy, it is not caused by democracy, but rather it constitutes what democracy is. I do not think that the factor analytic approach is problematic in that intelligence causes one to score higher on IQ tests. Clearly, symptoms are caused by diseases; however, what the disease *is* differs from what the symptoms are. I suggest that for many concepts that political scientists and sociologists are interested in the ontological view makes more sense.

Third, the ontological view makes more sense when one basically has a functionalist view of the phenomenon. Many feel that democracy cannot function correctly unless basic civil liberties are present. The secondary-level dimensions are really a *theory* about the *interrelationships* of the parts of the conceptual whole. Hence, when the theoretical language, implicitly or explicitly, is functionalist in nature, one probably will want to take an ontological approach to the concept.

Fourth, often scholars argue at the indicator level that there is *functional equivalence*, i.e., various phenomena that satisfy the secondary-level dimension. Within the factor analytic school, it is important that indicators of the same unmeasured, latent variable be highly correlated with each other. However, a theory of functional equivalence does not require high correlation; in fact the opposite is often a good sign. Functional equivalence, by definition, means that the occurrence of an attribute A can substitute for the occurrence of attribute B; hence a secondary-level dimension can be present when there is little or no correlation between the indicators.

⁵Good methodologists have always been conscious of the issue of causal direction in concepts and measures: “Nearly all measurement in psychology and the other social sciences assumes effect indicators. Factor analysis, reliability tests, and latent class analysis are examples of techniques that assume effect indicators. However, there are situations in which indicators are more realistically thought of as causes of the latent variable rather than the reverse. Tests for causal versus effect indicators have recently become available (Bollen and Ting 2000), but most empirical research implicitly assumes effect indicators. Incorrectly specifying indicators as causal or effect indicators leads to a misspecified model and holds the potential for inconsistent parameter estimates and misleading conclusions (Bollen and Lennox 1991)” (Bollen 2002, 616–17; see also Blalock 1964, 162–69, who uses the name “cause” indicators).

Fifth, Blalock and the psychologists were concerned with abstract concepts and phenomena with no easily measurable manifestation. A measure of “sex” or “gender” was not the kind of concept that the factor analytic school was concerned about. For these concepts the link between measurement and the concept—between measured and unmeasured—was so clear and direct that it was not seen as problematic. The concepts that I shall focus on as core examples are those that are complex and multidimensional, but which often have quite direct links between the secondary-level dimensions and the data-level indicators. Unlike the huge gap between the concept of intelligence and the response to questions on a test, the difference between a secondary-level concept of democracy such as competitive elections and the actual data level is not large.

These five differences constitute a fundamentally different perspective on concepts. To focus on concepts is to think about the nature of the phenomenon being conceptualized. Factor analysis correctly emphasizes that the effects of the phenomenon are important. However, just as important, if not more, are the causes of the effects. It is worth examining the disease just as much as its symptoms.

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[T]o be a man, or of the species man, and have the *essence* of a man, is the same thing.

John Locke

I would like to use Martha Nussbaum’s concept of “human well-being”—based on Sen’s (1985) work—as an example of a three-level concept in action. She presents a complex, multilevel, multidimensional view of human well-being. This example provides a brief introduction to many of the topics covered in this volume, and illustrates what a complex three-level concept looks like in practice. It is an interesting case because, given that she is working within a very different intellectual context (political philosophy), it reinforces the point that one needs to develop concepts appropriate to the substance of the phenomenon as well as the theory.

Embedded in her concept we shall see causal hypotheses about how human beings function in biological, psychological, and sociological terms. It is not a definitional debate, but one about the reality of human lives in various cultures around the world. It is ontological

because it is about human nature. In short, in terms of its content and structure Nussbaum's concept of human well-being provides a good introduction to three-level concepts as causal, ontological, and realist.

She clearly sees the concept of human well-being in ontological terms: "Here, then, is a sketch of an internal-essentialist proposal, an account of the most important functions of the human being, in terms of which human life is defined" (1992, 214). She is "defining" or conceptualizing what it means to be human. She wants to know empirically how human beings and their lives are constituted. She does not want a series of indicators or symptoms of what it is to be human, but rather a description of the essence of human well-being.

She describes many functions and capabilities, aspects of what it means to live a good human life. Here are a few to give a flavor of her analysis:

Basic Human Functional Capabilities:

1. Being able to live to the end of a complete human life, as far as is possible: not dying prematurely, or before one's life is so reduced as to be not worth living.

2. Being able to have good health; to be adequately nourished; to have adequate shelter; having opportunities for sexual satisfaction; being able to move from place to place.

...

7. Being able to live for and with others, to recognize and show concern for other human beings, to engage in various forms of familial and social interaction.

...

10. Being able to live one's own life and nobody else's; being able to live one's own life in one's very own surroundings and context. (1992, 222)

These functions are her secondary-level dimensions.

Her subtitle—"In Defense of Aristotelian Essentialism"—suggests that she is using the standard approach to concepts, necessary and sufficient conditions. An intimate bond links the necessary and sufficient condition structure to essentialism. If some characteristic is essential for an animal to be a human being, then that characteristic is a necessary condition for being human. She is quite clear that the various dimensions she discusses are necessary:

As far as [secondary-level] capabilities go, to call them part of humanness is to make a very basic sort of evaluation. It is to say that a life without this

item would be too lacking, too impoverished, to be human at all. (1992, 220)

At the secondary level she denies substitutability between dimensions:

The Aristotelian essentialist claims that a life that lacks any one of these [capabilities], no matter what else it has, will be lacking humanness. . . . The list is, emphatically, a list of separate components. We cannot satisfy the need for one of them by giving a larger amount of another one. (1992, 222)

Her conceptualization of a human being uses the basic three-level framework common in complex, multidimensional concepts. The necessary factors like those listed above lie at the secondary level of the human well-being concept. At the third level we find a sensitivity to historical and cultural differences. In terms of chapter 5, we have substitutability in the ways, for example, a human being can be nourished, sheltered, have sex, and so forth:

The political plan [secondary level], while using a determinate [necessary condition] conception of the good at a high level of generality, leaves a great deal of latitude for citizens to specify each of the components more concretely and with much variety, in accordance with local traditions or individual tastes. (1992, 224)

At the third level, we allow for culture variation in the filling of the requirements at the secondary level. Hence we have a structure with necessary and sufficient conditions at the secondary level and substitutability at the indicator/data level. I think that this particular structure is quite common and I will use it myself in reformulating the polity measure of democracy in chapter 4.

The theory of what it means to be human is quite explicitly a functionalist one. She proclaims this in the title of her article "Human Functioning and Social Justice." Some of the essential characteristics deal with the physiological aspects of being human, such as shelter, clothing, food, and sex. Some deal with the psychological aspects of being human, like the possibility to make choices. Others deal with the social character of human beings, like being able to live with and for others.

The Sen-Nussbaum approach to human well-being or quality of life thus typifies the ways scholars build complex multidimensional

and multilevel concepts. It also illustrates the distinction between an ontological view of concepts and a factor analytic one. Nussbaum is not asking what are the indicators or effects of human well-being but what human well-being is. It is causal because she is making claims about what happens biologically, psychologically, and socially to people who fail to attend to secondary-level functions. It is a realist approach to human well-being, based on her reading of anthropology, sociology, and biology.

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Part II focuses on a key use of concepts, the selection of cases. The conceptualization of both the independent and dependent variables has enormous implications for empirical analyses and causal inference. Almost without exception the population under analysis is defined with concepts. All the chapters in part II show the strong impact of concepts on case selection and then on causal inference.

Figure 1.1 illustrates how concepts and case selection interact. Absolutely core in research design, particularly in qualitative analysis, is the concept that drives the selection of positive cases. The positive case concept is almost always what the researcher is trying to explain. The choice of these positive cases is absolutely central in the qualitative context. Often one or two cases are central to the *general* theory (e.g., the Netherlands for Lijphardt). Hence there is a risk that these positive core examples do not fit well with the concept. If one is basing the general theory more or less explicitly on these positive, but marginal, cases then one runs the risk of having a general theory that does not fit well the set of positive cases. In terms of figure 1.1 one is choosing examples from the gray zone instead of cases of the nongray, positive set.

One can see this issue arise in the literature on corporatism. Katzenstein's very influential analysis (1985) of corporatism was driven by his two core cases of Austria and Switzerland. Hicks in his review (1988) of Katzenstein stresses that Switzerland is not a good example of corporatism. Siaroff's (1999) meta-analysis of corporatism measures brings this out very clearly; Switzerland does not fit well into the core set of corporatist countries, it belongs in the gray zone. Hence any theory of corporatism driven implicitly or explicitly by marginal cases is likely to prove problematic.

Chapter 6 shows that variation in the concept of international crisis induces selection effects. As chapter 3 discusses in detail, concept

Scope conditions

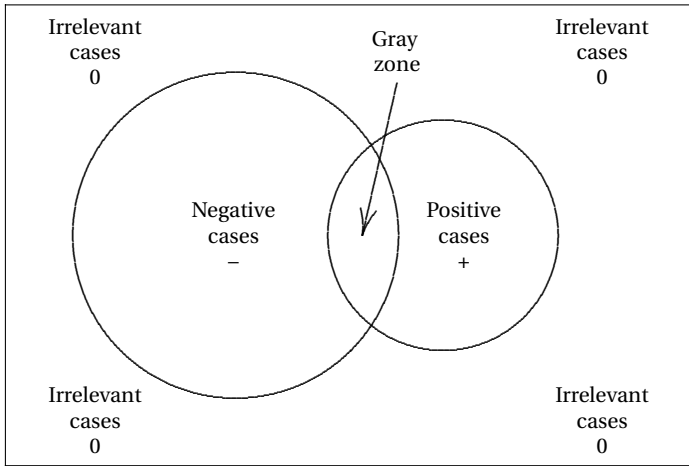


FIGURE 1.1

Case selection: Positive, negative, and irrelevant cases

structure has a large impact on the inclusivity or permissiveness of a concept in terms of empirical coverage and extension. In the context of international crisis, a looser concept allows in more lower-level crises. In terms of figure 1.1, depending on the concept of crisis used, cases move from the gray zone to the positive set (looser concept) or to the negative set (stricter concept).

As is well known, any selection criterion (e.g., variation in concept) that correlates with the dependent variable is likely to produce selection effects. Chapter 6 shows this phenomenon in action for international crisis concepts. There are very strong correlations between the concept of crisis applied and the dependent variables commonly used in the literature.

Much trickier are the issues surrounding how concepts are used to select the negative cases. Skocpol (1979) is quite clear about what social revolution is, but it is not at all clear what the universe of non-social revolutions consists of. Here we see a very significant problem linking concepts to research design, the nature of “non” concepts, which typically define the negative cases needed to test hypotheses and theories.

The negative case problem is exacerbated for Skocpol by the fact that the non-social revolution cases are divided into the negative ones

and those that are “irrelevant” to a test of Skocpol’s theory. The United States in 1900 is certainly a case of non–social revolution; should it be included in a test of her theory? Chapter 7 introduces the Possibility Principle as a solution to this problem of dividing the negative cases from the irrelevant ones. In short, one uses the theory of the positive cases to determine which of the negative ones are those where the outcome “was possible.” The Possibility Principle expresses a widely held intuition—for both quantitative as well as qualitative scholars—about what constitutes relevant control cases. For example, Skocpol chooses as her control cases events such as Russia 1905 or Prussia 1848 where it seems that social revolution “might have occurred.” Chapter 7 uses the Possibility Principle to construct the complete set of negative cases within the scope of Skocpol’s theory of social revolution. The purpose of the Possibility Principle is to solve the problem of “non” concepts in terms of selecting negative cases.

In the case of Skocpol we use the Possibility Principle only to select the negative cases. However, one can use the Possibility Principle to select entire populations. Here the focus is on eliminating the irrelevant observations, not on choosing the negative ones. When the Possibility Principle is used only to select negative cases the issue of the boundary between the positive and irrelevant cases (see figure 1.1) does not arise, but when the Possibility Principle is first used to select the population and then another concept is used to select the positive cases, boundary issues arise. This is when the “impossible can happen.” In summary, one can use the Possibility Principle to (1) select the negative cases only or (2) eliminate the irrelevant cases independently of the determination of the positive and negative cases. Chapter 8 examines this latter application of the Possibility Principle.

Chapter 8 looks at the concept of “politically relevant dyads” to see how the Possibility Principle informs population selection in the context of large-*N* studies. In particular, I shall use the literature on militarized interstate conflict. Scholars have used the specific concept of “politically relevant dyads” to choose the population of cases. We shall see that the boundary line between the positive and irrelevant cases plays a large role in choosing the population.

The Possibility Principle underlies this discussion as well, as one can see from the following discussion where the word “possible” or its synonyms like “might have” appear frequently:

In addition to the time-saving device [politically] relevant dyads represent, many proponents of their use argue there are fundamental reasons

for restricting analysis to relevant dyads. Weede (1976, 396) claims we should restrict analysis to relevant dyads because “only in this relatively small subset of dyads is there a possibility for irreconcilable conflicts of interest to arise and create a substantial risk of war.” Similarly, Maoz and Russett (1993, 627) suggest analysis of all dyads is inappropriate because “the vast majority are nearly irrelevant. The countries comprising them were too far apart and too weak militarily, with few serious interests potentially in conflict, for them plausibly to engage in any militarized diplomatic dispute.” The strongest statement along these lines is Lemke’s (1995, 29) claim that relevant dyads matter because they comprise the correct referent group, and thus function as a true control group, against which war dyads are compared. The reason the set of relevant dyads is the correct referent group for war dyads is that it is only the relevant dyads that might have had a war. (Lemke and Reed 2001, 128)

It is worth noting that the concept of “political relevance” has the typical three-level concept structure. At the secondary level one says that states have the possibility of having a military conflict if they have either the opportunity OR the willingness. These secondary-level dimensions must receive operationalization at the data/indicator level. For example, opportunity is normally operationalized as either major power status OR geographical contiguity. One can see these substantive factors mentioned in the long quote just above, for example when Maoz and Russett say that countries “too far apart” (i.e., no opportunity) AND with no “irreconcilable conflicts of interest” (i.e., no willingness) constitute the set of irrelevant observations.⁶

One can think of the research chain discussed in part II as concepts —> case selection —> causal inference. Perhaps the most dramatic effects of concepts are at the end of the chain. Chapters 6–8 illustrate in different ways the impact of concepts on causal inference. In chapter 6 we see that those factors that conflict scholars have typically seen as key in selection effects—particularly power variables—are those where the variation in concepts produces the greatest variation in causal inference. Chapter 7 shows that the variable relatively ignored by most readers of Skocpol—peasant revolt—is empirically more important than the state crisis variable that has received far more attention. Chapter 8 illustrates how the common practice of including in the statistical analyses the variables used to define the population (i.e., politically relevant dyads) has a major impact on the

⁶The negation of (A OR B) is (not-A AND not-B).

causal evaluation of the population-defining variables. So while concepts typically are used at the beginning in terms of research design, their downstream impacts on causal inference cannot be ignored.

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J. S. Mill started his *System of Logic* with a book on concepts because they are used as components of scientific propositions. Part III looks at how multilevel concepts appear in theories. In chapter 9 I analyze Skocpol's theory of social revolutions, Hick's study of the causes of the welfare state, Ostrom's work on common pool resource institutions, and Downing's analysis of democracy in early modern Europe. With these various examples we shall see a variety of different ways to build concepts, on both the independent as well as the dependent variable side of the equation. We shall see necessary and sufficient condition and family resemblance concepts in real-life theoretical contexts.

Three-level concepts have two theoretical levels, the basic level and the secondary level. If we ignore measurement issues (i.e., the indicator/data level) we can focus on the theory which uses basic-level independent and dependent variables, which themselves include causal hypotheses from the secondary level. These are then what I refer to as two-level theories. All the examples discussed in chapter 9 involve causal relationships at the basic and secondary levels.

We must structure variables at the basic level to form theories just as one needs to structure secondary-level dimensions to form concepts. Not surprisingly, in the concluding chapter I use for theories the same structural principles of necessary and sufficient conditions and substitutability that earlier chapters discuss for concepts. We shall see the (fuzzy) logic of AND and OR used in the logic of theoretical propositions just as I have used that logic in the analysis of concepts. The "aggregation" problem is theoretically different since we are combining the independent variables to explain the dependent, but we can use the same formal principles and mathematics to make this move. Of course, this is what Mill was really referring to in his system of logic, the logic of causal propositions.

This similarity between the explanatory theory at the basic level and the theory of concepts should not be surprising, but reassuring. Both are theories about phenomena. Nussbaum claims her theory is an empirical one; it describes something about the reality of human life. The theories described in chapter 9 are causal analyses of important phenomena.

In summary, there is an underlying theoretical logic used in this book that cuts across the analysis of concepts as well as the causal explanations of outcomes. I suggest that this logic provides a powerful set of tools for understanding social phenomena and that it underlies a great deal of theorizing about phenomena and concepts. Two theories described in chapter 9 belong to recent presidents, Elinor Ostrom and Theda Skocpol, of the American Political Science Association; perhaps there is something to these theoretical structures.