

and then reach down to pick up a chip and press the chip into the circuit board. This was not standard operation.

"The camera happened to be pointed toward Bertha when I carelessly let it rap against the window. Bertha glances up, stops the assembly line and warily strolls over to the window and cranks it open. All of this was against standard procedures, of course—stopping the line, leaving the workstation, opening the window, and I had a very bad feeling about what was going to happen next. And I was dizzy, and nauseous, and cold.

"She sees me, and with the camera pointing straight in her face. She reaches back into her hair and withdraws a hat pin which is holding her bandanna in place. Then she thrusts the hatpin past the camera and sticks the huge pin in Otto's big ham of a hand, and that was when he yelped, 'Oh, darn,' and let go of my left ankle.

"Now the video goes black, as I let go of the camera and it breaks loose from its cable. There I am, swinging around, first looking in the window, looking at the moon, looking at the parking lot, looking down at the snowbank maybe 40 feet below, all at the same time, it seemed.

"I must have grabbed Bertha, because I remember that Otto was pulling up and Bertha was pulling back, and Bertha won, thank goodness! Bertha falls backward, pulling me through the window on top of her.

"Everyone calmed down when they recognized me. And we had the good wits to check the contents of Bertha's pocket. It was full of greasy, salted peanuts. The poor gal was not able to wait until her 6 P.M. dinner break and was feeding herself secretly and quietly. Then with greasy fingers she would pick up a chip and press the greasy pins into the circuit board.

"Uncle Fred advanced the supper hour to 4:45 and the problem disappeared."

"Quite a triumph of observation," said Myra.

"It was craziness," said Jason. "I was a lunatic to trust Otto to lean out the window and not drop the camera. It took us half an hour the next morning to dig the camera out of a snowbank, and I could not stop thinking, this might be me, buried head down in the snow. Overall, it was no great coup of observation. I mean, ask yourself, why hadn't the people in quality control noticed grease on the circuit boards?"

The Uses of Observation

Much of what we know comes from observation. We notice coworkers' reactions to political intrigue, the sounds of the assembly area, the smell of perfume, the taste of office coffee, the smoothness of the vice president's marble desk, and a host of other stimuli. While such observation may be a basis for knowledge, the collection processes are often haphazard.

Observation qualifies as scientific inquiry when it is conducted specifically to answer a research question, is systematically planned and executed, uses proper controls, and provides a reliable and valid account of what happened. The versatility of observation makes it an indispensable primary source method and a supplement for other methods. Many academics have a limited view of observation, relegating it to a minor technique of field data collection. This ignores its potential for forging business decisions and denies its historic stature as a creative means of obtaining primary data. Exhibit 13-1 depicts the use of observation in the research process.

EXHIBIT 13-1 Observation and the Research Process

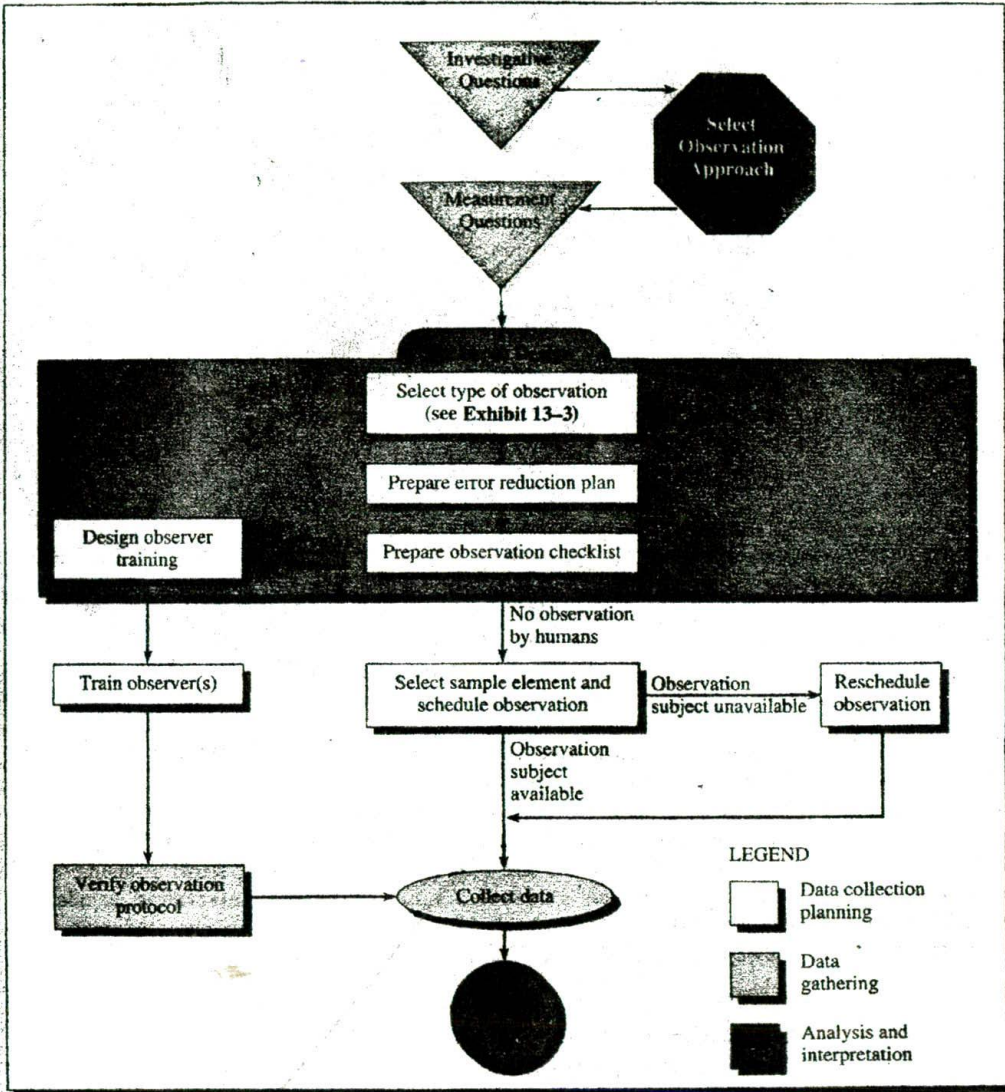
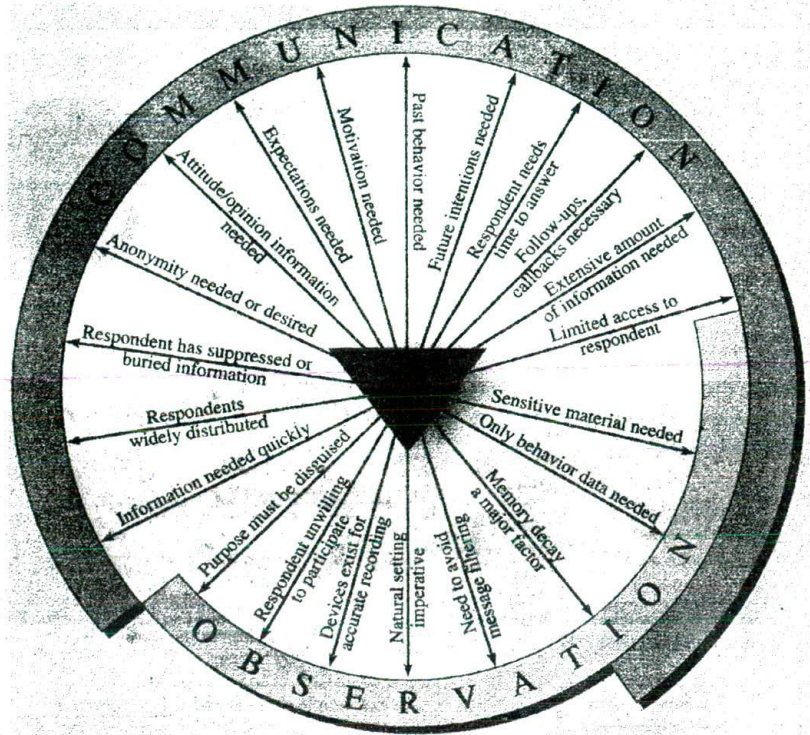


Exhibit 13-2

Exhibit 13-5

In Chapter 11, we said that research designs are classified by the *approach* used to gather primary data: We can *observe*, or we can *communicate*. Exhibit 13-2 describes the conditions under which observation is an appropriate method for data collection. It also contrasts those conditions with ones we are familiar with from the communication

EXHIBIT 13-2 Selecting the Data Collection Method



modes discussed in Chapter 11—personal interview, telephone interview, and self-administered survey (see Exhibit 11-2).

Besides collecting data visually, observation involves listening, reading, smelling, and touching. Behavioral scientists define observation in terms of animal or human behavior, but this too is limiting. As used in this text, **observation** includes the full range of monitoring behavioral and nonbehavioral activities and conditions, which, as shown in Exhibit 13-3, can be classified roughly as follows:

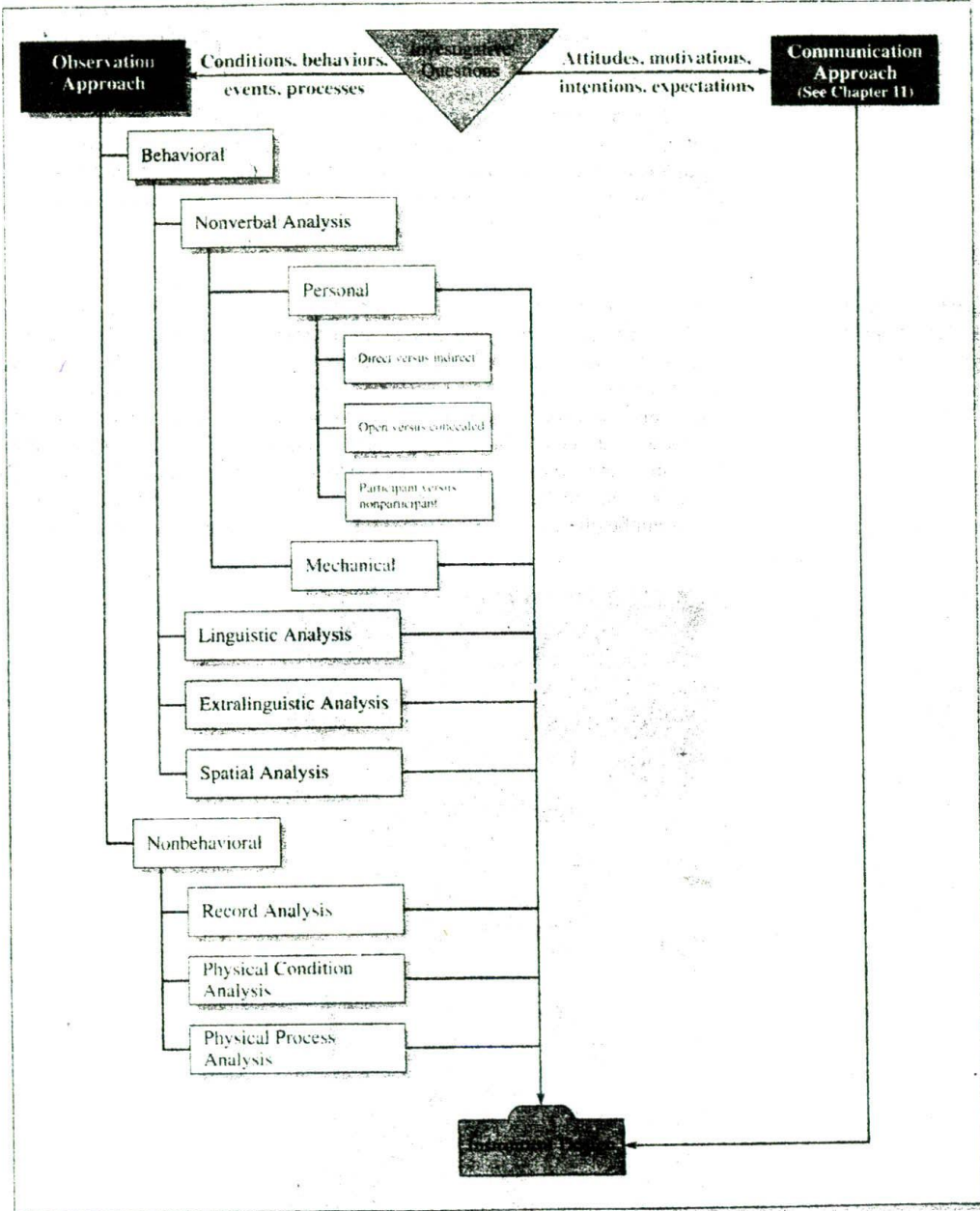
Behavioral observation

- Nonverbal analysis
- Linguistic analysis
- Extralinguistic analysis
- Spatial analysis

Nonbehavioral observation

- Record analysis
- Physical condition analysis
- Physical process analysis

EXHIBIT 13-3 Selecting an Observation Approach



Nonbehavioral Observation

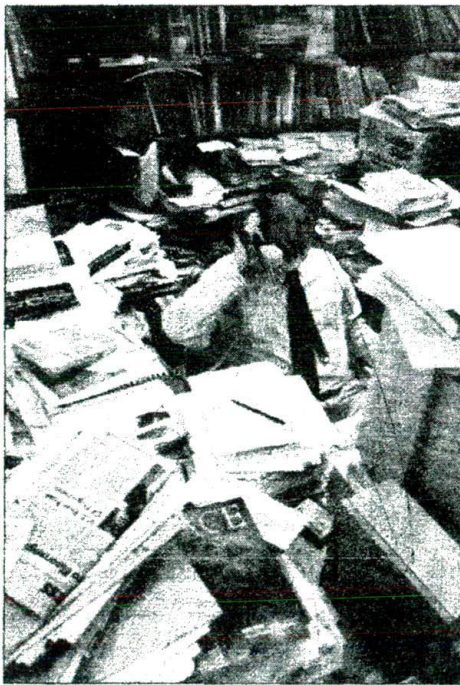
A prevalent form of observation research is **record analysis**. This may involve historical or current records and public or private records. They may be written, printed, sound-recorded, photographed, or videotaped. Historical statistical data are often the only sources used for a study. Analysis of current financial records and economic data also provides a major data source for studies. Other examples of this type of observation are the *content analysis* (described in Chapter 15) of competitive advertising and the analysis of personnel records.

Physical condition analysis is typified by store audits of merchandise availability, studies of plant safety compliance, analysis of inventory conditions, and analysis of financial statements. **Process or activity analysis** includes time/motion studies of manufacturing processes and analysis of traffic flows in a distribution system, paperwork flows in an office, and financial flows in the banking system.

Behavioral Observation

The observational study of persons can be classified into four major categories.¹ **Non-verbal behavior** is the most prevalent of these and includes body movement, motor expressions, and even exchanged glances. At the level of gross body movement, one might study how a salesperson travels a territory. At a fine level, one can study the body movements of a worker assembling a product or time-sample the activity of a department's work force to discover the share of time each worker spends in various ways. More abstractly, one can study body movement as an indicator of interest or boredom, anger or pleasure in a certain environment. Motor expressions such as facial movements can be observed as a sign of emotional states. Eye blink rates are studied as indi-

Space and organization consultants use observation to learn how individuals work, organize, and store material needed for productive work and generally use work space. Both nonverbal behaviors (movement of piles, movement around obstacles, repeated sorting, frantic searching, phone and computer use patterns, etc.) and linguistic behaviors (frustrated utterances, etc.) can be observed via human or mechanical means to aid the consultant in finding solutions. After years of observation, reorganizing guru and author Julie Morgenstern claims everyone can organize his or her space for more efficient and satisfying work. Based on the evidence of clutter and seeming disorganization in this office, we can only hope that not only her research but also her solutions are up to the task. www.juliemorgenstern.com



cators of interest in advertising messages. Exchanged glances are of interest in studies of interpersonal behavior.

Linguistic behavior is a second frequently used form of behavior observation. One simple type familiar to most students is the tally of "ahs" or other annoying sounds or words a professor makes or uses during a class. More serious applications are the study of a sales presentation's content or the study of what, how, and how much information is conveyed in a training situation. A third form of linguistic behavior involves interaction processes that occur between two people or in small groups. Bales has proposed one widely used system for classifying such linguistic interactions.²

Behavior also may be analyzed on an extralinguistic level. Sometimes **extralinguistic behavior** is as important a means of communication as linguistic behavior. One author has suggested there are four dimensions of extralinguistic activity.³ They are (1) *vocal*, including pitch, loudness, and timbre; (2) *temporal*, including the rate of speaking, duration of utterance, and rhythm; (3) *interaction*, including the tendencies to interrupt, dominate, or inhibit; and (4) *verbal stylistic*, including vocabulary and pronunciation peculiarities, dialect, and characteristic expressions. These dimensions could add substantial insight to the linguistic content of the interactions between supervisors and subordinates or salespeople and customers.

A fourth type of behavior study involves **spatial relationships**, especially how a person relates physically to others. One form of this study, *proxemics*, concerns how people organize the territory about them and how they maintain discrete distances between themselves and others. A study of how salespeople physically approach customers and a study of the effects of crowding in a workplace are examples of this type of observation.

Often in a study, the researcher will be interested in two or more of these types of information and will require more than one observer. In these forms of behavior study, it is also important to consider the relationship between observers and participants.

Evaluation of the Observational Method

Observation is the only method available to gather certain types of information. The study of records, mechanical processes, and young children, as well as other inarticulate participants, falls into this category. Another value of observation is that we can collect the original data at the time they occur. We need not depend on reports by others. Every respondent filters information no matter how well intentioned he or she is. Forgetting occurs, and there are reasons why the respondent may not want to report fully and fairly. Observation overcomes many of these deficiencies of questioning.

A third strength is that we can secure information that most participants would ignore either because it is so common and expected or because it is not seen as relevant. For example, if you are observing buying activity in a store, there may be conditions important to the research study that the shopper does not notice or consider important, such as: What is the weather? What is the day of the week or the time of the day? How heavy is customer traffic? What is the level of promotional activity in competing stores? We can expect to learn only a few of the answers to these questions from most participants.

The fourth advantage of observation is that it alone can capture the whole event as it occurs in its natural environment. Whereas the environment of an experiment may seem contrived to participants, and the number and types of questions limit the range of responses gathered from respondents, observation is less restrictive than most primary

collection methods. Also, the limitations on the length of data collection activities imposed by surveys or experiments are relaxed for observation. You may be interested in all the conditions surrounding a confrontation at a bargaining session between union and management representatives. These sessions may extend over time, and any effort to study the unfolding of the negotiation is facilitated by observation. Questioning could seldom provide the insight of observation for many aspects of the negotiation process.

Finally, participants seem to accept an observational intrusion better than they respond to questioning. Observation is less demanding of them and normally has a less biasing effect on their behavior than does questioning. In addition, it is also possible to conduct disguised and unobtrusive observation studies much more easily than disguised questioning.

The observational method has some research limitations. The observer normally must be at the scene of the event when it takes place, yet it is often impossible to predict where and when the event will occur. One way to guard against missing an event is to observe for prolonged periods until it does occur, but this strategy brings up a second disadvantage. Observation is a slow and expensive process that requires either human observers or costly surveillance equipment.

A third limitation of observation is that its most reliable results are restricted to information that can be learned by overt action or surface indicators. To go below the surface, the observer must make inferences. Two observers will probably agree on the nature of various surface events, but the inferences they draw from such data are much more variable.

Fourth, the research environment is more likely suited to subjective assessment and recording of data than to controls and quantification of events. When control is exercised through active intervention by the researchers, their participation may threaten the validity of what is being assessed. Even when sample sizes are small, the observation records can be disproportionately large and difficult to analyze.

Fifth, observation is limited as a way to learn about the past. It is similarly limited as a method by which to learn what is going on in the present at some distant place. It is also difficult to gather information on such topics as intentions, attitudes, opinions, or preferences. Nevertheless, any consideration of the merits of observation confirms its value when used with care and understanding.

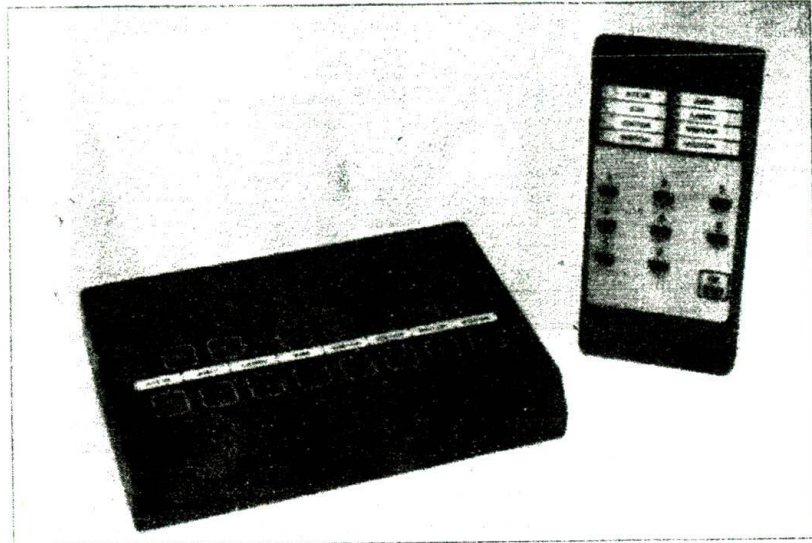
The Observer-Participant Relationship

Interrogation presents a clear opportunity for interviewer bias. The problem is less pronounced with observation but is still real. The relationship between observer and participant may be viewed from three perspectives:

- Whether the observation is direct or indirect.
- Whether the observer's presence is known or unknown to the participant.
- What role the observer plays.

Directness of Observation

Direct observation occurs when the observer is physically present and personally monitors what takes place. This approach is very flexible because it allows the observer to react to and report subtle aspects of events and behaviors as they occur. He or she is also free to shift places, change the focus of the observation, or concentrate on unexpected events if they occur. A weakness of this approach is that observers' perception



Television networks and stations measure audience viewing patterns to assist in making numerous decisions, among them program continuation or discontinuation, program location on the schedule, and advertising rates. They share this viewer data with advertisers, who then use the data to make network, station, and program selections. Nielsen Media Research partially collects its television viewer data for both broadcast and cable with electronic devices labeled "people meters." The people meter measures three things: the tuning station of the TV set (on, off, time); what channel/station is being tuned; and who is watching (via assigned code buttons). Additionally, households in the 53 largest markets have set-tuning meters that measure and transmit set-tuning data on a daily basis. There are 5,000 households in the national sample and more than 20,000 households in various local samples used to represent more than 102 million TV households in the United States. To supplement the people meter data, more than 1.6 million households provide written viewership diaries during four measurement periods known as "sweeps." Sweeps, usually two weeks long, occur in November, February, May, and July of each year. Which part of Nielsen's research design employs observation techniques?
www.nielsenmedia.com

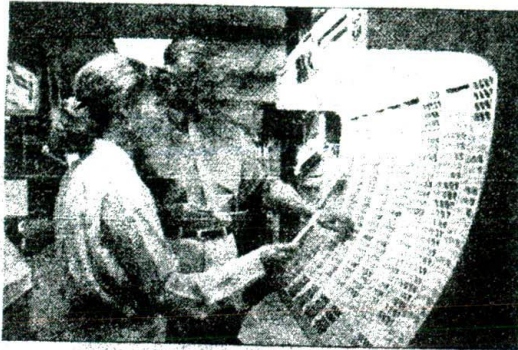
circuits may become overloaded as events move quickly, and observers must later try to reconstruct what they were not able to record. Also, observer fatigue, boredom, and distracting events can reduce the accuracy and completeness of observation.

Indirect observation occurs when the recording is done by mechanical, photographic, or electronic means. For example, a special camera that takes one frame every second may be mounted in a department of a large store to study customer and employee movement. Indirect observation is less flexible than direct observation but is also much less biasing and may be less erratic in accuracy. Another advantage of indirect observation is that the permanent record can be reanalyzed to include many different aspects of an event. Electronic recording devices, which have improved in quality and declined in cost, are being used more frequently in observation research.

Concealment

A second factor affecting the observer-participant relationship concerns whether the participant should know of the observer's presence. When the observer is known, there is a risk of atypical activity by the participant. This is why Otto dangled Jason out the

The Point of Purchase Advertising Institute estimates that manufacturers provide retailers with more than \$9 billion of display materials each year. Manufacturers then hire researchers to evaluate whether these displays have been used, and used as intended.



sixth-floor window. The initial entry of an observer into a situation often upsets the activity patterns of the participants, but this influence usually dissipates quickly, especially when participants are engaged in some absorbing activity or the presence of observers offers no potential threat to the participants' self-interest. The potential bias from participant awareness of observers is always a matter of concern, however.

Observers use **concealment** to shield themselves from the object of their observation. Often, technical means such as one-way mirrors, hidden cameras, or microphones are used. These methods reduce the risk of observer bias but bring up a question of ethics. Hidden observation is a form of spying, and the propriety of this action must be reviewed carefully.

A modified approach involves partial concealment. The presence of the observer is not concealed, but the objectives and participant of interest are. A study of selling methods may be conducted by sending an observer with a salesperson who is making calls on customers. However, the observer's real purpose may be hidden from both the salesperson and the customer (e.g., she may pretend she is analyzing the display and layout characteristics of the stores they are visiting).

SNAPSHOT

Progressive Wants Your Autograph™

Progressive Insurance, Inc., started near Cleveland in 1937 by two lawyers, has been shaking up the insurance industry for decades. But its maverick attitude has become increasingly evident during the last 10 years. Its impressive string of firsts includes: 24-hour service, insurance over the Web, Immediate Response[®] (which settles claims within minutes rather than weeks using specialized technology-equipped sports utility vehicles), and its free rate comparison service. Recently, some Texas drivers have been experiencing lower insurance rates due to a patented information transfer process being tested called Autograph™. Most drivers' insurance rates are determined based on a company's past realized losses with a class of automobile and a class of driver. Autograph™ provides Progressive with detailed data

about when, where, and how much the insured vehicle has been driven. The data are reported periodically and automatically using cellular communication technology. Thus automobile insurance rates are based on current, not historic, driving patterns—if you drive less, you pay less—similar to the way phone, electric, and gas utilities price their services. The Autograph™ collection device is about the size of a videocassette. And this rate-reducer also packs some special safety features: for an additional monthly fee, Progressive can track your vehicle if it's stolen, remotely unlock your doors, offer roadside and directional assistance, and even detect when your battery is low.

www.progressive.com

Structured, human, participant observation within the retail environment is used to judge customer service, as done here by a male mystery shopper evaluating the product knowledge and selling skills of a female sales associate.



Participation

The third observer-participant issue is whether the observer should participate in the situation while observing. A more involved arrangement, **participant observation**, exists when the observer enters the social setting and acts as both an observer and a participant. Sometimes he or she is known as an observer to some or all of the participants; at other times the true role is concealed. While reducing the potential for bias, this again raises an ethical issue. Often participants will not have given their consent and will not have knowledge of or access to the findings. After being deceived and having their privacy invaded, what further damage could come to the participants if the results became public? This issue needs to be addressed when concealment and covert participation are used.

Participant observation makes a dual demand on the observer. Recording can interfere with participation, and participation can interfere with observation. The observer's role may influence the way others act. Because of these problems, participant observation is used less in business research than, say, in anthropology or sociology. It is typically restricted to cases where nonparticipant observation is not practical—for example, a study of the functioning of a traveling auditing team.

Conducting an Observational Study

The Type of Study

Observation is found in almost all research studies, at least at the exploratory stage. Such data collection is known as **simple observation**. Its practice is not standardized, as one would expect, because of the discovery nature of exploratory research. The decision to use observation as the major data collection method may be made as early as the moment the researcher moves from research questions to investigative questions. The latter specify the outcomes of the study—the specific questions the researcher must answer with collected data. If the study is to be something other than exploratory, **systematic observation** employs standardized procedures, trained observers, schedules

for recording, and other devices for the observer that mirror the scientific procedures of other primary data methods. Systematic studies vary in the emphasis placed on recording and encoding observational information:

At one end of the continuum are methods that are unstructured and open-ended. The observer tries to provide as complete and nonselective a description as possible. On the other end of the continuum are more structured and predefined methods that itemize, count, and categorize behavior. Here the investigator decides beforehand which behavior will be recorded and how frequently observations will be made. The investigator using structured observation is much more discriminating in choosing which behavior will be recorded and precisely how [it is] to be coded.⁴

One author classifies observational studies by the degree of structure in the environmental setting and the amount of structure imposed on the environment by the researcher,⁵ as reflected in Exhibit 13-4. The researcher conducting a class 1, completely unstructured, study would be in a natural or field setting endeavoring to adapt to the culture. A typical example would be an ethnographic study in which the researcher, as a participant-observer, becomes a part of the culture and describes in great detail everything surrounding the event or activity of interest. Donald Roy, in the widely used case in organizational behavior, "Banana Time," took a punch press job in a factory to describe the rituals that a small work group relied on to make their highly repetitive, monotonous work bearable.⁶ With other purposes in mind, business researchers may use this type of study for hypothesis generation.

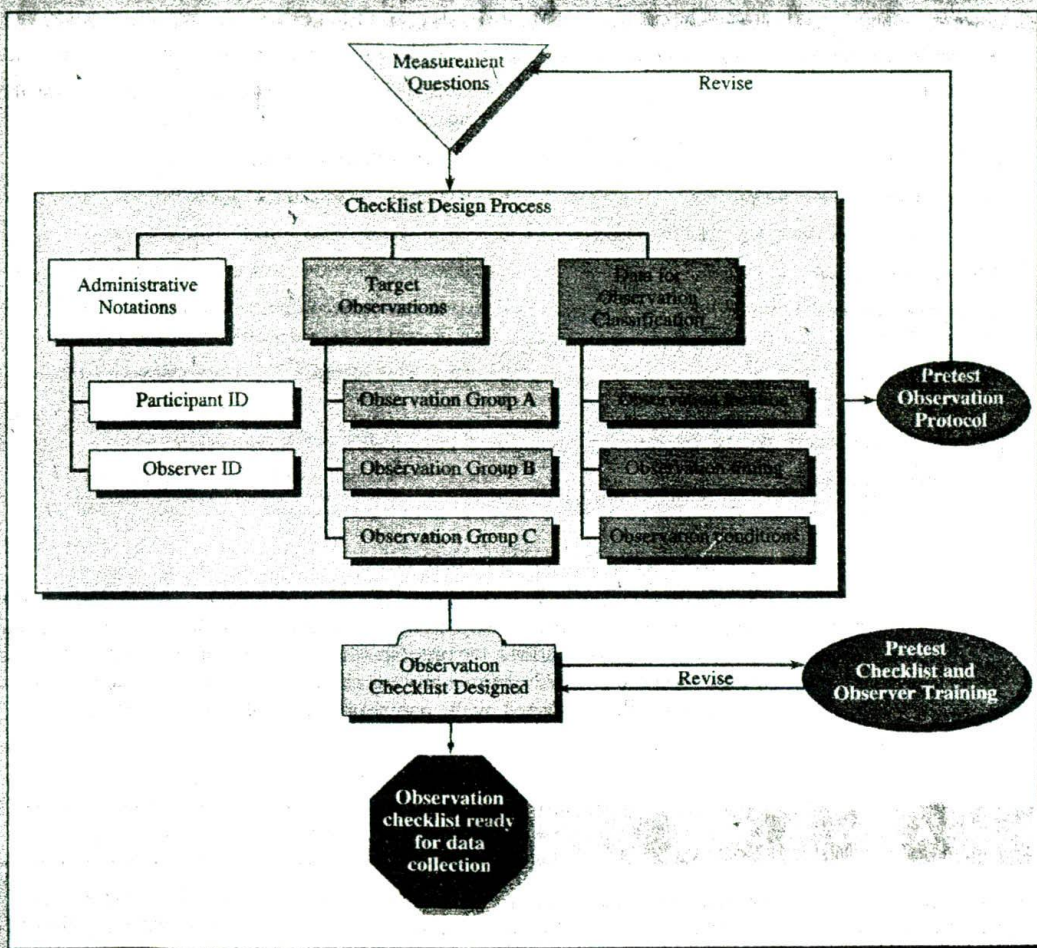
Class 4 studies—completely structured research—are at the opposite end of the continuum from completely unstructured field investigations. The research purpose of class 4 studies is to test hypotheses; therefore, a definitive plan for observing specific, operationalized behavior is known in advance. This requires a measuring instrument, called an **observational checklist**, which is analogous to a questionnaire. Exhibit 13-5 shows the parallels between survey design and checklist development. Checklists should possess a high degree of precision in defining relevant behavior or acts and have mutually exclusive and exhaustive categories. The coding is frequently closed, thereby simplifying data analysis. The participant groups being observed must be comparable and the laboratory conditions identical. The classic example of a class 4 study was Bales's investigation into group interaction.⁷ Many team-building, decision-making, and assessment center studies follow this structural pattern.

The two middle classes of observation studies emphasize the best characteristics of either researcher-imposed controls or the natural setting. In class 2, the researcher uses the facilities of a laboratory—videotape recording, two-way mirrors, props, and stage sets—to introduce more control into the environment while simultaneously reducing the time needed for observation. In contrast, a class 3 study takes advantage of a structured observational instrument in a natural setting.

EXHIBIT 13-4 Classification of Observation Studies

Research Class	Environment	Purpose	Research Tool
1. Completely unstructured	Natural setting	Generate Hypotheses	
2. Unstructured	Laboratory	↓	
3. Structured	Natural setting		
4. Completely structured	Laboratory	Test Hypotheses	Observation Checklist

EXHIBIT 13-5 Flowchart for Observation Checklist Design



Content Specification

Specific conditions, events, or activities that we want to observe determine the observational reporting system (and correspond to measurement questions). To specify the observation content, we should include both the major variables of interest and any other variables that may affect them. From this cataloging, we then select those items we plan to observe. For each variable chosen, we must provide an operational definition if there is any question of concept ambiguity or special meanings. Even if the concept is a common one, we must make certain that all observers agree on the measurement terms by which to record results. For example, we may agree that variable *W* will be reported by count, while variable *Y* will be counted and the effectiveness of its use judged qualitatively.

Observation may be at either a *factual* or an *inferential* level. Exhibit 13-6 shows how we could separate the factual and inferential components of a salesperson's

EXHIBIT 13-6 Content of Observation: Factual Versus Inferential

Factual	Inferential
Introduction/identification of salesperson and customer.	Credibility of salesperson. Qualified status of customer.
Time and day of week.	Convenience for the customer. Welcoming attitude of the customer.
Product presented.	Customer interest in product.
Selling points presented per product.	Customer acceptance of selling points per product.
Number of customer objections raised per product.	Customer concerns about features and benefits.
Salesperson's rebuttal of objection.	Effectiveness of salesperson's rebuttal attempts.
Salesperson's attempt to restore controls.	Effectiveness of salesperson's control attempt.
	Consequences for customer who prefers interaction.
Length of interview.	Customer's/salesperson's degree of enthusiasm for the interview.
Environmental factors interfering with the interview.	Level of distraction for the customer.
Customer purchase decision.	General evaluation of sales presentation skill.

presentation. This table is suggestive only. It does not include many other variables that might be of interest, including data on customer purchase history; company, industry, and general economic conditions; the order in which sales arguments are presented; and specific words used to describe certain product characteristics. The particular content of observation will also be affected by the nature of the observation setting.

S N A P S H O T

Pervasive Commerce: Science Fiction or Our Future?

A consortium of 36 consumer packaged goods (CPG) manufacturers, research companies, and universities is working to change the way consumers generate and deliver purchase and consumption information, as well as how this information is integrated with detailed supply chain management information. If the Auto ID Center gets its way, all future CPGs will contain radio frequency identification (RFID) smart labels that will send signals to Internet databases and track a specific product unit through manufacturing, warehousing, retailing, consumer storage and consumption, and the recycling center. The RFID embedded label could continuously transmit information ranging from a unique electronic product code, to consumption status, to environmental conditions like temperature and moisture content, which influence product freshness.

This research methodology would still require consumer compliance, similar to the way consumers agree to be part of ACNielsen's Homescan panel today. An agree-

able consumer would permit an "interrogator" to be placed in his or her car, home, office, or some combination. The interrogator, through its antenna, transceiver, and decoder, would receive information from the RFID tag and transmit information to a host computer. While the RFID industry has been growing aggressively, it still has too little production capacity to make enough tags for this vision to be a reality. And our refrigerators and microwaves would need to be equipped to read and transmit data, too. But according to John Stermer, ACNielsen's senior vice president for e-business market development, "There is no debate that pervasive commerce, intelligently deployed, will redefine the competitive landscape for the CPG industry."

www.autoidcenter.org

www.acnielsen.com

<http://trolleyscan.com.za>

Observer Training MANAGEMENT



There are a few general guidelines for the qualification and selection of observers:

- **Concentration:** Ability to function in a setting full of distractions.
- **Detail-oriented:** Ability to remember details of an experience.
- **Unobtrusive:** Ability to blend with the setting and not be distinctive.
- **Experience level:** Ability to extract the most from an observation study.

An obviously attractive observer may be a distraction in some settings but ideal in others. The same can be said for the characteristics of age or ethnic background.

If observation is at the surface level and involves a simple checklist or coding system, then experience is less important. Inexperience may even be an advantage if there is a risk that experienced observers may have preset convictions about the topic. Regardless, most observers are subject to fatigue, halo effects, and **observer drift**, which refers to a decay in reliability or validity over time that affects the coding of categories.⁸ Only intensive videotaped training relieves these problems.

The observers should be thoroughly versed in the requirements of the specific study. Each observer should be informed of the outcomes sought and the precise content elements to be studied. Observer trials with the instrument and sample videotapes should be used until a high degree of reliability is apparent in their observations. When there are interpretative differences between observers, they should be reconciled.

Data Collection

The data collection plan specifies the details of the task. In essence it answers the questions *who, what, when, how, and where*.

Who? What qualifies a participant to be observed? Must each participant meet a given criterion—those who initiate a specific action? Who are the contacts to gain entry (in an ethnographic study), the intermediary to help with introductions, the contacts to reach if conditions change or trouble develops? Who has responsibility for the various aspects of the study? Who fulfills the ethical responsibilities to the participants?

What? The characteristics of the observation must be set as sampling elements and units of analysis. This is achieved when event-time dimension and “act” terms are defined. In **event sampling**, the researcher records selected behavior that answers the investigative questions. In **time sampling**, the researcher must choose among a time-point sample, continuous **real-time measurement**, or a time-interval sample. For a time-point sample, recording occurs at fixed points for a specified length. With continuous measurement, behavior or the elapsed time of the behavior is recorded. Like continuous measurement, time-interval sampling records every behavior in real time but counts the behavior only once during the interval.⁹

Assume the observer is instructed to observe a quality control inspection for 10 minutes out of each hour (a duration of two minutes each for five times). Over a prolonged period, if the samples are drawn randomly, time sampling can give a good estimate of the pattern of activities. In a time-interval sampling of workers in a department, the outcome may be a judgment of how well the department is being supervised. In a study of sales presentations using continuous real-time sampling, the research outcome may be an assessment of a given salesperson’s effectiveness or the effectiveness of different types of persuasive messages.

Other important dimensions are defined by acts. What constitutes an *act* is established by the needs of the study. It is the basic unit of observation. Any of the following could be defined as an act for an observation study:

- A single expressed thought.
- A physical movement.
- A facial expression.
- A motor skill.

Although acts may be well defined, they often present difficulties for the observer. A single statement from a sales presentation may include several thoughts about product advantages, a rebuttal to an objection about a feature, or some remark about a competitor. The observer is hard-pressed to sort out each thought, decide whether it represents a separate unit of observation, and then record it quickly enough to follow continued statements.

When? Is the time of the study important, or can any time be used? In a study of out-of-stock conditions in a supermarket, the exact times of observation may be important. Inventory is shipped to the store on certain days only, and buying peaks occur on other days. The likelihood of a given product being out of stock is a function of both time-related activities.

How? Will the data be directly observed? If there are two or more observers, how will they divide the task? How will the results be recorded for later analysis? How will the observers deal with various situations that may occur—when expected actions do not take place or when someone challenges the observer in the setting?

Where? Within a spatial confine, where does the act take place? In a retail traffic pattern study, the proximity of a customer's pause space to a display or directional sign might be recorded. Must the observation take place in a particular location within a larger venue? The location of the observation, such as a sales approach observation within a chain of retail stores, can significantly influence the acts recorded.

Observers face unlimited variations in conditions. Fortunately, most problems do not occur simultaneously. When the plans are thorough and the observers well trained, observational research is quite successful.

SNAPSHOT

EnviroSell: Studies Reveal Left-Hand Retail

World retailers collect and subscribe to numerous data sources, but they need knowledge from that data to craft their merchandising, staffing, and promotion strategies, as well as their store designs. Retail giants (e.g., GAP, Limited, Starbucks, Radio Shack, McDonald's) turn to consultant Paco Underhill when they want to know how consumers buy what they do and what barriers prevent or discourage buying. Underhill describes himself as a "commercial researcher, which means I am part scientist, part artist, and part entrepreneur." His company, EnviroSell, has offices in the United States, Milan, Sidney, and Sao Paulo. EnviroSell concentrates on the third segment of retail information,

drawn from observation (segment 1 is register data and segment 2 is communication studies). In a recent ABC News live e-chat, Underhill said, "the principal differences in 1st world shopping patterns are governed more by education and income than by ethnicity . . . but the Brits and Aussies [do] tend to walk as they drive. This sets up some very peculiar retail [shopping] patterns, because their walking patterns set up a left-hand dominance, whereas in the U.S. and much of the rest of the world, our walking patterns set up a right-hand dominance."

www.enviroSell.com

Unobtrusive Measures

Up to this point, our discussion has focused on direct observation as a traditional approach to data collection. Like surveys and experiments, some observational studies—particularly participant observation—require the observer to be physically present in the research situation. This contributes to a **reactivity response**, a phenomenon where participants alter their behavior in response to the researcher. (You are familiar with the historic research at Western Electric and the so-called Hawthorne effect—introduced in Chapter 6—and the reactions interviewers produce in participants that bias the findings of a study.)



Close-Up

Designing the Observational Study

The design of an observational study follows the same pattern as other research. Once the researcher has specified the investigative questions, it is often apparent that the best way to conduct the study is through observation. Guidance for conducting an observation and translating the investigative question(s) into an observational checklist is the subject of this section. We first review the procedural steps and then explain how to create a checklist.

Most studies that use the observational method follow a general sequence of steps that parallel the research process. Here we adapt those steps to the terminology of the observational method:

- Define the content of the study.
- Develop a data collection plan that identifies the observational targets, sampling strategy, and acts (operationalized as a checklist or coding scheme).
- Secure and train observers.
- Collect the data.
- Analyze the data.

In this chapter's "Bringing Research to Life," we recounted a humorous incident in a quality control situation that used observation. Assume our concerns are more serious. We have limited resources, so the study will be small. ProSec Electronics' management is concerned about a deterioration of quality in its assembled product—security cameras—toward the end of each day. The management question is, "Why are products failing quality assurance in the afternoon?" The research question might be stated, "What factors affect the quality of assembled cameras?" Although we presume that management is correct about the time, we will allow the data to confirm this. The investigative questions could then include: "What is the variability due to changes in parts vendors? Inventory? Does the manufacturing procedure change during the day?

Is it shift-dependent? To what extent is the failure rate contingent on time of day? What is the role of workplace conditions? Is it linked to assembler performance?"

Further assume that, through interviewing, we isolate the *content of the study* to assembler behavior in the natural environment. The major variables of interest will be operationalized from the assembler's job description and the environmental conditions of the assembly area.

The *observational targets* will be the assemblers and their acts (physical behavior consistent with the job description). We have chosen to sample during the late afternoon, initially, and we will use *time sampling* on a *continuous* basis. This allows us to record all relevant behavior and complete an environmental checklist. The observation will be *direct*, and we will operate from *concealment* using the one-way mirror on the door to the assembly area.

A tour of the assembly area reveals a rectangular room with east- and west-facing windows. The workstations run the length of the rectangle, splitting the room in half and facing north. Comfortable chairs are present, and parts bins are to the right of each workstation, requiring the assembler to turn westward to select parts. The windows have shades, and there is both general and task lighting.

The variables to be measured (measurement questions) were derived from the investigative questions on workplace conditions and assembler performance. Notes taken on the tour improved our understanding of contextual variables. By examining the workplace first, we can assess and begin to rule out environmental variables (lighting, temperature, noise, and other variables controlled by the production facility) before moving on to behavioral characteristics. Both checklists will be revised after pretesting. The *observational checklist* for the assembly environment features a range of measures from graphic rating scales to category scales. It is shown in Exhibit 13-7.

The assemblers are subject to periodic and unscheduled supervisory visits and normal workplace rules for a drug-free environment. Nevertheless, the foremost ethical concern is restricting the observations to assembly activities.

EXHIBIT 13-7 Environmental Observation Checklist


ProSec Electronics: Assembly Observational Study

Time Stamp: _____ Observer: _____

Lights: General area On Off Malfunction **Comments:**
 Workstations On Off Malfunction


Lighting (general) Irregularly bright Uniformly bright Uniformly even Uniformly dim Irregularly dim
 (Note locations for discrepancies)

Shades (Estimate and color in)




Example
70%

(West)



% Used _____

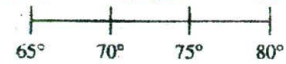
(East)



% Used _____

Temperature

Cold Standard Hot



65° 70° 75° 80°

Cleanliness (Circle)

Very clean | 1 2 3 4 5 | Very dirty

General Area


Very clean | 1 2 3 4 5 | Very dirty

Workstation

(Note individual deficiencies below)

Noise Level (Decibels: mark scale per reading)

Quiet Loud



50 75 100

Assemblers at Workstations During Observation

Virginia	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Bertha	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Gladys	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Maria	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Helen	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Roberta	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Nonassembly Personnel in Room: _____ **Activities of Nonassemblers:** _____

Comments: _____

Using the company's cameras, we will run one on wide angle for context and the other zoomed-in to capture individual assembler behavior on a time-interval sampling. The observation will be videotaped so a consistent stimulus

may be used to train observers, pretest and refine the checklists, and obtain a benchmark for later comparison. The behavioral checklist will be devised after studying the job descriptions and viewing the preliminary videotape.

Webb and his colleagues have given us an insight into some very innovative observational procedures that can be both nonreactive and inconspicuously applied. Called **unobtrusive measures**, these approaches encourage creative and imaginative forms of indirect observation, archival searches, and variations on simple and contrived observation.¹⁰ Of particular interest are measures involving indirect observation based on **physical traces** that include *erosion* (measures of wear) and *accretion* (measures of deposit).

Natural erosion measures are illustrated by the frequency of replacement of vinyl floor tile in front of museum exhibits as an indicator of exhibit popularity. The study of wear and tear on book pages is a measure of library book use. Counting the remaining brochures in a car dealer's display rack after a favorable magazine review suggests consumer interest.

Physical traces also include natural accretion such as discovering the listenership of radio stations by observing car radio settings as autos are brought in for service. Another type of unobtrusive study involves estimating liquor and magazine consumption by collecting and analyzing family trash. An interesting application compared beer consumption reports acquired through interviews with the findings of sampled trash. If the interview data were valid, the consumption figures for the area were at 15 percent. However, the validity was questioned when the beer can count from trash supported a 77 percent consumption rate.¹¹

William Rathje is a professor of archaeology at the University of Arizona and founder of the Garbage Project in Tucson. His study of trash, refuse, rubbish, and litter resulted in the subdiscipline that the *Oxford English Dictionary* has termed *garbology*. By excavating landfills, he has gained insight into human behavior and cultural patterns—sometimes sorting the contents of up to 150 coded categories. His previous studies have shown that “people will describe their behavior to satisfy cultural expectations, like the mothers in Tucson who unanimously claimed they made their baby food from scratch, but whose garbage told a very different tale.”¹²

Physical trace methods present a strong argument for use based on their ability to provide low-cost access to frequency, attendance, and incidence data without contamination from other methods or reactivity from participants. They are excellent “triangulation” devices for cross-validation. Thus, they work well as supplements to other methods. Designing an unobtrusive study can test a researcher's creativity, and one must be especially careful about inferences made from the findings. Erosion results may have occurred because of wear factors not considered, and accretion material may be the result of selective deposit or survival.

SUMMARY



1 Observation is one of the few options available for studying records, mechanical processes, lower animals, small children, and complex interactive processes. We can gather data as the event occurs and can come closer to capturing the whole event than with interrogation. On the other hand, we have to be present to catch the event or have some recording device on the scene to do the job.

2 Observation includes a variety of monitoring situations that cover nonbehavioral and behavioral activities.

3 The strengths of observation as a data collection method include:

- Securing information about people or activities that cannot be derived from experiments or surveys.



- Avoiding participant filtering and forgetting.
- Securing environmental context information.
- Optimizing the naturalness of the research setting.
- Reducing obtrusiveness.

Observation may be limited by

- The difficulty of waiting for long periods to capture the relevant phenomena.
- The expense of observer costs and equipment.
- The reliability of inferences from surface indicators.
- The problems of quantification and disproportionately large records.
- The limitation on presenting activities and inferences about cognitive processes.

We can classify observation in terms of the observer-participant relationship. This relationship may be viewed from three perspectives: (1) Is the observation direct or indirect? (2) Is the observer's presence known or unknown? (3) Is the observer a participant or nonparticipant?

The design of an observational study follows the same general pattern as other research. Observational studies fall into four general types based on the degree of structure and the nature of the observational environment. The researcher must define the content of the study; develop a data collection plan that identifies participants, sampling strategy, and "acts" (often operationalized as a checklist or coding scheme); secure and train observers; and launch the study.

Unobtrusive measures offer an unusual and creative approach to reducing reactivity in observational research by indirect observation and other methods. Measures of erosion and accretion serve as ways to confirm the findings from other methods or operate as singular data sources.

KEY TERMS

concealment 408	observational checklist 410	reactivity response 415
direct observation 406	observation 402	record analysis 404
event sampling 413	observer drift 413	simple observation 409
extralinguistic behavior 405	participant observation 409	spatial relationships 405
indirect observation 406	physical condition analysis 404	systematic observation 409
linguistic behavior 405	physical traces 417	time sampling 413
nonverbal behavior 404	process (activity) analysis 404	unobtrusive measures 417

EXAMPLES

Company	Scenario	Page
CPG industry	Testing the use of RFID technology for tracking exchanges, as well as product use, storage, and speed of consumption.	412
Envirosell	A comparison of store traffic behavior in the United States, Great Britain, and Australia.	414

Point of Purchase Advertising Institute	A trade association that determines the value of retail display materials.	408
Progressive Insurance, Inc.	Tracking actual driver behavior with a "black box" device for cars.	408
ProSec Electronics*	An observational study to discover process or equipment errors contributing to defective merchandise.	BRTL, Throughout
TaskMasters (Julie Morgenstern)	The use of observation by professional organizers to reveal space use and storage behavior.	404
TrolleyScan	Provider of RFID tags for the CPG industry, marking a new phase of direct observation for the future.	412

*Due to the confidential and proprietary nature of most research, the names of some companies have been changed.

DISCUSSION QUESTIONS

Terms in Review

1. Compare the advantages and disadvantages of the survey to those of observation. Under which circumstances could you make a case for using observation?
2. What ethical risks are involved in observation? In the use of unobtrusive measures?
3. Based on present or past work experience, suggest problems that could be resolved by using observation-based data.
4. Distinguish between the following:
 - a. The relative value of communication and observation.
 - b. Nonverbal, linguistic, and extralinguistic analysis.
 - c. Factual and inferential observation.

Making Research Decisions

5. The observer-participant relationship is an important consideration in the design of observational studies. What kind of relationship would you recommend in each of the following cases?
 - a. Observations of professional conduct in the classroom by the student author of a course evaluation guide.
 - b. Observation of retail shoppers by a researcher who is interested in determining customer purchase time by type of goods purchased.
 - c. Observation of a focus group interview by a client.
 - d. Effectiveness of individual farmworker organizers in their efforts to organize employees of grape growers.
6. Assume you are the manufacturer of modular office systems and furniture as well as office organization elements (desktop and wall organizers, filing systems, etc.). Your company has been asked to propose an observational study to examine the use of office space by white-collar and managerial workers for a large insurance company. This study will be part of a project to improve office efficiency and paperwork flow. It is expected to involve the redesign of office space and the purchase of new office furniture and organization elements.
 - a. What are the varieties of information that might be observed?
 - b. Select a limited number of content areas for study, and operationally define the observation acts that should be measured.

7. Develop a checklist to be used by observers in the previous study.
 - a. Determine how many observers you need and assign two or three to a specific observation task.
 - b. Compare the results of your group members' checklists for stability of recorded perceptions.
8. You wish to analyze the pedestrian traffic that passes a given store in a major shopping center. You are interested in determining how many shoppers pass by this store, and you would like to classify these shoppers on various relevant dimensions. Any information you secure should be obtainable from observation alone.
 - a. What other information might you find useful to observe?
 - b. How would you decide what information to collect?
 - c. Devise the operational definitions you would need.
 - d. What would you say in your instructions to the observers you plan to use?
 - e. How might you sample this shopper traffic?
9. Develop the investigative questions that should have guided Jason and Otto's mechanical observation study of production processes at Otto's uncle's company.
10. Using Exhibit 13-3, identify the type of study described in each of the Snapshots featured in this chapter.

Bringing Research to Life

From Concept to Practice

CASES



ENVIROSELL

*All cases indicating a video icon are located on the Instructor's Videotape Supplement. All nonvideo cases are in the case section of the textbook. All cases indicating a CD icon offer a data set, which is on the accompanying CD.

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Experimentation

Learning Objectives

After reading this chapter, you should understand . . .

- 1 **The uses for experimentation.**
- 2 **The advantages and disadvantages of the experimental method.**
- 3 **The seven steps of a well-planned experiment.**
- 4 **Internal and external validity with experimental research designs.**
- 5 **The three types of experimental designs and the variations of each.**