CHAPTER 2

THE CONNECTIONS BETWEEN THEORY AND RESEARCH

The purpose of this chapter is to disclose some interconnections between scientific theories and empirical research in the conduct of inquiry. Although theory and research are integral and complementary components, higher education's tendency to compartmentalize courses into "theory," "research," and "statistics" often leaves the student befuddled of their interrelationships. The objective here is to make these linkages explicit. To accomplish this interfacing it will be necessary to outline the relationship between theoretical concepts and empirical hypotheses. Before moving directly into an abstract discussion of these matters, we will consider a real-life example. Your attention is called to the manner in which the research process unfolds.

BYSTANDER INDIFFERENCE

One early morning (3:20 a.m.) on March 13, 1964, a bar manager, Miss Catherine ("Kitty") Genovese, was murdered in a residential area in the Queens borough of New York City.[1] The actual homicide, as unfortunate and tragic as it was, is not our major concern here. The circumstances surrounding the incident are almost incredible. A.M. Rosenthal, an investigative reporter for the New York Times verified that some thirty-eight persons had witnessed some aspect of the slaying.[2] This heinous episode becomes even more unbelievable when we consider that it took the assailant about thirty minutes to kill her amidst sporadic screams and pleas for assistance. Her attacker was lurking in the parking lot where she habitually parked her automobile. After leaving the car he caught and stabbed her; she screamed and continued to run and, again, he trapped and

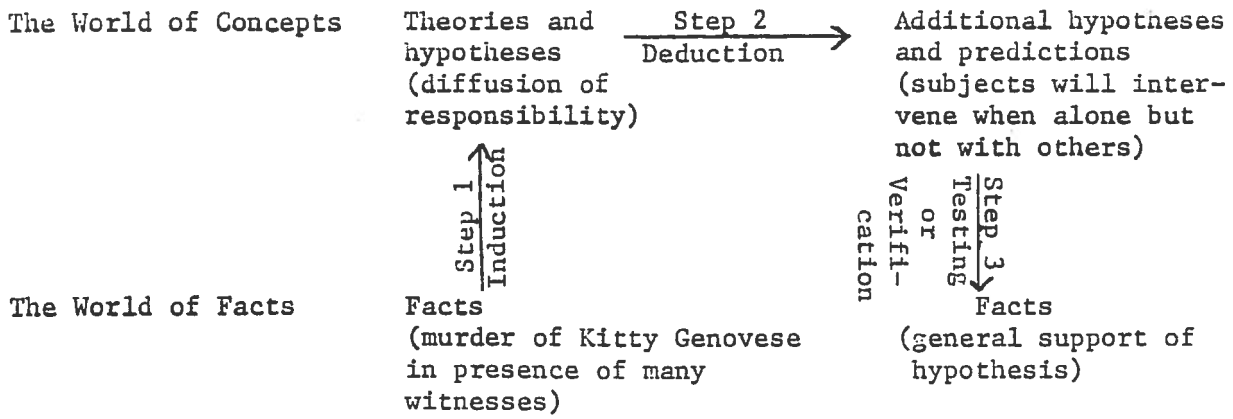
slashed her. Finally, at the threshold of her apartment building the third and fatal death knell was delivered.

The modus operandi of the social researcher is outlined in Figure 2.1. The initial facts were unmistakably substantiated. A female bar manager was killed while some thirty-eight persons during the course of the slaying peered on and not a single one of them actively intervened or called the police. The police were not contacted until after she was dead. (Incidentally, when the police were finally summoned, they arrived on the scene within two minutes). This crime led many to lament the blatant public apathy and moral indifference. The pathology, indifference, alienation, callousness, and anomie of the urban dweller has been a topic for many newspaper editorials and Sunday homilies. Two social psychologists, John Darley and Bibb Latané, were not convinced of these criticisms of urbanites and urban life. They proclaimed that while the behavior of the thirty-eight onlookers was obviously neither helpful nor altruistic, neither was it coldly indifferent nor apathetic. Latané and Darley sifted through and synthesized the facts and advanced a theory (in this case an hypothesis) to account for the bystander effect. They coined the concept diffusion of responsibility to explain the sequence of events. Diffusion of responsibility suggests that when multiple people are present in a situation (e.g., thirty-eight bystanders) an individual in a "group" is less likely to act or react in emergency situations because it is presumed that others will initiate such action. In short, when others are present the responsibility for a single person intervening is socially scattered (or diffused). In contrast to the media's perspective--"Isn't it terrible that so many people watched the murder without any one of them trying to help"--Latané and Darley thought, "Maybe the reason no one helped

FIGURE 2.1

THE MODUS OPERANDI OF THE SOCIAL RESEARCHER

The diagram below is a pictorial display of the ingredients of the scientific method.[3] To provide substance to the abstract model Latané and Darley's research will be used as a case study. Step one is to deal directly with the factual world. The Kitty Genovese incident was verified by the New York Times reporter. Using this corroborated information the social psychologists formulated (or inferred) a concept, namely, "diffusion of responsibility," to account for the inaction on the part of the bystanders. Then, from this rudimentary "theory" Latané and Darley deduced several logical hypotheses and predictions. Ultimately, these specific predictions were put to an empirical test. Then, depending upon the outcome of the investigation, the original explanation is accepted, modified, or refuted (typically in part rather than in total). As a consequence of scientific research, the cycle of activity commences over and over again.



was because so many people were viewing the incident."

Having observed the facts and woven them into a prototheory, the next stage in the scientific method is to test hypotheses or predictions that are logically deduced from the theory. The result of what these two social psychologists did, in a controlled laboratory experiment, will be reported.

BASIC INGREDIENTS OF SCIENTIFIC RESEARCH

Regardless of the specific aims of scientific investigations, there exist several common components in the conduct or process of inquiry. Any producer or consumer of social research must be cognizant and understand a small number of basic ideas. These fundamental concepts--sometimes called the "language of social research"--are concepts, constructs, real, nominal, conceptual and operational definitions, variables, hypotheses, and theory.

The Conceptualization Process. One of humans' monumental symbolic capacities resides in their ability to conceptualize. Conceptualizing involves concept learning, the ability to identify, abstract, classify, and utilize the attributes that objects, situations, events, things, and persons have in common. Language acquisition plays a vital role in this process since it is through this medium that the myriad stimuli that impinge upon us are simplified and cataloged. Although conceptualization enables us to make "mistakes" (as when we classify a lethal snake as harmless), it is fundamentally necessary if we are to avoid being overwhelmed by the enormous amount and variability of stimuli confronted in the physical and social worlds.[4]

In scientific research a near infinite number of topics can be studied. Among this subject matter are love, marital happiness, marital success, life satisfaction, alienation, prejudice, and religiosity. Each of these terms is an idea--technically a concept--that undoubtedly means something to you. Although you have a casual understanding of these terms, this casual understanding is often too general and imprecise for efficient communication and scholarly research. Researchers are not afforded the luxury of using vague and ill-defined terms. Hence there is a need for conceptualization, the mental operations through which researchers refine, hone in, and specify what their major concepts mean. Let us consider some of the ways social researchers define their key terms.

Concepts. A concept may be defined as a word (e.g., dog, man) or symbol (e.g., ☆, 卐) that represents an object, property of an object, or some abstract notion (e.g., communism, social structure). Concepts are frequently derived through a logical inductive (reasoning from specific to more general cases) process. By observing the common denominators (attributes) that persons, objects, things, and places share one advances a word or symbolic label to describe their similarities. Concepts are socially constructed by way of consensus and emerge from human's ability to manipulate and create symbols.

All disciplines possess special vocabularies (e.g., jargon, "legalese," "psycholegese," "sociolegese") that function as shorthand expressions for identifying the phenomena of central concern. Among the major concepts of sociology are norm, value, role, status, social system, stratification, social organization, deviance, and group. Among the major concepts of psychology

are motivation, learning, cognition, intelligence and perception. The function of concepts is to enable effective and abbreviated communication without having to spell out in detail the characteristics of one's reference.

Concept usage and development are even more basic than just described. Many a young infant (before acquiring socially acceptable linguistic styles) delights in pointing to objects and things and having them named. Youngsters' initial use of concepts is vague and sloppy. Anything that has fur, walks on four legs, and produces a noise--cats, dogs, guinea pigs--may be called a dog. Gradually, however, infants learn to discriminate among similar-appearing animals and apply the correct label--concept--to these distinct objects. As you can see, concepts are not unique to science but are the basis for virtually all human communication and thought.

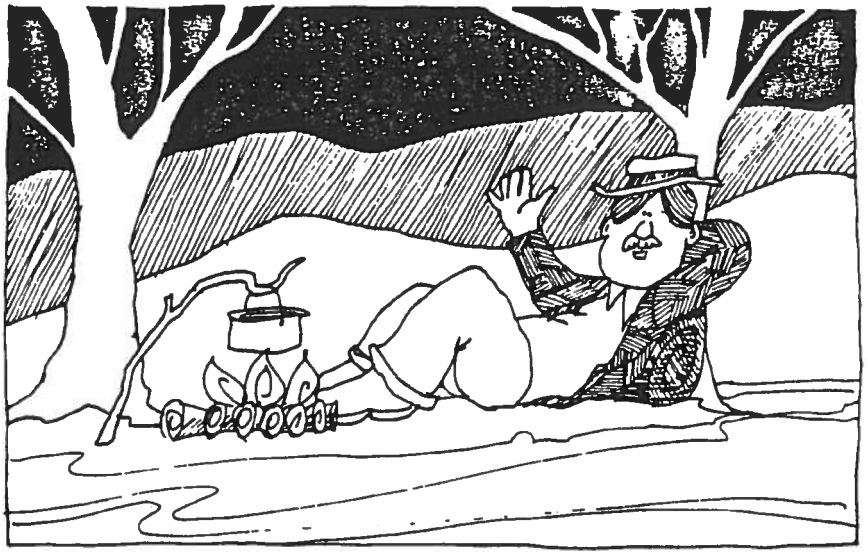
Constructs. To avoid semantic confusion it is desirable to differentiate concepts from constructs. Concepts refer to phenomena that have direct empirical referents.[5] For example, the concepts bird, cat, radio, chair, lamp, pen, and briefcase are tangible and can be directly observed and identified. Constructs, on the other hand, refer to phenomena that are neither tangible nor directly observed. Whereas constructs have no immediate and direct empirical referent, concepts do.[6] Many social science concepts possess these latter characteristics. To illustrate, the construct "norm" refers to the expected and/or required behavior of persons in a particular social situation; "value" is a construct which refers to conceptions of what is desirable; "culture" refers to the totality of roles, norms, and institutions of a society. Constructs, then, are a step up the ladder of abstraction from concepts.

When dealing with concepts and constructs it is important to avoid the fallacy of reification. The concepts and constructs must not be treated as if they were the actual phenomena to which they refer. Instead, they are the symbols or words we use to identify, characterize, and communicate ideas. Similarly, concepts should not be construed as either true or false; rather, they effectively or ineffectively communicate ideas.

A major criterion for a "good" concept revolves around its utility. Illustratively, to categorize all foodstuffs under a single designation would preclude important distinctions among those with different functions (e.g., protein, carbohydrate, vitamins, minerals, fats). Similarly, some concepts are too general. Whereas the English language has one word for love, Greek abstracts from human experience four kinds of love: (1) eros or romantic love, accompanied by sexual affection, (2) agape, love of God or Christ for mankind (spiritual love), (3) filios or family love, and (4) platonic or nonsexual love for a person of the same or different sex. Conceptualization, to reiterate, refers to the process by which ideas are refined, honed in on, and concretized. See Vignette 2.3 for one researcher's measurement of "love".

In summary, concepts are tentative notions that are subject to refinement, based upon interpersonal consensus, and useful to the extent that they capture or isolate some significant and identifiable element of reality.

Real Definitions. At this point you may be perplexed and ask "What is the real definition of love, or life satisfaction, or marital happiness, etc.?" What do these terms really mean? Surprisingly, and perhaps even unfortunately, there are no real definitions of concepts in the sense that they have some definite ultimate preordained meaning! Why? For openers,



"Unemployed? Not me, I'm out of the labor force."

reality is socially constructed.[7] Humans endow objects, events, and circumstances with meaning and labels. Take the concept of social class. Karl Marx, Lloyd Warner, and Max Weber all had somewhat distinct and different meanings for the idea[8].

Nominal Definitions. Since concepts possess no intrinsic meaning, scientists confront a major obstacle in effective communication. To deal with this dilemma it is mandatory that researchers make explicit their particular definitions of concepts. In this way other scientists can either accept, modify, or reject these definitions. When a definition is ascribed to a concept, acknowledging there is no real definition, it is called a nominal definition.

Conceptual Definitions. Scientific research makes use of two key definitions: (1) conceptual and (2) operational. Let us demonstrate their use, applicability, and necessity in social research. A conceptual definition is one using more familiar terms. It is sometimes referred to as a "textbook" or "dictionary" definition. A conceptual definition of intelligence is the "capacity for reasoning and understanding." A conceptual definition of prejudice is "an unfavorable opinion or feeling formed beforehand or without knowledge, thought, or reason." These dictionary definitions define the concepts "intelligence" and "prejudice" by using other, usually easier understood, concepts.

Conceptual definitions are judged by the ease with which they facilitate effective communication, not by their truth or falsity. Desirable conceptual definitions are those defined by concepts other than themselves. To define intelligence as an "intelligent" response or prejudice as a "prejudicial" attitude is not helpful. Such definitions tell us no more than we originally

knew. A second characteristic of "good" conceptual definitions is to describe their essential characteristics rather than characteristics they do not possess. To define intelligence as "not stupid" or prejudice as "not open-minded" is virtually useless.

Operational Definitions. Because conceptual definitions vary and do not necessarily have direct empirical referents, the researcher must link the conceptual/theoretical realm to the empirical/observational realm. Operational definitions provide this bridge. An operational definition consists of an explicit set of instructions (or operations) that must be executed to demonstrate the existence or degree of existence of a concept. Consider these examples. An operational definition of intelligence could be the score achieved on the Stanford-Binet IQ test or the Wechsler Adult Intelligence Scale; prejudice could be the score achieved on the dogmatism scale; a chocolate cake could be the recipe for making it; temperature is what a thermometer measures; and solubility is a substance which dissolves when placed in water.

The nature of operational definitions is simple. If a particular stimulus when applied to an object produces a certain reaction, the object has the property being measured. This property is the operational definition. Consider the notion of solubility. The stimulus is water, the object is say baking soda; when the soda mixes (produces a reaction) with the water it dissolves. Hence it is soluable.[9] See Vignette 2.1 for a semi-serious example of the consequences of operational definitions.

Variables. The typical purpose for engaging in social science research is to investigate the relationship between two or more concepts. Concepts that can take on different values in the empirical domain are called

VIGNETTE 2.1

OPERATIONAL DEFINITIONS AND THEIR IMPLICATIONS IN SOCIAL RESEARCH

To illustrate the glib and imprecise manner in which concepts are used in everyday vernacular, consider the following test. We talk about "intelligence" as if it were self-evident and easy to assess. To some extent, how we operationalize a concept, like intelligence, can determine who is and who isn't smart. Undoubtedly if the Chitling Test were used to measure IQ's rather than the more standard ones (e.g., Stanford-Binet, Wechsler) white and black's IQ's may be "reversed".

Adrian Dove, a black sociologist, was cognizant of the biases of standard intelligence tests when he devised the "Dove Counterbalance General Intelligence Test" (which he christened the Chitling Test). His test for ghetto black children was described as a "half-serious idea to show that we're just not talking the same language." Below is a sample of eight items. How "culturally deprived" is the white middle-class child when the "tables are turned"?[10]

1. A "handkerchief head" is: (a) a cool cat, (b) A Porter, (c) an Uncle Tom, (d) a hoddi, (e) a preacher.

2. Which word is most out of place here? (a) splib, (b) blood, (c) gray, (d) spook, (e) black.

3. A "gas head" is a person who has a: (a) fast-moving car, (b) stable of "lace", (c) "process", (d) habit of steaking cars, (e) long jail record for arson.

4. "Bo Diddley" is a: (a) game for children, (b) down-home cheap wine, (c) down-home singer, (d) new dance, (e) Moejoe call.

5. If a pimp is uptight with a woman who gets state aid, what does he mean when he talks about "Mother's Day"? (a) second Sunday in May, (b) third Sunday in June, (c) first of every month, (d) none of these, (e) first and fifteenth of every month.

6. If a man is called a "blood", then he is a: (a) fighter, (b) Mexican-American, (c) Negro, (d) hungry hemophile, (e) Redman or Indian.

7. What are the "Dixie Hummingbirds"? (a) part of the KKK, (b) a swamp disease, (c) a modern gospel group, (d) a Mississippi Negro paramilitary group, (e) deacons.

8. T-Bone Walker got famous for playing what? (a) trombone, (b) piano, (c) "T-flute", (d) guitar, (e) "hambone".

Answers: 1(c); 2(c); 3(c); 4(c); 5(e); 6(c); 7(c); 8(d).

variables. Variables capture the notion of degree or differentiation. A variable is a trait or characteristic whose "value" can vary from one case to the next. Consider several examples. Sex as a concept has two logical subdivisions: (1) male and (2) female. As a variable it can take on two "values". Political preference as a concept may have any number of subdivisions (e.g.,Democrat, Republican, and Independent, or liberal, conservative and moderate). Unlike sex, political preference possess no preordained values. While variables often imply quantitative differences in the concept, some variable differences may be qualitative (e.g., Protestant, Catholic, Jew; pregnant or not pregnant). On this latter example, one is or isn't pregnant--there is no such thing as a little bit or a great deal pregnant (despite popular claims to the contrary).

With the notion of variables in focus let us consider some additional ways in which they can be defined and utilized for research purposes. Variables are often cataloged as either dichotomies or polytomies. A dichotomous variable has two values only (e.g., male-female, alive-dead, employed-unemployed, fat-skinny). A polytomous variable (sometimes called a polychotomy or manifold classification) contains more than two values (e.g., Protestant, Catholic, Jew; liberal, conservative, moderate; upper class, middle class, working class, lower class, etc.) In the conduct of research it is possible to reduce polytomies to dichotomies, although this condensation is not always desirable.

Variables, either dichotomies or polytomies, can also be classified by their use in the research act. Three such designations are common: (1) independent, (2) dependent, and (3) control variables. The variable

the researcher is interested in explaining is the dependent or effect variable. The variable that presumably accounts for or explains the variations in the dependent variable is known as the independent or causal variable. A control variable (or test factor) is one judged to have some mediating effect on the initial relationship between the independent and dependent variables.

The distinctions among this triology of variables is specific to the research query. That is, a dependent variable in one investigation may be used as the independent variable in another. Furthermore, a control variable in one study may be an independent or dependent variable in another. Suppose one were interested in the relationship between job satisfaction and self-esteem. One researcher may wish to establish job satisfaction as the independent variable and self-esteem as the dependent variable. Another researcher may wish to reverse the order and treat self-esteem as the independent variable and job satisfaction as the dependent variable. Sleep, as a biological and social phenomenon, has been studied as both an independent and dependent variable. "For example, one may study the effect of prolonged wakefulness on the latency of sleep onset or the effects of sleep loss on performance. Or one may study the effect of presleep stress on the amount of REM (rapid eye movement) sleep or the suppression of REM sleep on subsequent performance."[11] However, once researchers have designated their independent and dependent variables it is customary to treat these variables in a consistent manner throughout a specific research project.

As we indicated earlier, most research investigations explore the interconnections among (at least) two variables. Typical research inquiries might explore the relationship between gender and anxiety, race and intelligence, IQ and grades, social class and voting behavior, and religion and political preference. A third variable, the control variable, may be thought to mediate the relationship and be added to the analysis for the light it sheds on the two-variable situation. More will be said on this latter matter in the chapters on multivariate distributions and analyses.

Hypotheses. An hypothesis is a statement about a relationship (between variables) that is so stated that it lends itself to empirical testing. Hypotheses direct and guide an investigation by providing an organizational framework to the study. The German poet, novelist, and dramatist Johann W. von Goethe (1749-1832) beautifully captured this point when he wrote: "Hypotheses are the scaffolds which are erected in front of a building and removed when the building is completed. They are indispensable to the worker; but he must not mistake the scaffolding for the building."[12]

An hypothesis proposes a relationship between two or more variables. For example, membership in voluntary associations (e.g., PTA, Rotary Club, Kiwanis) increases with social class standing. This simple declarative statement is an hypothesis. It has a subject (membership in voluntary associations), an object (social class), and a connective verb (the relationship "increases"). Similarly, the aphorisms "out of sight out of mind," "absence makes the heart grow fonder," and "idleness is the devil's workshop" are hypotheses. Hypotheses can be thought of as "if-then" statements.

If one's lover is absent he/she may not be thought of; if one's lover is absent he/she may be the object of greater devotion; and if one does not keep active he/she may get involved in destructive behavior.

Hypotheses originate in several ways. Some hypotheses derive from informal or systematic observation (See Kitty Genovese account at the beginning of Chapter 2); others may be arrived at via intuition; and still others may be logical deductions of an existing theoretical scheme. While the source from which hypotheses emanate is immaterial, the process by which they are accepted or refuted is of monumental importance.

For hypotheses to have scientific utility they must meet several requirements. Some criteria for usable hypotheses are:[13]

(1) Hypotheses must be conceptually clear. As we've noted heretofore, some concepts are ill-defined, sloppy, vague, ambiguous, and imprecise. This must be avoided. One's definition of concepts must be clear and generally accepted (or acceptable) to the scientific community and be made explicit rather than being figments of one's "private world".

(2) Hypotheses must be operationalized or operationalizable. Operationally defining one's concepts--specifying the operations for measuring them--is as important as the assurance of their conceptual clarity. If researchers fail to make clear their measurement procedures it would be virtually impossible for another researcher to replicate the study.

(3) Hypotheses should have empirical referents. Statements of "ought", "should", ought not", "should not" or "value" cannot be dealt with in research inquiry per se. They are moral/value judgments which cannot be answered with the tools of science. Take the assertion: scientists should be value free.

The truth or falsity of this statement cannot be established since no ultimate empirical answer exists for testing it. While scientists could be polled on whether or not they agree with the statement, the statement itself is metaphysical in nature.

(4) Hypotheses must be specific. Take the vague statement: variable X is related to variable Y. This hypothesis is so imprecise as to be useless. Why? First, there are a myriad of potential X and Y variables. Second, the relationship could be linear or nonlinear. Further, if linear, it could be positive or negative. Thirdly, the relationship could be extremely complex, additive or multiplicative. Instead of this nonspecific statement one might hypothesize: the feeling of frustration will elicit aggressive behavior by children in a controlled laboratory experiment. Notice that the specific X and Y variables are concretized as is the direction of the relationship, the object of study and the research context in which the investigation is to take place.

(5) Techniques for testing hypotheses must be available. How could you test an hypothesis that a box of marbles weighed more than a box of feathers without a scale? How could you decide whether Marcelle was taller than Marc without a ruler or some other measuring device? These queries suggest that to answer research questions, techniques for empirically testing them must be available. Otherwise, one must be content with metaphysical judgments.

Some scientists are vehemently critical of this criterion.[14] They argue that the upshot of this prescription means that the methods of measurement determine the research questions. In other words, hypotheses that do not lend themselves to verification by available techniques will tend not to be formulated. The unfortunate side effect is that our existing techniques may

enslave and squelch research into predetermined channels. Science must keep its doors open to creative and innovative hypotheses even when the research apparatus may not exist for passing judgment on their truth or falsity.

(6) Hypotheses should relate to a theoretical scheme. Since theory might be conceptualized as the integration and synthesis of facts and concepts into explanatory schemes, some methodologists argue that hypotheses (and facts) without some theoretical interfacing are barren and sterile. The famous French mathematician Jules Henri Poincaré (1854-1912) once said: "An accumulation of facts is no more a science than a heap of stones is a house." The argument is that science can only accumulate by building on existing fact and theory. Other scientists are critical of this stance. They contend that it precludes creative thinking and hypothesizing since existing theory sets the stage for the logical deduction of hypotheses. As with the former principle, science must permit creative speculation even when an existing theory does not directly serve as a foundation for exploration.

Theory. Many incorrect impressions of the meaning of theory exist. A theory is not an esoteric idea, nor is it an impractical scheme. A theory consists of a set of logically interrelated concepts or propositions and is susceptible to empirical testing. The purpose of theory is to provide a general explanation for the relationship between concepts or variables. Theories may be classified using a variety of criteria (e.g., macro, middle range, and micro) and may be empirically grounded, interpretative, or philosophical.[15] See Vignette 2.2 for two contrasting views of theory.

Empirically grounded theory is "theory, inquiry, and empirical fact... interwoven in a texture of operation with theory guiding inquiry, inquiry

VIGNETTE 2.2

THE PERFECT THEORY?

In any scientific enterprise, theories--schemes for organizing and synthesizing discrete facts--are of paramount importance. According to the philosopher of science Abraham Kaplan,[19] a "good" theory:

(1) makes predictions that fit the facts.

(2) is consistent with other explanatory schemes.

(3) is parsimonious, that is, it requires relatively few concepts and propositions to account for a particular phenomenon (i.e., "Occam's Razor" principle).

(4) is a catalyst to further investigation.

Because social science's theoretical perspectives do not always meet these requirements in the strict sense, some prefer to call them orientations rather than theories.

In the cartoon below Lucy seems to have discovered the perfect theory!

seeking and isolating facts, and facts affecting theory. The fruitfullness of their interplay is the means by which an empirical science develops."[16] Of the several meanings of theory, it is this one that is generally implied in the conduct of research (see also the section on the hypothetico-deductive method). The popular social psychological cognitive dissonance theory highlights this theoretical classification. According to Festinger,[17] the originator of the theory, when individuals engage in acts that are ludicrous, contradictory, embarrassing, inconsistent, meaningless, and/or nonsensical, they will try to justify or rationalize their behavior. To test this contention, Festinger and Carlsmith[18] contrived an experiment in which subjects performed dull and boring tasks and were subsequently asked to tell other subjects that the task was exciting. Some participants were paid $1, while others were paid $20 for conveying the message. According to cognitive dissonance theory, subjects paid $1 would be more enthusiastic and convincing in telling others about the experiment's merits because that amount (unlike those paid $20) was insufficient justification. The experimental results confirmed the hypotheses derived from the larger theory. Such theory--empirically grounded-- provides both an inception point as well as an explanation for the experimental outcomes.

Interpretative theory is less methodologically rigorous. It may or may not be couched in previous research. Its goal is:

> not to form scientific propositions but to outline and define life situations so that people may have a clearer understanding of their world, its possibilities of development, and the directions along which it may move. In every society, particularly a changing society, there

> is a need for meaningful clarification of basic values, social institutions, modes of living, and social relations. This need cannot be met by empirical science, even though some help may be gained from analysis made by empirical science.[20]

Riesman, Glazier, and Denny's account of the changing personality and character structure brought by modernization is illustrative of interpretative theory.[21] Accordingly, modern "man's" character is "other-directed" (looks to others for acceptance, approval, recognition, and behavior guidelines) in contrast to "inner-directed" (looks inside himself for values and norms that have been internalized during the socialization process) and "tradition-directed" (looks to family, church, and clan for behavior maps).

"Philosophical theory" is more conjectural and speculative in nature and is generally not empirically based. It is more concerned with what ought to be than with what is. Visions of utopian societies, Orwell's 1984 scenarios, and some of Marxist thought fit into this genre of theory.

A good theory helps anchor and synthesize facts and provides direction and purpose to empirical research. It helps us see commonalities among different categories of people (e.g., married vs. unmarried, Protestants vs. Jews vs. Catholics).[22] Goffman, on the other hand, revealed the similarities among such "total institutions" as mental hospitals, penal colonies, convents, and military boot camps.[23] Theory helps establish a body of accumulated findings by serving as a general framework into which facts can be incorporated. Theory is analogous to a completed puzzle in which the separate elements (facts in a sense) are interwoven into a coherent and meaningful "gestalt".

Model. A model is a mental picture of reality that scientists carry in their heads.[24] It is often used to understand "some complex phenomenon but is compared to it in form....not in content."[25] In sociology, for example, several metaphors or analogies have been forwarded for understanding how society functions. For example, the organic analogy suggests that societies (a social organism), like biological organisms, must perform certain duties and have certain needs met if they are to survive and flourish. Structural-functionalism represents the current version of this model. An opposing model of society, appropriately called the conflict model, sees power struggles and disensus rather than cooperation and consensus as basic societal social processes.

Models are not theories. They are more general than theories and cannot be proven true or false. Their value lies in the generation of ideas which can be translated into hypotheses and be subsequently empirically tested. In addition, they facilitate conceptualization and guide research. The danger of models lies in the tendency to reify them such that the functioning of a society may be equated with the functioning of a biological organism. Rather, the two are similar in certain respects.[26]

Typology. A typology is a classification scheme for assembling, describing, and organizing facts, observations, data, ideas, or concepts. People can be classified on various bio-social characteristics such as race, social class, religious affiliation, political party preference, hair color, and shoe size. Typologies may be logical or empirical constructs.

The notion of ideal type, a methodological technique developed by Max Weber (1864-1920), is an especially important and pervasive typological

construct in the social sciences.[27] An "ideal type" is constructed from either observing empirical phenomena or deduced from creative brainstorming. To illustrate, the concept of "economic man" as portrayed in classical economics has been heuristic in economic analyses even though there are discrepancies between the model and actual economic behavior. This model consists of several postulates about how people would act if they were motivated by strictly economic and rational considerations. In reality, people are not motivated by sheer economic and rational reasons, but the typology enables the researcher to see where divergences take place and the consequences of such divergence for economic systems. In short, an ideal type proposes what the result would be if the initial assumptions were true, although the assumptions themselves are frequently somewhat unrealistic and incomplete.[28]

Sometimes two (or more) ideal types, sometimes called polar opposites, are located at different points along a continuum. In psychology, personality types have frequently been located along a scale extending from introvertism to extrovertism.[29] Similarly, constitutional type theory has distinguished three somatotypes: (1) endomorphs, (2) mesomorphs, and (3) ectomorphs.[30] Societies, too, have been coded in an analogous way: folk and urban societies, Gemeinschaft and Gesellschaft, status and contract, pre-industrial and industrial.[31]

The function of typologies is to facilitate conceptualizing phenomena and may be ultimately woven into an empirically testable form.

INTEGRATING THE BASIC INGREDIENTS OF THE SOCIAL RESEARCH PROCESS

Students often think that knowledge is out in the "real world" merely waiting to be collected by a perceptive and energetic individual. Such thinking belies the very active role the researcher plays in creating this knowledge. Particularly in disciplines with a host of abstract concepts, investigators' ingenuities become tremendously important in establishing concrete empirical indicators of the phenomena of central focus. With this caveat in mind, let us integrate the essential elements of social research and consider the modus operandi of the scientist.

The dominant analytical mode in the behavioral sciences is sometimes called the hypothetico-deductive method. The hypothetico-deductive paradigm constitutes a merger of deductive and inductive reasoning.[32] Logic and mathematics are illustrations of deductive or analytical thinking while sociology and political science (empirical disciplines) exemplify inductive reasoning. According to Palumbo:[33]

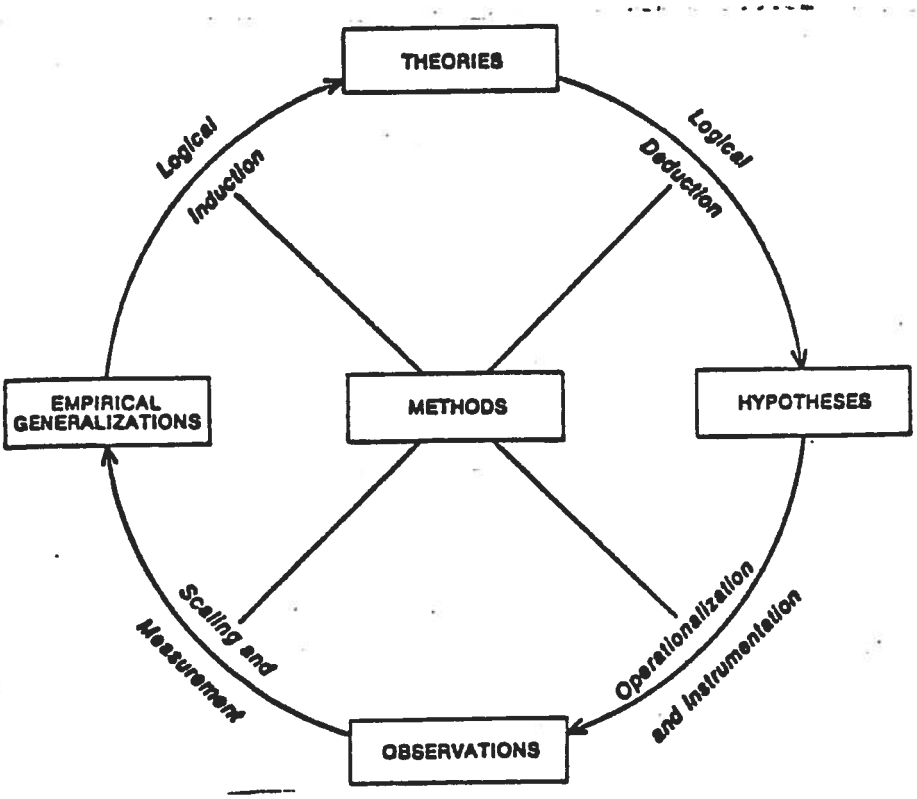
> Deductive reasoning makes assumptions and then derives consequences or conclusions from them analytically. The vehicle used is the concept, an abstraction, an idea, several steps removed from what can be observed with the senses. When a number of concepts have been interrelated in lawlike generalizations, we have a theory through which predictions about the world are made and tested empirically. Inductive reasoning is the process of moving from observations of events in the world to more general statements. Its principal vehicle is measurement,

> or the operational definition of abstract concepts. Through the inductive method, concepts are explicated or further clarified, and theories are confirmed, modified, or refuted.

The diagram in Figure 2.2 illustrates the process of social research whereby hypotheses logically derived from theories are tested. The hypotheses (propositions or variable relationships one wishes to study empirically) tested in the social research act are couched in a probabilistic framework. That is, there exist few, if any, relationships which may be labeled determinate or deterministic. When one variable always changes when another variable changes, a deterministic relationship is evident. Boyle's law in thermodynamics is a case in point. It states that for relatively low pressures, the pressure of a gas kept at a constant temperature varies inversely with the volume of gas. However, most social science hypotheses are stochastic in nature. A stochastic relationship is one that occurs quite frequently or on the average but not always.[34] As an illustration, take the frustration-aggression hypothesis. As originally formulated, it maintained that aggression is an inevitable consequence of frustration. That is, frustration precedes aggression. In fact, frustration is frequently found to be an antecedent condition but is not necessarily sufficient to elicit aggression. This contention reveals the nature of stochastic relationships. The mere fact that someone is frustrated does not automatically lead him/her to aggress, although this is likely to occur. In the social world there exist few, if any, invariate relationships. Very infrequently does variable X each and every time produce variable Y. The processes for transiting from theory to empirical hypotheses and from hypotheses to

FIGURE 2.2

THE COMPONENTS AND PROCESS OF SCIENTIFIC SOCIOLOGY



probability statements (bearing upon both theory and hypotheses) are indirect. In fact, the linkages between these strata are so elusive that professional disagreements frequently arise.[35]

Wallace provides one of the best pedagogical systems for understanding the components of scientific research.[36] He maintains that scientific inquiry may be thought of as consisting of five interrelated parts: (1) methods, (2) theories, (3) hypotheses, (4) observations, and (5) empirical generalizations. His visual scheme is presented in Figure 2.2. It must be remembered that this paradigm is an ideal type, since in the actual conduct of social research the five components frequently overlap and the sequence of steps is not invariable. In this chapter our basic concern will be with the first half (moving clockwise) of the scheme, that is, with the "Theories, Hypotheses, and Observations" dimensions.

When a research project to test hypotheses deduced from theories is designed, several decisions must be made before the test can actually be made. Assume for a moment that you are interested in assessing the relationship between socio-economic status (SES) and ethnocentrism. Conceptually, socio-economic status represents a person's hierarchical standing in society. Obviously, you must decide how you will determine a person's SES (and ethnocentrism). Since individuals do not wear tags that are valid and reliable indicators of these concepts we must be creative. Consulting the social stratification literature tells us that there are three conventional ways of determining a person's social class. They are the (1) reputational method in which individuals rate or rank others in terms of where they think they are located on the socio-economic ladder; (2) subjective method in which

individuals identify the social position to which they believe they belong, and (3) objective method in which various indices (e.g., income, education, occupation) are used to determine a person's social class.[37] The crux of the matter is that the three methods do not necessarily yield a consensus since a person's social class is partly a function of the method used for determining it.

Ethnocentrism, too, would have to be carefully defined for research purposes since, like SES, there exist alternative ways of conceptually and operationally defining it. Conceptually, ethnocentrism is defined as the (natural) tendency for people to use their own socio-cultural group as a reference for evaluating other individual and group standards and practices, by extension it implies attaching the evaluative labels of "proper," "natural," "correct," and "right," to one's own beliefs and behavior modes and "improper," "unnatural," and incorrect" and "wrong" to deviations from this standard. For research purposes, it is necessary to translate the concept ethnocentrism into specific operations or indicators. The authors of the classic work, The Authoritarian Personality,[38] devised a series of items (E-scale) purportedly measuring this theoretical concept. For example, responses of subjects to items like "Certain religious sects who refuse to salute the flag should be forced to such a patriotic action or else be abolished," were used as indicators of ethnocentrism.

In the preceding paragraph the importance of operational definitions (making explicit the manner or mode in which concepts such as SES and ethnocentrism are measured) in research was underscored. Imagine what could happen if I decided to replicate your study of SES and ethnocentrism and you neglected to operationally define the measurement of your variables. If I used the

reputational approach while you used the objective approach, the potential for lack of consistency between studies exists, even though we both measured the same idea. In brief, an operational definition spells out the exact procedures used in measurement. It consists of detailed instructions for categorizing observations clearly. Operational definitions are necessary because most ordinary definitions--named theoretical definitions--are defined in terms of other concepts supposedly already understood (these concepts supposedly already understood are called primitive concepts or axioms).[40]

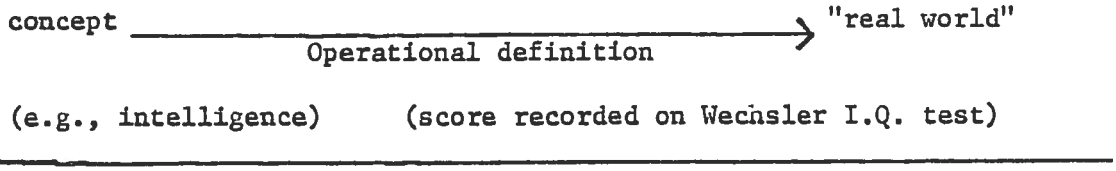
To illustrate primitive conceptualizations consider Euclidean geometry where the concepts of point and line are undefined but the concepts of angle, triangle, and rectangle are defined in terms of the primitive (i.e., undefined) concepts.[41] Let us look at some examples of operational definitions: an operational definition of "weight" would indicate how the object is (or was) to be weighed; an operational definition of one's desire to relate to persons of different ethnic groups might include the use of a Bogardus' social distance scale; and an operational definition of "status" might include the use of a composite index of an individual's occupation, annual salary, and education.

The point is simply that in any science two different definitions or "languages" are used, the theoretical and operational.[42] Many basic social science concepts (e.g., role, norm, social status, social structure, social system, group, integration, organization, society, culture, institution, value, attitude, deviance, interaction, socialization, conflict, stratification, mobility, and power) are of a highly abstract nature and, consequently, present a measurement problem.[43] Since such concepts have no ultimate meaning,

they must be reduced to specific empirical indicators through operationalization. Diagrammatically, Figure 2.3 is helpful in grasping the logic of conceptualization and operationalization. Epistemic rules link a concept with its empirical referent ("real world").[44]

FIGURE 2.3

THE LINK BETWEEN A CONCEPT AND THE "REAL WORLD"



Not all social science concepts are as intangible and elusive as those just listed. Some of the demographic variables (age, sex, race, ethnicity, regional residency) are not as abstract and, consequently, are generally easier to measure.

The methodological question is whether or not there is a way of determining if a given operational definition truly measures the theoretically defined concept. The answer to this query is a clear and resounding "NO"! The reason the answer is negative stems from the fact that concepts must be operationally defined for research purposes and they can be defined in a number of different ways.[45] There is one recommendation, however, for increasing confidence in a research outcome.

Replication of studies has, historically, not been particularly popular

nor widely practiced but it does enable one to determine what consistencies exist. Two subtypes of replication are: (1) exact, and (2) conceptual.[46] Exact replication involves only minor changes in the research design as when the same measures of SES and ethnocentrism are used to test respondents in different cities or states. Conceptual replication entails an operational definition change; for example, instead of employing the objective method of determining SES the subjective approach might be used. If the different operational indicators of a concept provide a consistent set of results then one's confidence in the variables' relationship is enhanced. Although conceptual replications help to avoid the criticism of "one methodology" studies, the nature of the social world and the research modus operandi produce few absolute and unchanging truths.

According to Northrop[47] the only way of associating theoretical/conceptual and operational definitions is by convention or common agreement . . . researchers must concur that a given operational definition is an acceptable measure of the conceptual definition with which it is presumably linked. Bridgman,[48] the initiator of the operationism movement, maintained that the two kinds of definitions should be matched up on a one-to-one basis--if you change the operation you should change the concept. In terms of our previous example this would mean that the different methods of determining a person's social class were not measuring the identical phenomenon. Although there is probably some merit to this extreme position, it does pose as somewhat unrealistic and extreme.[49]

Given the hiatus between the language of theory and research, what can be done? It is important to operationally define the concepts being tested.

Not all variables (or concepts) need or can be operationalized. But concepts which haven't been operationally defined should not be permitted to appear in statements purporting to be testable. If this occurs, the questions raised by the hypotheses will be operationally meaningless and lead to endless debate.[50] In terms of Wallace's research paradigm we have made explicit the bridge between theories and hypotheses and the link between hypotheses and empirically-gathered observations.

THE STAGES OF SCIENTIFIC RESEARCH

By incorporating some of the charcteristics of science mentioned earlier, scientific research may be defined as "systematic, controlled, empirical, and critical investigation of "hypothesized relations among variables.[51] For heuristic purposes scientific research may be divided into several discrete stages. By doing this the research process can be conceptualized as a series of logical and sequential steps. In practice, however, the process is neither so systematic nor chronological. Instead, the phases are intertwined and the researcher frequently shuttles back and forth among them. Here we

will describe scientific research as an "ideal type" and enumerate those steps which tend to take place serially.

Stages of Scientific Inquiry

(1) Choosing and Formulating a Research Problem. Choosing a problem to investigate generally reflects the researcher's judgement of what is practically or theoretically important and/or expedient to study. It is probably not desirable to select a research topic of neutral value, and probably one which produces no emotional commitment is best left unexplored (for a particular researcher). There are numerous specific reasons behind the choice of a particular research problem but, in general, three generic sources can be abstracted.[52] First, a research problem may be selected because of its theoretical or intellectual underpinnings because theories often provide the foundation for critical investigation. Second, problems may be selected because of the researcher's interest in a pervasive and/or timely social issue. Interest in social problems--poverty, abuse of power, alienation, ageism, sexism, racism, alternative sources of energy, discrimination, etc.--may provide the backdrop for scientific exploration. Third, simple curiosity may motivate one to delve more fully into a particular substantive area. No matter what the source of research problems once researchers select a problem they became immersed in scientific research . . . they devote very large portions of their thoughts, energies, and emotions to these activities. It seems a far cry from science to art, but in one respect at least they are similar: men (sic) make passionate commitments to them.[53]

While research questions can stem from a variety of sources and assume a variety of forms, they must all eventually be queries capable of being scientifically explored. You will recall from Chapter 1 that not all questions (and some very important ones at that) can be scientifically studied and be subject to empirical verification.

It is often necessary to provide justification for the selection of a research problem, particularly in research projects, articles, theses, and dissertations. Insufficient knowledge or gaps in the literature are frequently advanced as reasons for problem selection. To know this, the literature must be reviewed to avoid duplication of effort and gain new leads in a particular area.

Once a topic has been chosen it is necessary to express the problem in a scientifically testable manner. Usually this entails stating the problem as an hypothesis, a statement about the relation between variables that can be subjected to empirical confirmation or disconfirmation. The hypothesis is then tested by scientific research. For example, the hypothesis that prejudice varies inversely with socio-economic status is based upon a great deal of scientific observation and has been explored in many research projects. Eventually, an hypothesis is confirmed, rejected, or revised, and in this manner science continues to grow.

(2) Choosing a Research Design. Once a problem has been selected and stated in a testable form, the next step is to formulate an appropriate research design. A research design is a comprehensive blueprint for testing one's hypotheses. The research design necessitates a great deal of insight, foresight and planning since it seeks to answer such questions as: "What

will be studied?", "What variables will be investigated?", "How will the study be conducted?", "Who will be studied?", "In what way, if any, will control or manipulation of subjects and variables be accomplished?", "How much confidence can we place in the results?" and "How will the results of the investigation be disseminated?" In brief, a research design is the overall strategy a researcher employs in the collection, analysis and interpretation of data.

In the above example, it would be necessary to decide how subjects varying on the independent variable (socio-economic status) would be selected, how to secure the information on prejudice, and what tools would be used in the data analysis. Some define the research design as a "model of proof" for making causal inferences among the variables employed in scientific investigation.[54]

(3) Choosing a Data Collection Technique. There are various techniques for collecting data for scientific research. They range from observing subjects in laboratory or natural settings, content analyzing social documents, asking questions in either a written form (e.g., questionnaire) or orally (e.g., interview) to manipulating subjects and variables in a lab experiment.

The data collection stage ideally consists of two complimentary steps: (1) the pretest and (2) the main study.[55] As any seasoned researcher knows, one cannot assume the collection procedure works or that the research design is appropriate. To assure oneself of the validity of these procedures it is recommended that a miniature study, a pretest, of the instrument and design be conducted. The pretest data should be collected from subjects other than those who will be examined, but at the same time, are similar.

To illustrate, the author was once interested in professional hockey and baseball officials' perception of sports, fans, and players. A questionnaire was designed to tap these areas but before the instrument was sent out to professional officials, it was pretested on college students who officiated these sports at the high school and collegiate level. The pretest results called for some revisions and modifications in the items because several unanticipated problem areas in the instrument were disclosed.

No matter what data gathering technique is employed--official statistics, interviews, questionnaires, observation, documents, experimentation, special devices--it is desirable to pretest them for unexpected flaws. The time and energy spent in this preliminary phase will generally enhance the quality of the data collected by mandating at least a few minor alterations in the data collection instrument.

(4) Sampling Units for Study. Many investigations must confront the issue of sampling. Rarely if ever can the totality of individuals, objects, or events in which one is interested be scrutinized. Its just a pragmatic impossibility. How could one possibly locate all citizens of the U.S., all Protestants, all college professors, or all college students? Even if it were possible to study every case which meets one's criterion of interest, the cost, time, and effort involved would be prohibitive. Under these typical circumstances, the researcher is generally content with studying a subset of the totality. This miniature version of the totality (called a population or universe) is called a sample. It is part of the whole; a microcosm of the macrocosm.

But can results stemming from the sample be applicable to the population? Under certain circumstances and within a margin of error they can be. By using certain probability principles in selecting the sample elements one may make generalizations about the larger entity on the basis of the smaller one. This process of generalizing from sample to population is called logical inference and the principles involved are discussed more fully in chapter 12.

(5) Measurement. The coupling between the observations and empirical generalizations is measurement. Measurement is the process of assigning numerals to objects and events according to rules.[56] Instrumentation is the process of constructing instruments or devices for collecting data that are relevant to the researcher's hypotheses. The instruments must be both valid and reliable indicators of the concepts or variables the researcher wishes to study.

(6) Choosing Data Analysis Techniques. After the observations or data have been collected the researcher must convert the raw data into meaningful configurations. While the actual process of data analysis must await the collected observations, the type of analysis should have (at least preliminarily) been anticipated during the earlier phases of the research project. Data analysis and statistical analysis are frequently thought to be synonymous. While this is often true, it is also shortsighted. Before data can be analyzed, quantitatively or qualitatively, several tasks must first be completed.

The first step is to meaningfully assemble the data, thereby bringing a semblance of order out of chaotic raw data. Coding is the process through which the individual raw scores are classified into categories and, by so

doing, are reduced to a standardized form. While not all coding strategies can be mentioned, they may entail converting qualitative data to semi-quantitative data, sorting qualitative data into a restricted number of categories, or reducing quantitative data to another, usually simpler, form.[57] The mechanics of coding are discussed Chapter 7.

Once data have been adequately coded they are routinely transformed into computer-readable form. This phase typically involves entering data into a video display unit. Before the data are analyzed a statistical program must be selected before the statistical analysis can be accomplished.

Statistical analyses frequently comprises a major part of the data analysis phase. However, one cannot ordinarily jump to this step without having cleared the deck, so to speak, by executing several preliminary operations. Procedures for analyzing data abound and the appropriate statistical techniques for this analysis is, in part, dictated by the level of measurement of the data (nominal, ordinal, interval, ratio) and the purpose of the research endeavor.

(7) Interpreting the Results. The statistical values obtained via the computer (or hand) analysis do not speak for themselves. Instead, they must be interpreted. Sometimes interpretation is relatively simple and straight forward; other times it is unduly complex. The interpretation of results should always bear upon and return to the initial hypotheses proposed in the study. It should relate the specific research outcomes to the theory from which presumably the hypotheses sprung and suggest why the connections between the data and theory exist. It is probably more desirable to be conservative in interpretation than liberal. In other words, what

appears in the research report should be solidly substantiated by the data. Of course, one may wish to extrapolate beyond the data but it is imperative that this be made explicit if it is done.

Finally, since science is a public affair, the research project is typically disseminated to select audiences. Guidelines for research report writing appear in Chapter 13. Often research is reported at professional meetings, published as books, monographs or articles, or filed as research projects, theses or dissertations. In all cases they became part of the public domain and available for scrutiny and criticism. This public disclosure enables science to correct itself.

SUMMARY

In this chapter we have revealed some of the interconnections between social science theories and empirical research in the social research process. Regardless of the specific aims of scientific investigations, there exist several common ingredients in the conduct or process of inquiry. These basic ideas--sometimes called the "language of social research"--are concepts, real, nominal, conceptual and operational definitions, variables, hypotheses and theory.

Concepts are abstract generalizations, words or symbols that stand for something else. Constructs are special concepts that, unlike concepts, have no direct and immediate empirical referent. Since concepts have no ultimate and preordained meanings there are no "real" definitions; instead, the definitions used in the course of research are called nominal definitions. Science makes use of two additional types of notions: (1) conceptual (or textbook or dictionary) and (2) operational (or "recipe") definitions.

Concepts that take on different values are called variables. Variables are of different types. Some are dichotomous (have two subcategories), others are polytomous (take on more than two subcategories). Variables can be further classified as dependent (what the researcher is interested in explaining), independent (the variable that presumably accounts for or explains the variation in the dependent variable), and control (a variable believed to alter in some fashion that initial independent-dependent variable relationship).

Hypotheses are statements of variable relationships that can be empirically tested. Guidelines for constructing usable hypotheses were enumerated. Theory serves as the foundation from which hypotheses stem. A set of logically interrelated hypotheses or concepts that can be empirically tested is called theory.

Each of these major ingredients of social research was integrated using Wallace's wheel diagram as a pedagogical device. The hypothetico-deductive scheme, the dominant research mode, was illustrated in conjunction with the wheel diagram.

The research process can be conceptualized as a series of logical and chronological steps. Seven stages of social research were discussed: (1) choosing and formulating a research problem, (2) selecting a research

design, (3) choosing a data collection technique, (4) sampling units for study, (5) measurement, (6) selecting data analysis techniques, and (7) interpreting the results. Each of these phases will be more fully discussed in subsequent chapters.

VIGNETTE 2.3

LOVE

The famous American writer and painter Edward Estlin Cummings (born in Cambridge, Mass. in 1894) once wrote: "While you and I have lips and voices which are for kissing and to sing with who cares if some one eyed some of a bitch invents an instrument to measure Spring with?" (From "Voices to Voices, Lip to Lip" by E.E. Cummings, copyright 1926 by Horace Liveright). Many of us would agree that we don't need a scientific instrument to know when we are in love or when spring has sprung. But, guess what, a social scientist by the name of Zick Rubin has devised an instrument--a questionnaire--to measure love. Are you in love with a member of the opposite sex or do you merely like him or her? Now is your chance to find out!

Rubins's Love and Liking Scales

Directions: For the twenty six items listed below you are to indicate the extent of your agreement by circling the appropriate response which ranges from "not at all true; disagree completely" to "definitely true; agree completely." In the blank space you are to substitute your fondest dating partner.

1. If _____ were feeling badly, my first duty would be to cheer him (her) up.

   a. completely agree b. mostly agree c. somewhat agree d. slightly agree

   e. slightly disagree f. somewhat disagree g. mostly disagree

   h. completely disagree

2. I feel that I can confide in _____ about virtually everything.

   a. completely agree b. mostly agree c. somewhat agree d. slightly agree

   e. slightly disagree f. somewhat disagree g. mostly disagree

   h. completely disagree

3. I find it easy to ignore _____'s faults.

   a. completely agree b. mostly agree c. somewhat agree d. slightly agree

   e. slightly disagree f. somewhat disagree g. mostly disagree

   h. completely disagree

4. I would do almost anything for _____.

   a. completely agree b. mostly agree c. somewhat agree d. slightly agree

   e. slightly disagree f. somewhat disagree g. mostly disagree

   h. completely disagree

5. I feel very possessive toward _____.

   a. completely agree b. mostly agree c. somewhat agree d. slightly agree

   e. slightly disagree f. somewhat disagree g. mostly disagree

   h. completely disagree

6. If I could never by with _____, I would feel miserable.

   a. completely agree b. mostly agree c. somewhat agree d. slightly agree

   e. slightly disagree f. somewhat disagree g. mostly disagree

   h. completely disagree

7. If I were lonely, my first thought would be to seek _____ out.

   a. completely agree b. mostly agree c. somewhat agree d. slightly agree

   e. slightly disagree f. somewhat disagree g. mostly disagree

   h. completely disagree

8. One of my primary concerns is _____'s welfare.

   a. completely agree b. mostly agree c. somewhat agree d. slightly agree

   e. slightly disagree f. somewhat disagree g. mostly disagree

   h. completely disagree

9. I would forgive _____ for practically anything.

   a. completely agree b. mostly agree c. somewhat agree d. slightly agree

   e. slightly disagree f. somewhat disagree g. mostly disagree

   h. completely disagree

10. I feel responsible for _____'s well-being.

   a. completely agree b. mostly agree c. somewhat agree d. slightly agree

   e. slightly disagree f. somewhat disagree g. mostly disagree

   h. completely disagree

11. When I am with _____, I spend a good deal of time just looking at him (her).

   a. completely agree b. mostly agree c. somewhat agree d. slightly agree

   e. slightly disagree f. somewhat disagree g. mostly disagree

   h. completely disagree

12. I would greatly enjoy being confided in by _____.

   a. completely agree b. mostly agree c. somewhat agree d. slightly agree

   e. slightly disagree f. somewhat disagree g. mostly disagree

   h. completely disagree

13. It would be hard for me to get along without _____.

   a. completely agree b. mostly agree c. somewhat agree d. slightly agree

   e. slightly disagree f. somewhat disagree g. mostly disagree

   h. completely disagree

14. When I am with _____, we are almost always in the same mood.

   a. completely agree b. mostly agree c. somewhat agree d. slightly agree

   e. slightly disagree f. somewhat disagree g. mostly disagree

   h. completely disagree

15. I think _____ is unusually well-adjusted.

a. completely agree b. mostly agree c. somewhat agree d. slightly agree

e. slightly disagree f. somewhat disagree g. mostly disagree

h. completely disagree

16. I would highly recommend _____ for a responsible job.

a. completely agree b. mostly agree c. somewhat agree d. slightly agree

e. slightly disagree f. somewhat disagree g. mostly disagree

h. completely disagree

17. In my opinion, _____ is an exceptionally mature person.

a. completely agree b. mostly agree c. somewhat agree d. slightly agree

e. slightly disagree f. somewhat disagree g. mostly disagree

h. completely disagree

18. I have great confidence in _____'s good judgement.

a. completely agree b. mostly agree c. somewhat agree d. slightly agree

e. slightly disagree f. somewhat disagree g. mostly disagree

h. completely disagree

19. Most people would react very favorably to _____ after a brief acquaintance.

a. completely agree b. mostly agree c. somewhat agree d. slightly agree

e. slightly disagree f. somewhat disagree g. mostly disagree

h. completely disagree

20. I think that _____ and I are quite similar to each other.

a. completely agree b. mostly agree c. somewhat agree d. slightly agree

e. slightly disagree f. somewhat disagree g. mostly disagree

h. completely disagree

21. I would vote for _____ in a class or group election.

a. completely agree b. mostly agree c. somewhat agree d. slightly agree

e. slightly disagree f. somewhat disagree g. mostly disagree

22. I think that _____ is one of those people who quickly wins respect.

a. completely agree b. mostly agree c. somewhat agree d. slightly agree

e. slightly disagree f. somewhat disagree g. mostly disagree

h. completely disagree

23. I feel that _____ is an extremely intelligent person.

a. completely agree b. mostly agree c. somewhat agree d. slightly agree

e. slightly disagree f. somewhat disagree g. mostly disagree

h. completely disagree

24. _____ is one of the most likable people I know.

a. completely agree b. mostly agree c. somewhat agree d. slightly agree

e. slightly disagree f. somewhat disagree g. mostly disagree

h. completely disagree

25. _____ is the sort of person whom I myself would like to be like.

a. completely agree b. mostly agree c. somewhat agree d. slightly agree

e. slightly disagree f. somewhat disagree g. mostly disagree

h. completely disagree

26. It seems to me that it is very easy for _____ to gain admiration.

a. completely agree b. mostly agree c. somewhat agree d. slightly agree

e. slightly disagree f. somewhat disagree g. mostly disagree

h. completely disagree

SCORING DIRECTIONS

Assign the following numerical values to the response categories: 1 = completely agree, 2 = mostly agree, 3 = somewhat agree, 4 = slightly agree, 5 = slightly disagree, 6 = somewhat disagree, 7 = mostly disagree, and 8 = completely disagree. Then sum your responses using the numerical code for items 1 through 13 and sum your responses using the numerical code for items 14 through 26. Finally, calculate the arithmetic average ($\bar{X}$) by dividing the sum of the values for item 1 through 13 by 13 and divide the sum of the values for items 14 through 26 by 13. You will end up with two sums (items 1-13 and 14-26) and two arithmetic means (1-13 and 14-26). To determine whether there is a significant difference between the two scale scores requires selecting an appropriate measure of statistical significance.

IMPORTANT CONCEPTS DISCUSSED IN THIS CHAPTER

Conceptualization
Concepts
Constructs
Reification
Real Definitions
Nominal Definitions
Conceptual Definitions
Operational Definitions
Variables
Dichotomous Variables
Polytomous Variables
Independent Variables
Dependent Variables
Control Variables
Hypotheses
Theory
Empirically-grounded Theory
Interpretative Theory
Philosophical Theory
Model
Typology
Ideal Type
Hypothetico-deductive Method
Determinate Relationship
Stochastic Relationship
Primitive Concepts (Axioms)
Conceptual Replication
Exact Replication
Reliability
Test-retest Reliability
Split-half Reliability
Equivalent Form Reliability
Validity
Face Validity
Criterion Validity
Content Validity
Construct Validity
Scientific Research