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## CHAPTER 14 QUALITATIVE METHODS

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*It is exactly like putting together a child's picture-puzzle: after many attempts, we become absolutely certain in the end which piece belongs in the empty gap; for only that one piece fills out the picture and at the same time allows its irregular edges to be fitted into the edges of the other pieces in such a manner as to leave no free space and to entail no overlapping.*  
Sigmund Freud, 1896

In 1831, Charles Darwin began a five-year stint as unpaid naturalist aboard the HMS Beagle, a British survey ship. The Beagle was commissioned to sail around the world collecting data on geological formations and on the nature and distribution of plants and animals. Darwin spent his years aboard the Beagle observing, collecting specimens, sketching and cataloguing the animals and plants at each of the Beagle's stops. He observed systematically, carefully making field notes on findings that surprised him, and conducting experiments, whenever possible, to understand puzzling phenomena.

Aboard the Beagle, Darwin discovered that fossils of extinct species in a particular area had bodily structures which resembled those of living species in the same regions. At the Galapagos Islands, volcanic islands off the Pacific coast of South America, he learned that the finches on different islands had distinctive features, e.g. varying shaped beaks, each seemingly specially adapted to the food supply of the island on which it was found (see Figure 1). It was from such observations, supported by the published observations of other scientists, that Darwin developed the theory that "shook the world."

Early in the Beagle's voyage, Darwin began to suspect that his observations might "shed some light on that great "mystery of mysteries" - the origin of species. (Darwin, 1859, p. 1) As his conviction grew, Darwin took special care to record in his field notes every observation that he made that did not fit with his conception. He knew these would be forgotten most easily. Upon his return to Britain, Darwin then set about looking in the published writings of other scientists for any findings that seemed pertinent to his developing theory. Darwin knew that his argument could be betrayed

by overlooked facts, so he spent years "patiently accumulating and reflecting on all sorts of facts which could possibly have any bearing on it." (Darwin, 1859, p. 1) The outcome was his theory of evolution.

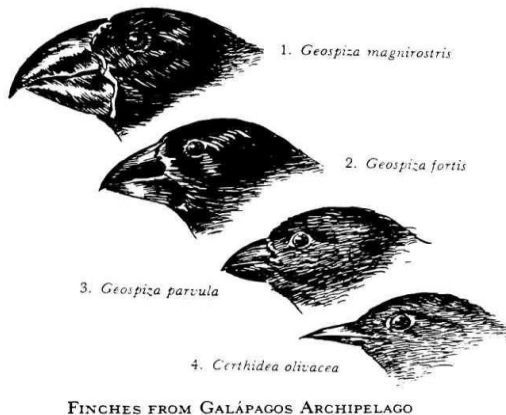


Figure 1 Variations in the Beaks of Finches, from Galapagos Archipelago (from Darwin, 1838)

Darwin referred to his book *The Origin of the Species* as "one long argument" in favor of the view that species are not immutable, as the Biblical account would have it, but rather can and do change over time, some changes eventually producing new species. The scientists of Darwin's day knew that individual variations occurred naturally within animal and plant species. Darwin argued that some natural variations give their possessors an edge in the struggle for survival. Animals and plants with these variations are more likely to survive and pass their characteristics on to future generations. The accumulated effects of this "natural selection," occurring in millions of animals and plants over millions of years, are noticeable variations in a given species and the creation of new ones. As Darwin explained this process, there is

one general law leading to the advancement of all organic beings -- namely, multiply, vary, let the strongest live and the weakest die. (Darwin, 1859, p. 238)

Using this concept, which he called "survival of the fittest," Darwin was able to account for numerous facts never before connected. He

could explain the puzzling variations he had observed in the beaks of finches in the Galapagos, the nature and distribution of extinct species in the geological record, anomalies such as the zebra-like stripes found on the necks and legs of certain horses, as well as certain behavior patterns of animals. Describing the passion for theorizing that led to this work, Darwin wrote: "My mind seems to have become a kind of machine for grinding general laws out of a large collection of facts." (Blinderman, 1987, p. 55)

## 14.1 DARWIN'S IMPACT ON FREUD AND PIAGET

Darwin's work profoundly influenced psychology's subject matter and methods. The field of comparative psychology was a direct outgrowth of his focus on the continuity between animals and humans. His observations on the instincts of animals inspired psychologists to search for the instinctual underpinnings of human behavior. The success of his historical approach sparked an interest in studying the genesis of behavior and stimulated the search for research methods to enable psychologists to do so. Most pertinent for our purposes, Darwin helped to establish qualitative research methods in psychology through his influence on the scientific methods of two pioneers who used them - Sigmund Freud and Jean Piaget, both leading figures in 20th Century psychology.

Toward the close of the 19th Century, Sigmund Freud, a young Viennese neurologist just beginning a medical practice, struggled to solve the same ancient medical problem that Anton Mesmer had treated with animal magnetism more than a century before. Freud's patients suffered from a myriad of medically unexplainable symptoms, including paralyses, visual and auditory disturbances, weakness, coughs, headaches, tics, loss of speech, inability to drink water, and odd olfactory sensations. Freud's book *Studies on Hysteria* (1895), which he published with Josef Breuer, told their stories, described a new method - free association - for studying them, and offered the "first approximation" to a theory to explain their symptoms and a therapy to cure them. Freud's subsequent work built on the theoretical and methodological foundations established in this book. Throughout the years from 1895 until his death in 1938, Freud referred to Darwin many times in his writings.

Darwin's books were among the few treasured possessions that Freud carried with him to London when he left Vienna in the 1930s. Ernest Jones, Freud's biographer, recognized the parallels between Freud's and Darwin's work when he referred to Freud as "the Darwin of the mind." (Ritvo, 1990, p. 5) Like Darwin, Freud studied errors (e.g. slips of the tongue, forgetting), instances of what he called "the psychopathology of everyday life," to develop principles of mental functioning. Like Darwin, he sought to explain the present (his patients' symptoms) by uncovering its causes in the past. And, like Darwin, Freud's approach to research was nonquantitative. His research tool, the case study, is the most popular qualitative research method used in psychology today.

Jean Piaget is perhaps the foremost developmental psychologist of the 20th century. The discoveries he made in his research "provided the field with an entirely new vision of the nature of children, and of the what, when, and how of their cognitive growth." (Flavell, 1996, p. 200) Trained as a biologist, Piaget employed concepts from Darwin's evolutionary biology in his theorizing; and, like Freud before him, Piaget also hit upon the idea of using errors to study psychological functioning. He devised ingenious tests that revealed the lack of "object permanence" in infants and the difficulties older children experience in understanding the conservation of volume and number with changes in the shape or spatial arrangement of objects. Using the case study as his method, Piaget demonstrated the evolution of children's intelligence and set forth principles of cognitive development to explain them. He began by systematically observing his own children in infancy.

The intensive study of the development of the individual child was not Piaget's innovation, however. Surprisingly, Darwin (1877) published one of the first case studies in psychology, a biographical sketch of the mental development of his infant son, William, in *Mind*, the first psychology journal. Darwin's study inspired developmental psychologist Preyer (1898) to use the same method and his work, in turn, paved the way for still other case studies of infant development (cited in Bolgar, 1965). By the time that Piaget began to use it in the second quarter of the 20th century, the method was a staple of developmental psychologists.

## 14.2 A NEW LOGIC FOR RESEARCH

Because the questions that Darwin, Freud, and Piaget hoped to answer were different in kind from those we have focused on so far in this book, the methods they needed to answer them also had to be different. So far, our discussion of the basic logic of scientific research has been limited to the work of the 19th century philosopher John Stuart Mill (see Chapter 3), whose methods specify procedures for identifying the causes of particular events. Darwin knew these methods and regularly used them to establish particular facts (e.g., how long seeds could endure in salt water, a fact that was critical for his theory since he believed that seeds were carried by sea to remote places).

But Mill's methods were of no use to Darwin in answering the question that he called "the mystery of mysteries" - the origin of species. To answer this question required that Darwin discover a principle that would explain everything that was known about the varieties of plants and animals on earth and how they were distributed, not any one particular fact. Because the past, the time frame of interest to Darwin, was long gone, the kind of isolation and manipulation of particular events specified by Mill also were not possible. Instead, inferences regarding the past had to be made by carefully examining its residues in the present. To do his research, Darwin had to develop an entirely new method, one which would be powerful enough to convince the many skeptics eager to discredit his work.

Stephen Jay Gould, a renowned evolutionary biologist, believed that Darwin's success in developing such methods was his greatest achievement. Darwin's innovation changed the character of biology (and, we would add, psychology) by making historical analysis possible. Darwin's methods were "problem solving patterns, aimed at answering families of questions about organisms, by describing the histories of these organisms." (Kitcher, 1985, in Gould, 1986, p. 61). In the words of Edward H. Carr, the eminent historian, "The real importance of the Darwinian revolution was that Darwin, completing what Lyell had already begun in geology, brought history into science" (Carr, 1961, in Gould, 1986, p. 60). Darwin found the model for research that he needed in the work of William Whewell, a 19th

century contemporary of John Stuart Mill, with whom he engaged in many exchanges on scientific method. Both Whewell and Mill were systematizers, formulating ideal methods for research by studying how scientists actually work, but their interests were quite different. Mill developed rules of experimental inference - procedures for reaching unambiguous conclusions about the causes of *particular events*; Whewell developed rules for scientific induction, the formulation of generalizations to account for *entire bodies of facts*. Clearly, Whewell's interests precisely matched Darwin's, and, as we shall see, Freud's and Piaget's need for a logic to guide their research.

### 14.3 WHEWELL'S PRINCIPLES OF INDUCTION

William Whewell and Darwin had been close friends during Darwin's student years at Cambridge University, in the late 1820s and early 1830s. The two men spent many hours together discussing science and other "grave matters," to use Darwin's term. Later in life, Whewell became a historian and philosopher of science. His two volume *History of the Inductive Sciences* (1837) traced the advances of the physical sciences "from their first germ to their growth into a vast and varied assemblage of undisputed truths." (Whewell, 1858a, p. 41) His *Philosophy of the Inductive Sciences* (1840) analyzed this history and set forth the ideals for scientific method that were to guide Darwin's research and theorizing.

#### 14.3.1 Induction's Role in Scientific Progress, According to Whewell

*[Induction is] the process of acquiring scientific knowledge by proceeding from particular observations to a general truth which includes them. (Whewell, 1858b, vol. I, p. 28)*

Science progresses, Whewell believed, by moving "from individual facts to universal laws, --from particular propositions to general ones, -- and from these to others still more general, with reference to which the former generalizations are particular." (Whewell, 1858a, Vol. 1, p.46) Whewell used developments in astronomy to illustrate this process.

*The ancient Greek astronomers Hipparchus and Ptolemy explained the motions of the sun, moon, and planets by assuming that these heavenly bodies move around the earth in complicated cyclical patterns. Later, Copernicus found irregularities in the patterns they described and discovered that these could be eliminated by assuming that the sun, rather than the earth, was the center of the universe. Working on the same problem much later, Kepler collected observations that were inconsistent with the cyclical hypothesis accepted by Copernicus, Hipparchus and Ptolemy, but consistent with a new hypothesis that he invented, the hypothesis that the planets move about the sun in elliptical patterns. Even later, Newton used Kepler's laws of planetary motion as the foundation for his theory of gravity. (Whewell, 1858b, I, p. 5052)*

#### 14.3.2 Science as Interpretation

For Whewell, induction is interpretation, and scientists, like Darwin, Freud, and Piaget, are nature's interpreters. As Whewell put it,

*Nature is the Book, and Man is the Interpreter. The facts of the external world are marks, in which man discovers a meaning, and so reads them. Man is the Interpreter of Nature, and Science is the right Interpretation.... The Sciences are not figuratively, but really, Interpretations of Nature. (Whewell, 1858b, Vol. I, pp. 41-42)*

For Whewell, the goal of scientific induction is the colligation of facts, which he defined as follows:

*[Colligation is] the binding together of a set of facts by the invention and the introduction among them of an exact and appropriate conception, expressing them all at once. (Ducasse, 1951, p. 213)*

The facts of nature present themselves in an incomplete and seemingly chaotic array. The job of the scientist is to make sense of them, constructing order out of the chaos by "selecting and reordering elements of it in new connections of one's own making." (Donahue and Quandahl, 1987, p. 643)



*Before [colligation], the facts are seen as detached, separate, lawless; afterwards, they are seen as connected, simple, regular; as parts of one general fact, and thereby possessing innumerable new relations before unseen. (Whewell, 1849, in Butts, p. 278)*

The kind of conceptual seeing that colligation provides goes beyond simply providing a generalization of the available facts. The scientist must reinterpret them, selecting what is significant from the entire array and disregarding what is incidental, and suggesting connections that might hold when the evidence is scanty. The desired end-point is a coherent and consistent theoretical organization that will account for all the available data.

#### 14.4 THE CYCLE OF DISCOVERY

As we noted in Chapter 1, developing a good hypothesis to explain a body of facts requires a continuous interplay between collecting observations and attempting to understand what has been observed. It requires the scientist to formulate, test, reject, and reformulate conceptions until one is developed that accords so well with the facts that it convinces the scientist, as well as other scientists, of its correctness. No formulas for making such discoveries are specifiable. For Whewell, the process relied upon the wisdom of the discoverer.

The facts are known, but they are insulated and unconnected, till the discoverer supplies from his own stores a Principle of Connexion. The pearls are there, but they will not hang together till someone provides the String. (Whewell, 1858c, p. 73)

As Sigmund Freud described the process in the quote with which we began this chapter, "it is exactly like putting together a child's picture-puzzle: after many attempts, we become absolutely certain in the end which piece belongs in the empty gap." (Freud, 1896, p. 205) For Whewell, human beings are all interpreters of nature, but scientific interpretation is correct interpretation. The act of interpreting is similar for the investigator sifting through wreckage to find an accident's cause, for the cryptographer deciphering a code, for the

student of literature trying to understand the meaning of a passage, and for the psychologist attempting to make sense of a client's early memories. So what makes one interpretation scientific and another not? How does the scientist achieve the "right interpretation", to use Whewell's terms?

Whewell's answer was three-fold. He believed that scientific knowledge: 1) is based on clear and distinct conceptions; 2) is founded on definite and sufficiently numerous facts; and 3) provides an exact and universal accounting of the facts that the scientist is trying to understand.

#### 14.4.1 Clear and distinct conceptions

In Whewell's view, our conceptions are the lenses through which we perceive the world, so it is important that they be as clear as possible. But, as we noted in Chapter 1, theory and fact are not always easy to separate. The hypothesis one is testing guides the selection of facts to observe, and one's observations influence one's theory. In fact, Whewell believed that every act of perception is an act of interpretation, so it is impossible for anyone, including scientists, to be absolutely objective -- that is, to perceive the outside world somehow independently of our concepts.

Nevertheless, science requires that scientists free their observations "from all the mists which imagination and passion throw around them" sufficiently to be able to separate "what we receive from without, and what we ourselves contribute from within; what we perceive, from what we infer." This is accomplished, Whewell thought, by maximizing the clarity of our concepts, a process that he thought was best achieved by careful study of the language of one's scientific discipline and by dialogue with other scientists. It is through such dialogue that precise definitions of concepts are developed.

#### 14.4.2 Definite and Sufficiently Numerous Facts

Scientific knowledge must be based on definite facts. Although Whewell acknowledged that definiteness is added to fact finding by measurement, he did not believe that precision requires quantification. On the contrary, he concluded that precise observation using qualitative distinctions had been amply

demonstrated, for example, in the scientific classifications of plants and animals into species, of clouds, of crystalline forms, and of geological strata. In fact, Whewell was a champion of qualitative science. He argued that all scientists should study natural history, Darwin's field, because such an education would force them to overcome their prejudices against nonquantitative methods.

Good colligations also must be based on "sufficiently numerous facts." This is essential because a colligation is meant to bind together all the known facts related to a problem. Because hypotheses depend upon the facts that are available in any historical period and in a given place, theories change over time. As new facts are discovered theoretical understanding changes. This is the reason that Darwin hesitated for years before publishing his theory. He wanted to be as certain as possible that his theory would explain all the facts. As we will see in this chapter, gauging how many facts should be collected before developing a colligation continues to be a problem for modern qualitative researchers.

#### 14.4.3 Exact and Universal Accounting for Facts

The ability of a conception to explain all known facts relevant to a problem is Whewell's last criterion for scientific knowledge. The credibility of a hypothesis is strengthened, for Whewell, when it accounts exactly for all the known facts and is contradicted by none of them. Darwin used this ideal to guide his research and, as the following quote from Daniel Dennett (1995) explains, modern evolutionary theory is accepted by so many scientists today because it has succeeded in explaining so many facts.

[Modern evolutionary theory] unifies all of biology and the history of our planet into a single grand story. Like Gulliver tied down in Lilliput, it is unbudgeable...because it is securely tied by hundreds of thousands of threads of evidence anchoring it to virtually every other area of human knowledge. (Dennett, 1995, p. 20)

### 14.5 THE CYCLE OF VALIDATION

Although Whewell could offer no rules for discovering colligations, he specified three tests of their validity. The first, the universal accordance of the colligation with the facts, we have just discussed.

The others were prediction and consilience of inductions, an idea that we will discuss after prediction.

#### 14.5.1 Prediction

The principle of prediction states that the credibility of a hypothesis increases when it can be shown to predict or account for phenomena that were unknown at the time that the theory was formulated.

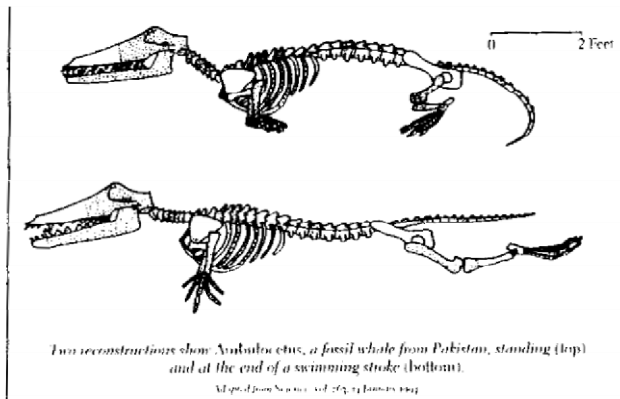
One of the criticisms raised against Darwin's theory, for example, was the absence in the fossil record of the kinds of intermediate species that his theory had predicted must exist. When an intermediate species was found during his lifetime, it contributed greatly to the acceptance of his ideas.

One of the best examples of the "missing links" between two major types predicted by Darwin's *Origin of Species* (1859) was found in 1861 in the late Jurassic limestone of Solenhofen, Germany. The *Archaeopteryx* was a virtually perfect intermediate link between birds and reptiles. This discovery... contributed to the excitement over Darwin's ideas that was to grow in the Germanophonic world during the next decade. (Ritvo, 1990, p. 13)

The credibility of Darwin's theory continues to increase as new discoveries of "missing links" are made (See Box 2).

In Pakistan, Thewissen and colleagues collected a remarkable skeleton of a new whale -- not complete, but far better preserved than anything previously found of this age, and with crucial parts in place to illustrate a truly transitional status between land and sea. The chosen name, *Ambulocetus natans* (literally, the swimming walking-whale) advertises the excitement of this discovery. (Gould, 1995, p. 368)

Figure 2 *Ambulocetus Natans* (The swimming walking-whale), a recently discovered missing link, (from Gould, 1995, p. 368)



#### 14.5.2 Consilience of Inductions

Whewell's final test for the validity of hypotheses was consilience, which he saw as "the most striking and convincing test of the correctness of a hypothesis." Whereas prediction involves correctly anticipating facts of the same kind as those on which the colligation is based, consilience refers to its ability to explain and predict phenomena of a different kind from those on which it is based.

Consilience of inductions is achieved when independent propositions, developed to account for different sets of facts, are incorporated within propositions at a higher level of generality.

Darwin's concept of survival of the fittest is a good example of a consilient induction. With it, Darwin was able to pull together the known facts of "many subdisciplines like behavior, paleontology, and biogeography." (Ruse, 1988, p. 93) The theory continues to prove its power as a consilient induction today, by its ability to explain "planet-sized facts of geology and meteorology, through middle-sized facts of ecology and agronomy, down to the latest microscopic facts of genetic engineering." (Dennett, 1994, p. 20)

## 14.6 QUALITATIVE RESEARCH DEFINED

Like the subject matter Darwin studied, many aspects of human experience of interest to psychologists do not lend themselves to analysis or expression using numbers. For many phenomena, narrative is the best medium through which to describe events, discuss processes, and convey subtle features of the context in which behavior occurs. When the results are presented in narrative form, the research is said to use "qualitative" rather than "quantitative methods."

To repeat the definition of qualitative research that we presented in Chapter 2:

Qualitative research uses language as the medium for understanding and reporting research results, and involves some form of a naturalistic, interpretive approach to its subject matter. (Polkinghorne, 1989)

This definition applies to Darwin's research and as we shall see, the basic logic that Darwin used, Whewell's principles of scientific induction, continues to guide the work of qualitative researchers today.

This chapter examines the three most common qualitative methods in psychology: the case study, participant observation, and the phenomenological method. Because the case study is the most widely used qualitative method in psychology, we will begin our presentation with it.

### 14.6.1 The Case Study

The term "case study" came to psychology from medicine, whose practitioners referred to their patients as "cases." Although modern personality theorists often depart from Freud's teachings, they continue to rely on the methods he used in formulating and refining their theories. Freud tested his psychoanalytic therapy using the case study, as have countless psychiatrists and clinical psychologists since. Modern categories for diagnosing mental disorders, like DSM-IV, also

have evolved from the pioneering case studies done by Emil Kraepelin in the 19th Century.

Like all qualitative research methods, the case study is naturalistic, but what distinguishes this method is that it is idiographic; that is, it is a method for studying the individual (see Chapter 2). Hedda Bolgar (1965) described the case study as follows:

The case study method is the traditional approach of all clinical research. It is essentially exploratory in nature; it focuses on the individual, and it aims primarily at discovering and generating hypotheses. It is the preferred method of the clinical psychologist, who is concerned with complex interrelationships between many variables and whose subject matter, i.e., the clinical situation involving human beings, makes experimental manipulation difficult and often impossible...There seems to be universal agreement about the fact that the *case study* method is the ideal way to generate hunches, hypotheses, and important discoveries. (Bolgar, 1965, pp. 28-31)

Most case studies in psychology and in medicine focus on understanding and/or treating the disorders of individual people, as Freud did. Participants for case study research most often are chosen for study because they are "textbook examples" of a particular disorder. But case study methodology is not restricted to problem behaviors. Developmental psychologists, like Piaget, use it to study normal processes and case studies are used to discover the roots of exemplary gifts and talents, like creativity, leadership, and musical or artistic talent. Although most case studies focus on individual people, groups, organizations, hospital wards, and other similar units taken as a whole have been the focus of case studies.

As the following definition, which we introduced in Chapter 2, indicates, the term "case study" is reserved for studies which do not look at everything about a person's life.

A case study is a reconstruction and interpretation, based on the best evidence available, of part of the story of a person's life. (Bromley, in Runyan, 1982, p. 443)

Case studies reconstruct and interpret only those facts that are judged to be pertinent to a particular phenomenon that is the focus of the investigator's interest. When case study methodology is applied to understanding the entire life of a person, it is called a life history or psychobiography.

The following case study, one of several published by Freud, is typical of the method in describing the nature and history of the subject's symptoms and in providing a causal analysis of them; but it is unusual in the kind of data on which it is based. Most case study researchers obtain their data first hand from interviews or observations of their subjects, perhaps supplemented by information from other sources (e.g. medical examinations, diagnostic tests, eyewitness reports, and personal documents, like diaries or letters). Typically, only the researcher has access to the full array of data on which the interpretation is based.

The case we will discuss next is atypical. It was based entirely on the experiences reported by a man in his autobiography and on documents published along with it. Any researcher therefore can have access to the complete data on which the case, a classic in psychoanalysis, is based. As we will see, this fact makes the case particularly useful for demonstrating two methodological problems of case studies: the possibility of alternative explanations and the dependence of interpretations on the completeness and accuracy of the evidence on which they are based.

#### **14.6.1.1 THE SCHREBER CASE**

In December of 1902, Daniel Paul Schreber, then a sixty-year-old inmate of Sonnenstein Asylum in Saxony, Austria, put the finishing touches on his autobiographical book, *Memoirs of my Nervous Illness*. He described the book as an account of "supernatural matters, knowledge of which has been revealed to me." (Schreber, 1903, p. 2) Daniel Schreber was a successful German judge, who suffered two mental breakdowns, each precipitated by his promotion to a new position of increased responsibility. The first breakdown, which was



diagnosed as hypochondria, happened when Schreber was forty-two; the second, diagnosed as a case of paranoia dementia, took place eight years later. Schreber wrote the *Memoirs* from observations and experiences that he recorded on scraps of paper and in notebooks during the seven years of his second hospitalization.

By his own account, between his two hospitalizations Schreber's life had been one "of great happiness, rich in outward honors, and only clouded from time to time by the oft-repeated disappointment of our hope that we might be blessed with children." One morning, following his latest promotion, however, he had the unusual thought while half asleep that "it really must be very nice to be a woman submitting to the act of copulation." On another occasion, his sleep again was interrupted, but this time by sexual feelings of an unusual intensity, that led him to think of his former illness and of Dr. Flechsig, the physician who had cured him of it. It was at this point that Schreber began to make the accusations against Flechsig that led to his commitment to an asylum for the mentally ill.

At first, Schreber accused Flechsig of committing soul murder on him and of transforming him into a woman. Later, he believed that "God himself must have known of the plan, if indeed He was not the instigator, to commit soul murder on me, and to hand over my body in the manner of a female harlot." (ibid, p. 59) Schreber's physician during part of the second illness, Dr. Weber, reported that "Dr. Schreber was dominated by delusions, that he considered himself chosen to redeem the world and to restore to it the lost state of Blessedness. This however he could only do by first being transformed from a man into a woman." (ibid, p. 475)

During the many years of his hospitalization, Schreber often was suicidal, believed that he was "dead and decomposing," and frequently asked for the cyanide that was meant for him. He continued to claim that "soul murder" was being performed on him and that his body was being penetrated by God's nerves, or "rays," that were slowly transforming him, nerve by nerve, into a woman. In fact, Schreber had "the feeling that already masses of 'female nerves' have been transferred into his body, from which through immediate fertilization by God new human beings would come forth." (Dr. Weber, in ibid, p. 387) "Divine rays" also performed miracles on

Schreber causing him to suffer "worse horrors than anyone could imagine." For example, he wrote:

Every word spoken near me or with me, every human action however small which is combined with some noise, for instance opening the door-locks on my corridor, pressing the latch on the door of my room, the entry of an attendant into my room, etc., is accompanied by a sensation of a painful blow directed at my head; the sensation of pain is like a sudden pulling inside my head which calls forth a very unpleasant feeling as soon as God has withdrawn to an excessive distance, and may be combined with the tearing off of part of the bony substance of my skull -- at least that is how it feels. (Schreber, 1903, p. 204)

Schreber claimed that miracles caused him to live frequently without a stomach. "Miracles of heat and cold," forced the blood toward his head and away from his extremities, preventing "natural feelings of bodily well-being." "Little men" opened and closed his eyes, and affected the direction of their gaze. The pain caused by the "coccyx miracle" (the coccyx is a small triangular bone at the lower end of the vertebrae) made sitting or lying down impossible. The "compression-of-the-chest miracle" produced great pain and prevented him from breathing normally. The "head-compressing-machine," "compressed [his] head as though in a vice" causing it "temporarily to assume an elongated almost pear-shaped form." (ibid, p. 159) In the "writing-down miracle," Schreber was constantly observed and his every action recorded.

Soon after its publication, the *Memoirs* caught the attention of Sigmund Freud. Freud had already had some success in showing that seemingly nonsensical mental productions, like dreams, slips of the tongue, and the paralyzes of hysteric patients, have meaning for those who experience them; so Schreber's complex delusional system must have been particularly intriguing to him. Schreber's book offered Freud a welcome opportunity to test a theory he was developing about the origins of paranoia. Because he believed that paranoics

betray the very secrets of their mental life that others hide, he thought he could do an analysis using the *Memoirs* as his data.

Based on his work with other patients, Freud had come to believe that the delusions of paranoics are strategies that they invent to deal with powerful but unconscious homosexual impulses, urges that are repugnant to their conscious minds. In the following quotation from the case, Freud explains how this theory helps to explain Schreber's symptoms.

*We shall therefore, I think, raise no further objections to the hypothesis that the exciting cause of the illness was the appearance in him of a feminine (that is, a passive homosexual) wish-phantasy, which took as its object the figure of his doctor. An intense resistance to this phantasy arose on the part of Schreber's personality, and the ensuing defensive struggle, which might perhaps just as well have assumed some other shape, took on, for reasons unknown to us, that of a delusion of persecution. The person he longed for now became his persecutor, and the content of his wishful phantasy become the content of his persecution. It may be presumed that the same schematic outline will turn out to be applicable to other cases of delusions of persecution. What distinguishes Schreber's case from others, however, is its further development and the transformation it underwent in the course of it.*

*One such change was the replacement of Flechsig by the superior figure of God. This seems at first as though it were a sign of aggravation of the conflict, an intensification of the unbearable persecution, but it soon becomes evident that it was preparing the way for the second change and, with it, the solution of the conflict. It was impossible for Schreber to become reconciled to playing the part of a female wanton towards his doctor; but the task of providing God Himself with the voluptuous sensations that He required called up no such resistance on the part of his*

*ego. Emasculation was now no longer a disgrace; it became 'consonant with the Order of Things,' it took its place in a great cosmic chain of events, and was instrumental in the re-creation of humanity after its extinction. 'A new race of men, born from the spirit of Schreber,' would, so he thought, revere as their ancestor this man who believed himself the victim of persecution. By this means an outlet was provided which would satisfy both of the contending forces. His ego found compensation in his megalomania [delusions of grandeur], while his feminine wishful phantasy made its way through and became acceptable. (Freud, 1911, pp. 47-48)*

Freud used the concepts of wish-fulfillment and conflict to explain or, in Whewell's terms, "bind together" many facts from the *Memoirs*, including the following. Schreber's symptoms had begun one evening when his wife was away, when he experienced sexual arousal and thought about his previous illness, and possibly his physician. Freud believed that ordinarily the presence of Schreber's wife kept his homosexual impulses in check, but that in her absence they resurfaced to disturb him. Further, Schreber believed that he was being transformed into a woman for the purpose of sexually gratifying a male, God. (Freud believed that God most likely stood for Schreber's father, a physician, and so a miracle worker who would appear god-like to his young son, whereas Flechsig possibly represented an older brother.) God demanded "voluptuousness," so Schreber often found his nerves in "a state of high-grade excitation" which attracted God's rays. Once Schreber's emasculation was complete, he believed he would be impregnated by God and thus redeem the world by giving birth to a new and superior race of humans.

With this interpretation, Freud believed, the parts of the puzzle fell into place. The interpretation fit the facts and, as Whewell's logic demands, nothing in the Memoir's pages refuted it. Freud acknowledged that there were gaps in the factual record, however. Schreber's family had been allowed to censor the book prior to its publication, deleting references to his home life. The passage of the

*Memoirs* in which Schreber disclosed "the true essence of soul-murder" and "its technique" was censored, for example.

#### **14.6.1.2 AN ALTERNATIVE EXPLANATION**

Freud concluded that it was impossible to interpret the miracles that Schreber experienced without additional information about his personal history. How did Schreber come up with the delusion that his head was being crushed and his chest compressed? What was the origin of his belief that his stomach regularly disappeared and reappeared, that his eyes were being manipulated, that he was constantly observed, and why did he experience unusual sensations of heat and cold? Freud's theory could offer no explanation of these facts. All the pearls could not be strung together in one necklace, as Whewell's ideal for colligation requires.

Because Freud believed that additional data would not substantially alter his interpretation, he did not search for other information on Schreber's personal life -- this, despite the fact that Schreber's father was a well-known figure in German society. The elder Schreber, it turns out, was a specialist in orthopedic medicine and a self-styled expert on how to raise children -- a 19th century German Dr. Spock, so to speak, who tested his theories on his own children.

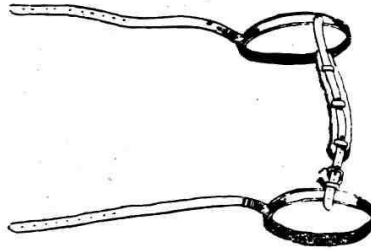
Some 60 years after Freud published his case study, Schatzman (1973) and Niederland (1974) independently discovered eighteen books and pamphlets that Schreber's father had written detailing his principles of childrearing. What they discovered in these writings suggests the inadequacy of Freud's interpretation of the case. Schreber's father advocated battling the weakness and moral "decay" of his age with an elaborate daily training regimen. He believed that children should "form a protective wall against the unhealthy predominance of the emotional side," the cause of depression, mental illness and suicide, in his view. (Schreber, 1858, in Schatzman, p. 20)

Schreber's father's books presented elaborate formulas for stripping children of their own wills and subjecting them to the wills of their parents. He recommended that parents "suppress everything in the child," even in the first months of life, and accustom the child to automatic and absolute obedience. If his recommendations were followed, he promised, parents would "soon be rewarded by the

appearance of a wonderful relationship where the child is nearly always ruled merely by parental glances." (ibid, p. 34) Schatzman believes that the widespread acceptance of these child rearing practices set the stage in Germany for the acceptance of the Nazi ideology. Schreber's father may have played a part in the events that led to the Holocaust! The senior Schreber also recommended a daily routine to toughen children's bodies and ensure proper development of their bones and muscles. After a certain age, children were to have cold baths only and not a morsel of food between meals. They were to sleep in unheated rooms and do daily eye and posture exercises. They were to maintain an erect posture at all times and to sit evenly on both buttocks at once, never leaning to one side or the other. In going about their daily activities, they were to alternate in their use of both sides of their bodies, to prevent uneven development. If they opened a door with the right hand, for example, the next time they were to use the left. With such continuous attention to the body and its activities, it is small wonder that Schreber's first breakdown was diagnosed as hypochondria (excessive anxiety over health, often accompanied by imaginary illness)!

The elder Schreber also had invented many orthopedic devices to be worn for preventive or corrective purposes --Schreber's straight-holder, head-holder, and chin band, for example, are illustrated in Figure 3. As you might imagine, the moral training of children also was rigid and demanding. Even minor infractions of the rules were written down on a "writing-down board," that was left in the children's rooms for weeks to remind them of their lapses from proper behavior.

Figure 3 Reproductions from Dr. Scheber's Printed Works.  
Apparatus for maintaining perfect posture in sleep.

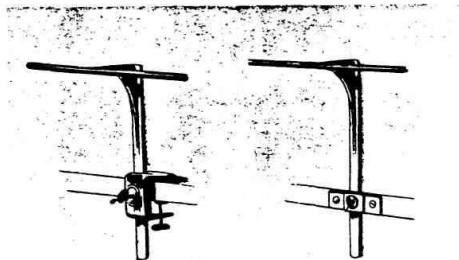


*Figure 5 (p. 174) A belt for the sleeping child.*



*Figure 6 (174) The belt in use.*

Geradhalter (or straight holder) a device for maintaining perfect posture while sitting. The portable model is on the left; the model on the right was fixed to desks at school.



*Figure 3 (p. 203) The Geradhalter. On the left is a portable one for home use. The one on the right was fixed to desks at school.*



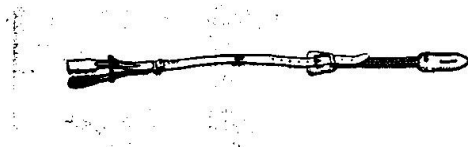
Figure 4 (p. 205) *The Geradhalter in use.*

The chin band, to ensure proper development of teeth and jaws.

Figure 8 (p. 220)  
*The chin band.*

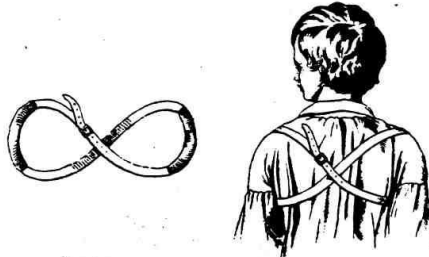


The head holder designed to prevent the child's head from falling forward or sideward. It was attached to the child's hair at one end and to the child's underwear at the other, pulling the hair if the head was not held straight.





The shoulder band to prevent slumping, illustrated in use. It was to be worn until the child's posture was corrected. Metal springs rest on the front of the shoulders.



*Figure 2 (p. 198) A shoulder band to prevent "falling forward of the shoulders." Dr. Schreber thought it should be worn every day, all day, until "the bad habit is regulated." The shaded parts of the band on the left are metal springs to rest on the front of the shoulders.*

Combined use of devices.



*Figure 5 / Geradehalter with head belts.*

The practices and contrivances described in the father's books are reflected in the son's accusations against God. And the religious language of the father (quoted below) shows up in the delusions of his son.

At a tender age, the ground must be made ready to receive the seed of Godliness....By frequently repeated gentle reminders the child should be brought to accustom himself to stepping before God at the end of every day alone and in his own mind...in order to

reflect his inner self in the pure rays of the concept of God (of the loving Universal Father)...The word of religion must not be left simply adhering to ear and mouth, but its deep sense, the spirit of the word, should penetrate and wed the person's soul. (ibid, pp. 9397)

The analysis offered by Schatzman and Niederland illustrates both the power of the case-study method --we finally can understand Schreber! - as well as two of its problems -- 1) the possibility of alternative explanations of the same case, and 2) the dependency of interpretations on the completeness and accuracy of their information base. Freud's preconceptions pointed him in certain directions and away from others. By focusing only on wish-fulfillment and the defensive struggle against conflict to explain Schreber's symptoms, Freud missed the possibility that they resulted from actual persecution in childhood, an interpretation which strikes us as painfully obvious after the fact. Perhaps one of his readers showed Freud the father's books. We will never know. But a quarter of a century later, Freud (1937) came up with a new hypothesis to explain delusions like those from which Schreber suffered. He now concluded that delusions may communicate "historical truth" -- that is, happenings experienced in childhood that force their way into the consciousness of the adult in distorted form. With a more complete information base and an inclination to explore the full range of alternative hypotheses, Freud might have discovered this idea years earlier.

#### 14.6.1.3 THE VALUE OF MULTIPLE WORKING HYPOTHESES

T. C. Chamberlin (1890), a geologist, was concerned with the ways in which scientists' working theories and hypotheses can unconsciously direct their attention. Although his comments were intended for geologists, Chamberlin's comments also point to the ways that the conceptions of researchers in psychology can color their interpretations in case studies, a source of invalidity in such research.

*There is an unconscious selection and magnifying of the phenomena that fall into harmony with the theory and support it, and an unconscious neglect of those that fail of coincidence.... Instinctively there is a special searching-out of phenomena that support [the theory], for the mind is led by its desires. There springs up,*

*also, an unconscious pressing of the theory to make it fit the facts, and a pressing of the facts to make them fit the theory. (Chamberlin, 1890; reprinted in Science, 1965, p. 755)*

Because we usually do not have access to the data on which a case study is based, we have no way to assess the impact of such selective attention on the interpretations that researchers offer. We also cannot know whether other investigators, with different theoretical orientations, would interpret the same data differently -- a problem highlighted by the Schreber case.

To avoid such bias, Chamberlin suggested that researchers investigating new phenomena entertain multiple working hypotheses rather than single hypotheses, to neutralize the impact of their desires on how they collect and interpret data. He explained his thinking as follows:

*The effort is to bring up into view every rational explanation of new phenomena, and to develop every tenable hypothesis respecting their cause and history. The investigator thus becomes the parent of a family of hypotheses: and, by his parental relation to all, he is forbidden to fasten his affections unduly upon any one. (ibid, p. 756)*

By cultivating multiple hypotheses, Chamberlin believed, researchers would be less likely to selectively attend to data and thus less likely to offer interpretations distorted by their preconceptions and desires.

Chamberlin's suggestion is followed routinely in investigative work outside of psychology. When Trans World Airlines Flight 800 mysteriously crashed in the summer of 1996, for example, the wreckage was meticulously examined in an attempt to discover clues about the cause. The investigators imagined several possible scenarios, including pilot error, mechanical failure, an explosive device on board the plane, and a missile fired from the ground or air. All of these scenarios were kept in mind as they examined the evidence. The investigators retrieved the airplane's black box and listened to the recording of the plane's last seconds; they analyzed chemical traces on

bits of wreckage as evidence of explosives; they looked for patterns in the damage to the plane, etc. Prior observations and experimental findings established the validity of these tests, but the investigation was guided by the logic of the case study.

Chamberlin pointed out that entertaining multiple hypotheses has other benefits. "By its nature it promotes thoroughness" and endows the mind of its user with "the power of simultaneous vision from different viewpoints," he wrote. In his view, the practice also promotes the kind of rich, full, multidimensional thinking that is required to solve complex research problems. Entertaining multiple hypotheses also increases the likelihood of discovering multiple causes of phenomena, because working hypotheses suggest lines of inquiry that might otherwise be overlooked. (Chamberlin, 1965, p. 756)

#### *14.6.1.4 Maximizing the Completeness and Accuracy of Data*

We have seen how increasing the factual base for interpretation cast a different light on Schreber's symptoms; they now seem to communicate the details of abusive treatment at the hands of his father. We are left to wonder whether our interpretation would change even further if we had more information about Schreber's past life and present circumstances. As Whewell stated, valid colligations must be based on sufficiently numerous and definite facts. But how can researchers know whether a sufficient number of relevant facts has been collected? Should we stop with reading Schreber's father's books or should we also examine the details of Schreber's life during his hospitalizations? Was there a possibility, for example, that he might have been thrown to the attendants for sexual abuse as he feared? What light might be cast on Schreber's "delusions" by learning more about the physician he accused of trying to murder his soul and of plotting to emasculate him? Schatzman discovered that at the time that Schreber was his patient, Flechsig was recommending a new treatment for mental illness, one that he already had tried out on at least three patients. The treatment was castration!

In addition to such questions about the completeness of the data for a case study, it also is important to consider their accuracy. Although self-report is essential to case study research (it provides information unobtainable in other ways), we also know that we cannot always rely

on what people tell us, especially about events that have happened in the past. In the absence of objective data, psychologists have no fool-proof methods for distinguishing true from mistaken memories.

For these reasons, D. B. Bromley (1986) suggested that case study researchers follow the same rules of evidence that have proven to be successful in the judicial system. Like witnesses in a court of law, research subjects should be encouraged to be as concrete and detailed as possible in their self-reports and their statements should be examined carefully to detect inconsistencies and gaps, and to distinguish inferences from facts. In addition, subjects' self-reports should be checked against other forms of evidence (e.g. the recollections of other people, archival records, etc.), the more objective the better.

Researchers also should be sensitive to possible ways that they might influence the reports of their subjects. Verbal reports can be influenced by the ways questions are worded, the sensitivity of the topic being discussed, who is doing the questioning, for what purpose, and in what context. Young children especially are susceptible to leading questions, so those who interview them must take special pains to avoid influencing their responses.

Self-report also can be affected by subjects' attempts to manage the impressions of them that researchers receive. Participants in research, like people in many other situations, want to present their best face to others. Katha Pollitt (1992) confessed to succumbing to this urge in an essay criticizing the reliance of social scientists on self-report.

*We tend to tell strangers what we think will make us sound good. I myself, to my utter amazement, informed a telephone pollster that I exercised regularly, a boldfaced lie. How much more difficult to describe truthfully one's moral and ethical values -- even if one knew what they were, which, as Socrates demonstrated at length, almost no one does. (Pollitt, 1992, pp. 801-802)*

Sigmund Freud, one of the fathers of case study research, tried to avoid the problem that Pollitt identified by asking his patients to tell

him everything that came to mind in their psychoanalytic session, censoring nothing. The censored material, Freud believed, was likely to be critical in understanding the patient's problems.

#### 14.6.1.5 STEPS IN THE CASE STUDY

Bromley (1986) recommended several steps for case study researchers to follow if they wish to increase the validity of their results. His steps, given below, encourage researchers: 1) to systematically examine *prima facie* (that is, immediately apparent) alternative explanations, 2) to be open to exploring new hypotheses as the investigation progresses, and 3) to base their interpretations on the most trustworthy evidence available.

Step One. The initial problems and issues are stated as clearly as possible.

Step Two. Background information is collected to provide a context in terms of which the problems and issues are to be understood.

Step Three. On the basis of information available at the time when the problems and issues are raised, *prima facie* explanations and solutions (about the individual's personality and predicament) are formulated.

Step Four. These guide the investigator's search for additional evidence. If they do not fit the available evidence, alternative explanations (conjectures) are worked out.

Step Five. The investigator then searches for and admits for consideration sufficient evidence to eliminate as many of the suggested explanations as possible, in the hope that one of them will be so close to the truth as to account convincingly for all the evidence and be contradicted by none of it. The evidence may be direct or indirect; but it must be admissible, relevant, and obtained from competent and credible sources.

Step Six. The sources of evidence, as well as the evidence itself, must be closely examined. In the case of personal testimony this is analogous to cross-examination in a court of law; otherwise it amounts to checking the consistency and accuracy of all items of evidence.

Step Seven. There must be a critical inquiry into the internal coherence, logic, and external validity of the whole network of argument claiming to settle the issues and solve the problems. (Bromley, 1986, p. 26)

Bromley's steps illustrate how Whewell's principles of induction are applied in collecting and interpreting data on an individual case. The investigator collects the full range of pertinent information and makes every effort to ensure that any conclusions drawn are based on in-depth and definite evidence. Once preliminary data are collected, the researcher formulates and tests multiple alternative hypotheses to account for them, until one is found that best accounts for the available facts. Bromley's criteria for a good explanatory hypothesis are that it "makes good sense," is "internally coherent," "corresponds with the empirical evidence," and "successfully predicts how the individual will behave." (Bromley, 1986, p. 37)

Bromley advises that case study researchers, like attorneys in a court of law, anticipate opposition to their interpretations and prepare for it by asking themselves whether the evidence in favor of an interpretation is weighty; whether sufficient links have been established between the evidence and the conclusions drawn from it; whether gaps exist in the argument or evidence; whether there might be alternative interpretations of the data; and whether predictions based on the interpretation have been substantiated.

In Bromley's view, the ultimate test of an explanation is its acceptance "by competent investigators working independently of one another." (Bromley, 1986, p. 37) A well-argued interpretation should be able to withstand the critical appraisal of other scientists testing the interpretation on cases of the same sort. Although case studies focus on single cases, their findings should generalize to other cases of the same kind. Freud, for example, believed that his analysis of Schreber's *Memoirs* would shed light on paranoia, not just Schreber's paranoia.

In anticipation of such critical appraisal, it is a good idea for researchers to review the published literature to see how well their interpretations hold up in the light of other researchers' results. Researchers also should facilitate the review of their work by other scientists by making their data available to them whenever this is

ethically justified and feasible. As the Schreber case illustrates, when data are viewed from diverse perspectives our understanding is enriched.

#### 14.6.2 Participant Observation

In the 1920s and 1930s, anthropologists, like Margaret Mead, Ruth Benedict, Franz Boas, and Bronislaw Malinowski, pioneered the use of participant observation (called ethnography in anthropology) to study the customs and perspectives of members of societies other than our own. Sociologists at the University of Chicago, like Robert Park, W. I. Thomas and Florian Znaniecki, began to use it at about the same time to learn about the perspectives of members of our own society who led unfamiliar lives. Social psychologists who believe that we can best gain an understanding of people's behavior by figuratively walking a mile in their shoes also use the method. Norman Denzin (1970) defined participant observation as follows:

Participant observation is a commitment to adopt the perspective of those studied by sharing in their day-to-day experiences. [It is] a field strategy that simultaneously combines document analysis, respondent and informant interviewing, direct participation and observation, and introspection. (Denzin, 1970, p. 185-186)

Just as Whewell described, the participant observer collects facts and interprets them, trying out various colligations to account for them, until finally one is discovered that seems adequate. The interpretation might be a description of kinship patterns, an account of the stages in the "career" of a mental patient, an explanation of what life is like for a ballet dancer, or an attempt to understand the causes of rape by studying how rapists see themselves and their victims. Whatever the particulars, participant observation attempts to formulate explanatory propositions to shed light on the full range of data under analysis.

This field method is less structured than most (see Chapter 10), as the following quotation from Denzin (1970) indicates:



*Participant observation is deliberately unstructured in its research design so as to maximize the discovery and verification of theoretical propositions. The attempt is to continually revise and test emergent hypotheses as the research is conducted.... The hypothesis... in its final stage of development, frequently is not of the strict "A causes B" type. Instead, propositional sets of an all-inclusive nature are developed so that the total arena of behavior under analysis may be incorporated in an explanatory network. (Denzin, 1970, p. 186-187)*

#### 14.6.2.1 Triangulation

Because valid interpretations cannot be built on invalid data, participant observers, like case study researchers, make every effort to supplement self-report with other types of data. Qualitative researchers have insisted on the importance of triangulation.

The use of multiple methods, or triangulation, reflects an attempt to secure an in-depth understanding of the phenomenon in question. The combination of multiple methods, empirical materials, perspectives and observers in a single study...adds rigor, breadth, and depth to an investigation. (Denzin & Lincoln, 1994. p. 2)

Whenever possible, participant observers triangulate, incorporating diverse theories, multiple measures, multiple occasions of data collection, in many situations, with different investigators.

If diverse indicators all point in the same direction, the confidence of researchers in their data and interpretations is increased. The term "triangulation" comes to participant observation from surveying and navigation, where it refers to a method of computing the unknown distance of an object, by using two known objects as reference points. The method is illustrated in Figure 4.

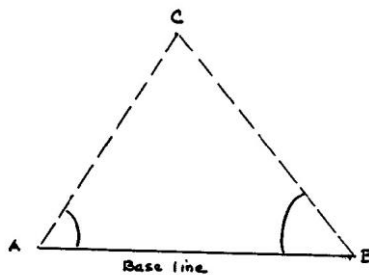
#### 14.6.2.2 Researcher Roles

To learn how people understand and construct meanings, participant observers have to establish relationships with them. In the past, they

often infiltrated groups, keeping their true identities as researchers secret. This method of gaining entrance to groups is used less frequently today for ethical as well as methodological reasons. To maintain secrecy, researchers who infiltrated groups would have to record the group's transactions, reconstruct complex conversations, and happenings from memory. Modern researchers usually adopt one of two other roles, which Raymond Gold (1958) has labeled participant-as-observer and observer-as-participant, according to the degree of the researcher's participation in the life of the group.

Figure 4. Triangulation in Surveying and Navigation.

Triangulation refers to a technique used in surveying and navigation to determine the unknown distance of a point. When points A and B are known, the distance to point C, which is visible from both A and B, can be determined if the surveyor or navigator knows the distance between A and B (called the base line) and the angles at A and B.



Recall from Chapter 9 that in single case experimental designs the "baseline" observations serve as a reference point for determining the unknown effects of the experimental treatment.

In the participant-as-observer role, researchers participate in the life of the group, like secret infiltrators did in past research, but let those being studied in on their scientific goals. Jay MacLeod became a participant-as-observer in his study of the lifestyles of two groups of teenage boys in a housing project, The Hallway Hangers and The Brothers (See Chapter 2 for details). At first, MacLeod assisted with a youth group, hanging out with the teens and playing basketball with them. Later, he conducted in-depth interviews with them to learn more about their aspirations for the future.

Observers-as-participants, unlike the role we just described, do not become involved in group activities or try to establish long-term relationships with members. Instead, they study the lives of their subjects by conducting one or a few in-depth interviews focused on a particular topic. Observers-as-participants study drug or alcohol addiction, rape, or vandalism, for example, by asking respondents about their involvement in such activities. Analytic induction is used to arrive at the causes of behavior in this type of research. The steps in analytic induction are given below, as they were presented by Denzin (1970).

#### *14.6.2.3 Steps in Analytic induction*

1. A rough definition of the phenomenon to be explained is formulated.
2. A hypothetical explanation of that phenomenon is formulated.
3. One case is studied in light of the hypothesis, with the object of determining whether or not the hypothesis fits the facts in that case.
4. If the hypothesis does not fit the facts, either the hypothesis is reformulated or the phenomenon to be explained is redefined so that the case is excluded.
5. Practical certainty may be attained after a small number of cases has been examined, but the discovery of negative cases disproves the explanation and requires a reformulation.
6. This procedure of examining cases, redefining the phenomenon, and reformulating the hypotheses is continued until a universal relationship is established, each negative case calling for a redefinition, or a reformulation. (Denzin, 1970, p. 195)

The rules of analytic induction direct investigators to formulate tentative hypotheses to explain the behavior of a given subject. The hypotheses, so formulated, then are tested to ensure that they apply to all the cases under study. The self-conscious search for negative cases, cases for which the hypothesis does not apply, is basic to this

method. When negative cases are found, the hypothesis is revised, the process ending only when a universally applicable explanation of the behavior of interest has been formulated. Donald Cressey's (1950) study of trust violation is a classic example of this method.

#### 14.6.2.4 CAUSAL ANALYSIS OF TRUST VIOLATION

Dissatisfied with previous accounts of the causes of embezzlement, Donald Cressey (1950) set out to discover whether a "definable sequence of events is always present when trust violation is present and never present when trust violation is absent." (Cressey, 1950, p. 739) To be included in his study, a prisoner had to have accepted a position of financial trust in good faith and then violated that trust. Cressey interviewed each inmate in three Illinois penitentiaries who satisfied this criterion, with a view to identifying differences that they saw in their circumstances at the time of the embezzlement that were not present earlier.

Cressey developed and tested a series of tentative hypotheses in the two years required for the interviewing. Whenever he found even one negative case for which the hypothesis seemed not to apply, he abandoned it and replaced it with a new one. The hypothesis that trust violation results from seeing oneself as involved in a financial emergency that cannot be solved through legal means was ruled out in this way, as was the hypothesis that trust violators see their crimes only as technical violations.

After several hypotheses were abandoned in this way, Cressey concluded that a satisfactory explanation for embezzlement would require the specification of an entire sequence of perceptions rather than any single perception. The final three-stage cognitive process, which Cressey claimed applied to all of the men he interviewed, was as follows:

*Trusted persons become trust violators when they conceive of themselves as having a financial problem which is non-shareable, have the knowledge or awareness that this problem can be secretly resolved by violation of the position of financial trust, and are able to apply to their own conduct in that situation verbalizations which enable them to adjust their*

*conceptions of themselves as trusted persons with their conceptions of themselves as users of the entrusted funds or property. (Cressey, 1950, p. 742)*

Cressey found that this sequence always was present when embezzlement occurred, whereas one or more elements were missing before that. Although this pattern of thinking was consistent for each prisoner Cressey interviewed, the actual circumstances of their lives were anything but uniform. Some needed money to make up for financial losses from stock speculation, gambling, or business reversals; others wanted the money to cover up personal failures or to increase their social status.

Cressey's study fit Whewell's requirement that an explanatory principle account for all the facts and be disconfirmed by none of them. When Cressey searched the reports of other investigators, he found no incidents of embezzlement in the absence of this cognitive sequence (an example of what Whewell would call prediction). At the end of his research report, Cressey urged his readers to let him know if they came across cases that contradicted his hypothesis. This request is a clear example of the kind of deliberate and active search for negative cases required in analytic induction.

Cressey's study yielded a new understanding of how, when, and why embezzlement takes place, but it is not without its problems. Chief among these is the possibility of alternative explanations -- that other investigators might not come up with the same cognitive sequence, or any sequence at all. Another problem stems from the fact that triangulation has become standard practice only in the years since Cressey's study was published. Because Cressey relied exclusively on self-report, there is no way to check whether the cognitive sequence he specified occurred before the crime, making it possible, or whether the sequence actually was constructed after the fact, as the men thought back on their crimes. Finally, as in the case study, we cannot know whether Cressey inadvertently influenced the accounts of his subjects.

We also cannot know whether Cressey's results would generalize beyond the particular men he interviewed. This is the question of external validity. Would Cressey's results be found for female

embezzlers? Do Cressey's conclusions apply only to embezzlers who have been found guilty in a court of law? Our faith in Cressey's interpretation will increase if other investigators confirm his findings, and with very different sorts of subjects.

### 14.6.3 The Phenomenological Method

The phenomenological method developed from the work of Edmund Husserl, an existentialist philosopher and a contemporary of Freud. Phenomenology, a philosophical method grounded in Husserl's work, is based on the idea that the latent or unrecognized essences of our subjective human experiences can be brought to light by reflecting systematically on our experiences. (Polkinghorne, 1983, p. 42) Polkinghorne defines phenomenology as "the science of the essential structures of consciousness," the goal of which is to "come to a grasp of the constituents or common elements that make the experience what it is." (ibid, pp. 41, 46)

Phenomenological researchers first gather descriptions of particular experiences, like the feeling of really being understood, the experience of friendship, or, as in the study by Josselson (1992) that we presented in Chapter 2, the experience of relationship with others. The descriptions then are analyzed to identify and describe their necessary and invariant features. The success of the method depends upon investigators collecting accurate and full descriptions of experience. Polkinghorne (1989) identified three steps in this method, which we quote below.

#### 14.6.3.1 *Steps in the Phenomenological Method*

Step One. Gather a number of naive descriptions from people who are having or have had the experience under investigation.

Step Two. Engage in a process of analyzing these descriptions so that the researcher comes to a grasp of the constituents or common elements that make the experience what it is.

Step Three. Produce a research report that gives an accurate, clear, and articulate description of an experience. The reader of the report should come away with the feeling that "I understand better what it is like for someone to experience that." (Polkinghorne, 1989, p. 46)

#### 14.6.3.2 *Gathering Descriptions of Experience*

The phenomenological method specifies only general guidelines for collecting descriptions of experience, leaving it to researchers to devise particular strategies that will yield the kinds of rich descriptions required for this research. Polkinghorne (1989) lists three sources of descriptions of experience used in phenomenological research: self-reflection, descriptions collected from subjects, and descriptions generated by others (writers, researchers) not involved in the study.

Participants are selected for phenomenological research who show promise of being able to supply rich and complete accounts of the experience being studied. Ideally, they should represent the entire range of variations in the experience. Usually the subjects are asked to recall an occasion on which they had the experience, and then to describe, either orally or in writing, what it was like and the circumstances in which it occurred. The number of descriptions gathered varies from study to study, from several hundred in some, to only a few in others. Descriptions of the experience by writers and others not involved in the study are used to check on the validity of the essences extracted in the analysis phase of the research.

Phenomenological researchers often begin their studies by identifying their own preconceptions and biases by reflecting on their personal experiences. This is done to "bracket" their preconceptions.

*Bracketing refers to the resolve to set aside theories, research presuppositions, ready-made interpretations, etc., in order to reveal engaged lived experience.*  
(Ashworth, 1996, p. 1)

By bracketing, researchers attempt to render themselves "as noninfluential as possible during the process of research." (Giorgi, 1994, p. 205) This is done to ensure that the experience descriptions

gathered from participants reflect their experiences and not the investigator's ideas of what those experiences might be.

#### **14.6.3.3 Analysis Using Free Imaginative Variation**

The goal of describing the essential attributes of particular types of experience is achieved by a process of "free imaginative variation".

*The method involves looking reflectively at an instance (or several instances) of the kind of experience under consideration. The instance (or instances) is then altered in imagination. This process of imaginative variation of altering allows for the sifting through of those aspects of the experience that are contingent and variable, thus leaving to be gleaned the necessary and sufficient ingredients -- that is, the essence of the object of consciousness. (Polkinghorne, 1983, p. 42)*

To discover the invariant structure of "chair" as an object of consciousness, for example, we would first imagine as many variations of a chair as possible, e.g. an arm chair, an office chair, a butterfly chair, a Shaker chair, a high chair, etc. The essence of "chair," for the person using free imaginative variation, is whatever remains constant through all such variations.

Since the ideal of the phenomenological method is to arrive at an accurate and complete description of the essence of experiences, the results of phenomenological research are judged by their clarity. When results of a phenomenological study are published, it is assumed that others will evaluate its analysis against their own experiences. As a further check, investigators often compare their findings to the descriptions of other researchers, as was done in the study described below.

#### **14.6.3.4 A PHENOMENOLOGICAL STUDY OF SHYNESS**

Ivana Guglietti-Kelly and Malcolm Westcott (1990) were co-investigators in a phenomenological study of "what shyness means to the shy person." (Guglietti-Kelly & Westcott, 1990, p. 150) Because the study was inspired by the first author's personal issues with shyness, the study was written in the first person singular.



Guglietti-Kelly began by describing her own experiences. As the authors explained, this was done "to bracket them and attempt to minimize their influence on the analysis." (ibid, p. 151) She then wrote a personal account of an experience of shyness, again to bracket certain of her assumptions about shyness. The author deliberately avoided reading the published literature on shyness to eliminate any influences on her work.

Guglietti-Kelly then asked two female friends, young women, like herself, to "describe a situation in which you have felt shy, and describe what it felt like." (ibid, p. 151) One subject wrote one description; the other described four separate incidents, yielding a total of six descriptions (called protocols) for analysis.

In the analysis, the author first identified naturally occurring units in the descriptions, then abstracted themes in how the situation, self, and activity of shyness were experienced by her subjects. Based on these, she then developed an extended description of shyness, which was reduced to an essential description of shyness. Colleagues of the investigators were asked to read these in the light of their own experiences of shyness, looking for themes they identified in their own experience that seemed to be missing in the subjects' descriptions. These outside readers said that a sense of vulnerability, which they had experienced in shyness, was missing almost entirely in the protocols collected from participants. In the next phase of the research, Guglietti-Kelley tried to discover whether vulnerability actually had been part of her subjects' experiences.

In this step, the author went back to the participants with copies of the themes and extended description asking them how well they captured their experiences. She asked them to report any aspects of their own experience that were left out of the descriptions and to reflect on whether a sense of vulnerability and/or danger had been present. Based on these discussions, the author developed a final "essential description of shyness" (See Box 1) and the following definition of shyness:

*[Shyness is] an experience of separateness and aloneness in a social situation, which is precipitated by one's feeling of uncertainty about the ability to*

*establish an identity and a rapport with others, fear of behaving inappropriately, and awareness of oneself as inhibited in the interaction. It is an uncomfortable state of vulnerability, which the individual seeks to escape, (ibid, p. 157)*

Box 1. Essential Description of Shyness (Guglietti-Kelly & Wescott, 1990).

The experience of shyness arises in a situation where the shy individual is intent on the task of establishing herself as an individual worthy of notice by the particular other or others in an unknown situation. Despite the previous preparations, she is uncertain and tentative about her ability to do so. She is aware that she is not freely involved in the social interaction, and experiences physical symptoms of discomfort. She feels alone and emotionally vulnerable, seeking someone who will help her bridge her feeling of separateness both from herself and from others.

Feeling pressed, she may attempt to involve herself in the conversation, and if this is successful the shyness will diminish and may vanish as she becomes more comfortably involved. Otherwise relief comes only when she can get away from the situation, feeling disappointment at her lack of identity and involvement. If she feels she has made a bad or wrong impression she may feel quite devastated. (Guglietti-Kelly & Westcott, 1990, p. 151)

The authors also concluded on the basis of their research that shy people's attempts to show themselves to others in a good light precipitate shyness by "(1) encouraging self-absorption and (2) fostering feelings of uncertainty." (ibid, p. 157)

A literature review conducted after this analysis revealed that the author's essential description (Box 1) encompassed "all but one aspect of shyness reported elsewhere," the exception being certain types of shyness proposed by other investigators on the basis of their observations of shy people's behavior. (ibid, p. 159) Because the intent of phenomenological research is to describe experiences from the participants's rather than the outside observer's point of view, the authors decided that this omission did not disconfirm their analysis. They concluded instead that "phenomenological analysis is ...an

excellent method for uncovering the structure of the experience of shyness." (ibid, p. 159)

Despite the success of this study, the phenomenological method, like the case study and participant observation methods, is not error free. Polkinghorne (1983), for example, reports that "different phenomenological researchers have investigated 'the same' phenomenon and have arrived at different results, although each claims to have obtained the results through valid insight." (Polkinghorne, 1983, p. 46) Instead of discouraging researchers, Polkinghorne believes that such findings should be a spur to them to develop better descriptions of the essences of the experiences they are studying. Only those essential structures that apply to each description collected in the research and which hold up when tested against the experiences and results of other independent researchers should be considered valid.

## 14.7 FUTURE DIRECTIONS

We began this chapter by discussing Charles Darwin's success in applying Whewell's principles of induction. In Stephen Jay Gould's opinion, Darwin established an alternative to experimental methods in science, making "powerful, yet different, modes of inference" available to scientists. (Gould, 1986, p. 65)

*Darwin was, above all, a historical methodologist...Darwin taught us why history matters and established the methodology for an entire second style of science. (ibid, p. 60)*

Crediting Darwin for the acceptance within the natural sciences of nonquantitative, nonexperimental approaches to research, Gould notes, that Harvard University now classifies its science courses into two types, according to whether they employ primarily experimental, quantitative methods (based on the logic Mill articulated) or historical, qualitative methods (based on the logic that Whewell advanced). To quote from Harvard University's catalog:

*Courses in [Science A], largely concerned with the physical sciences, deal with the analysis of natural*

*phenomena through quantitative descriptions and synthesis of their simple elements. Courses in [Science B], emphasizing biological, evolutionary, and environmental science, present semiquantitative and frequently descriptive accounts of complex systems that cannot yet be fully analyzed on the basis of their simple elements. (Harvard University Catalog, 1995-1996, p. 34)*

Most of this book has focused on psychology's equivalent of Science A. The methods in this chapter represent what might be called psychology's equivalent of Science B. Psychologists, like natural scientists, are coming to recognize that there are two legitimate approaches to research. The use of qualitative research methods has increased continuously since the late 1960s, and there now are scores of books advising researchers on how to use these methods (e.g., a series of books by Sage Publications, including Denzin and Lincoln's (1994) *Handbook of Qualitative Research*). No doubt, this ever increasing popularity will inspire efforts to improve the reliability and validity of qualitative approaches to research. But what directions will these efforts take?

One direction most likely will be a focus on better understanding the strengths and limitations of self-report. Autobiographical memory increasingly is a topic of interest to researchers (see, for example, Neisser & Winograd, 1988; Ross, 1991) as is the psychology of eye-witness reporting (see Loftus, 1991, 1996). A further indication of this trend is that in 1996 The National Institutes of Health in Bethesda, Maryland, organized a conference entitled *The Science of Self-report: Implications for Research and Practice*. Distinguished speakers addressed such topics as the value of self-report data, true and false recollection of the past, effects of question wording and interviewer's gender, developing and evaluating self-report questionnaires, and self-report in children 4-17. Recognizing the problems of self-report, researchers most likely will continue to triangulate, checking the results of self-report measures against each other and against other forms of evidence.

The use of intensive face-to-face interviews also is likely to increase. Polkinghorne (1994) believes that the closeness fostered between the

researchers and subjects in such interviews can lessen the biasing effects that derive from subjects' need to manage the impressions they give, and it can also make possible the exploration of private and privileged aspects of subjects' experiences. (Polkinghorne, 1994, p. 510)

Qualitative researchers also are likely to increase their understanding of the best ways of generating the kinds of rich theoretical conceptions that can result from qualitative research. Chamberlin's suggestion that researchers entertain multiple working hypotheses is one possible direction such efforts might take. Another is Polkinghorne's (1994) recommendation that researchers use what Glaser and Strauss (1967) called theoretical sampling (cited by Polkinghorne, 1994). In theoretical sampling, a theoretical conception is developed on the basis of the initial data collected, then tested and retested by applying it to new data, until a rich theoretical perspective is developed that accounts for all the data collected.

Theoretical sampling entails the kind of continuous interplay between data collection and theorizing used by Cressey in his research. In the future, we are likely to see increasing testing of hypotheses developed by qualitative analysis for their predictive power and for consilience. Both Cressey (1950) and Guglietti-Kelly and Westcott (1990) tested their conceptions against the findings of other researchers who had independently studied the same phenomena; these are examples of Whewell's prediction. But no researchers cited in this chapter have developed consilient inductions, Whewell's "ultimate test" of the validity of an idea. Consilient inductions are higher level colligations wthat incorporate more specific ones.

A consilient induction has the demonstrated power of explaining phenomena of a different sort from those on which it was developed. Consilience would be demonstrated, for example, if Freud's (1937) hypothesis that delusions reveal "historical truth" was found for other sorts of symptoms; or if Cressey found that the kinds of self-justifications that allow embezzlers to commit their crimes are present whenever people sabotage their moral principles; or if the anticipation of negative consequences found for shyness also was shown to apply to other emotions. Such consilient inductions will be more likely if researchers share their findings and interpretations.

Finally, there is likely to be a movement away from the kind of "mixed discourse" that Giorgi (1994) believes has characterized certain areas of qualitative research. By mixed discourse, Giorgi means the attempt of researchers to graft the logic of experimental, quantitative approaches onto qualitative research. In place of such mixed discourse, Giorgi argued, as we do, for acceptance of the distinctive logic of qualitative research:

*There is a logic to qualitative research that guides the entire process from conception and planning all the way to report write-up, just as there is for quantitative research. There are simply two styles of research, each with its own logic. (Giorgi, 1994, p. 211)*

To Giorgi's statement, we would add one additional idea -- that researchers take care to select methods for research, not on the basis of their allegiance to one methodology over another, but because the method chosen offers the best promise of providing answers to the questions they are posing. We can look to the pioneers of qualitative research, who understood this principle, for models. Freud, who came to psychology from natural science, was trained, like Darwin, in experimental methods and struggled to overcome the prejudice he felt toward the methods he now found himself called upon to use:

*I have not always been a psychotherapist....It still strikes me myself as strange that the case histories I write should read like short stories and that, as one might say, they lack the stamp of science. I must console myself with the reflection that the nature of the subject is evidently responsible for this, rather than any preference of my own. (Freud, 1895, p. 160)*

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