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INNOVATIVENESS AND ADOPTER CATEGORIES

Be not the first by whom the new is tried, nor the last to lay the old aside.
    Alexander Pope, *An Essay on Criticism* (1711)

A slow advance in the beginning, followed by rapid and uniformly accelerated progress, followed again by progress that continues to slacken until it finally stops: These are the three ages of . . . invention . . . . If taken as a guide by the statistician and by the sociologists, [they] would save many illusions.
    Gabriel Tarde, *The Laws of Imitation* (1903), p.127.

The individuals in a social system do not all adopt an innovation at the same time. Rather, they adopt in an over-time sequence, so that individuals can be classified into adopter categories on the basis of when they first begin using a new idea. We could describe each individual adopter in a system in terms of his or her time of adoption, but this would be very tedious. It is much more efficient to use *adopter categories,* the classifications of members of a system on the basis of their innovativeness. Each adopter category consists of individuals with a similar degree of innovativeness. So adopter categories are a means of convenience in describing the members of a system.

We know more about *innovativeness,* the degree to which an individual (or other unit of adoption) is relatively earlier in adopting new ideas than other members of a system, than about any other concept in diffusion research. Because increased innovativeness is a main objective of many change agencies, it became the main dependent variable in diffusion research. Innovativeness indicates overt behavioral change, the ultimate goal of most diffusion programs, rather than just cognitive or attitudinal change. Innovativeness is the bottom-line behavior in the diffusion process.

This chapter suggests a standard method for categorizing adopters and demonstrates the usefulness of this technique with research findings about the characteristics of adopter categories.

*Diffusion of Farm Innovations in a Colombian Village in the Andes**

The Saucío study in the early 1960s was a turning point for diffusion research in several important respects. This investigation in Colombia was the first diffusion study in a peasant village in Latin America, Africa, or Asia (although a diffusion study by Syed Rahim was under way in Bangladesh at about the same time). All of the five hundred or so diffusion researches completed by 1960 were conducted in North America and Europe, despite the fact that 80 percent of the world's population lived in developing countries. At the time that the Saucío study was carried out in 1962, it was not known whether the diffusion model would apply to peasant villages. These systems were characterized by widespread illiteracy and poverty, and by very little mass media exposure.

The Saucío study was conducted by the late Paul J. Deutschmann, a professor of communication at Michigan State University, and Orlando Fals Borda, an American-trained Ph.D. who founded the field of sociology in Colombia. Professor Fals Borda had been carrying out research in Saucío for a decade, and had introduced various new ideas in the village as experiments in social change: a new school building, a sewing cooperative, a cooperative store, and two important agricultural innovations: the vaccination of chickens against cholera and a new potato variety, Papas Monserrate. The seventy-one farmers of Saucío depended on potatoes as their main crop, and also raised poultry, livestock, and wheat.

Professor Deutschmann had studied the diffusion of news events in the United States (Deutschmann and Danielson,

1960), and was well acquainted with research on the diffusion of agricultural innovations. Fals Borda had become familiar with agricultural diffusion research when he was earning his doctorate in the United States. In 1961, Deutschmann moved from East Lansing to San José, Costa Rica, where he directed a program on communication research in Latin America. He obtained funds for the collaborative restudy of Saucío, with Fals Borda and his students at the National University of Colombia (in Bogotá), using a diffusion approach.

Saucío was a small village located more than two miles high in the steep volcanic soils of the Andes Mountains. The residents of Saucío had originally been Indians and were conquered by Spanish explorers five hundred years ago. By 1962 most aspects of Indian culture had disappeared. The Saucíans were poor, with half of the farms less than four acres in size. Forty-two percent of the farmers were illiterate, and only two of the seventy-one farmers had more than four years of formal education. Illiteracy and poverty limited their mass media exposure. Only 14 percent of the households owned a radio. Compared to a media-saturated nation such as the United States, Saucío appeared to be an unlikely setting in which innovations would diffuse.

However, two of the six innovations of study, chemical fertilizers and spray guns for insecticides and fungicides, had diffused in Saucío over the previous thirty years, reaching almost 100 percent adoption. The rate of adoption for these two innovations was similar to that for hybrid seed corn in Iowa (Ryan and Gross, 1943). Two other innovations, a concentrated poultry and livestock feed and a potato fungicide, had diffused in the ten years prior to the 1962 diffusion study, with both reaching 75 percent adoption. All six innovations of study (including the two introduced by Fals Borda) followed an S-shaped curve over time. During the first years of the introduction of an innovation in the village, only a few farmers adopted each year. Then a critical mass of adopters was reached, and the cumulative rate of adoption speeded up as many farmers adopted each year. Finally, the rate of adoption gradually leveled off as fewer and fewer farmers remained to adopt the innovation.

Deutschmann and Fals Borda combined all six innovations into a composite measure of innovativeness, the general tendency for individuals to adopt new ideas. Four farmers in Saucío had adopted all six innovations, while one farmer had not adopted any of the innovations. Each villager who had adopted an innovation was asked when such adoption had taken place, and greater weight was given in each individual's innovativeness scores for relatively earlier adoption. The cumulative distribution of the innovativeness scores for the seventy-one farmers was S-shaped and approached normality. Thus the respondents were classified into five adopter categories:

1. *Innovators:* The two farmers with the highest innovativeness scores.
2. *Early adopters:* The ten farmers with the next highest innovativeness scores.
3. *Early majority:* The twenty-three farmers with the next highest innovativeness scores.
4. *Late majority:* The twenty-three farmers with the next highest innovativeness scores.
5. *Laggards:* The 13 farmers with the lowest innovativeness scores.

Deutschmann and Fals Borda (1962b) then proceeded to determine the characteristics of the five adopter categories, and to compare these results with the present author's study of Ohio farmers (Rogers, 1961). In *both* Saucío and in Ohio, farm size, formal education, exposure to mass media, and opinion leadership (measured as the degree to which a farmer was sought by others for information and advice about agricultural innovations) were the variables most highly related to innovativeness. That is, innovators differed most sharply from laggards on these socioeconomic and communication variables in both Saucío and Ohio. The diffusion of agricultural innovations seemed to display striking similarities in the two quite different settings. The diffusion process represented a general model of human behavior, rather than being limited to the United States and Western Europe.

However, there were certain sharp differences between the two systems of study regarding the diffusion of innovations. For example, the range in average farm size from innovators to laggards in Ohio was 339 to 128 acres (Rogers, 1961). In Saucío, the most innovative farmer had one hundred times the amount of farmland of the least innovative farmer! Such extremes in socioeconomic status are often characteristic of peasant villages in Third World nations. As in most other diffusion researches, the innovators in Saucío were much more cosmopolite than the laggards, traveling outside of the village to market towns and cities, and learning about new ideas from the mass media.

The diffusion process in Saucío was mainly via interpersonal communication channels within the village. In previous farm diffusion research in the United States, the mass media were most important at the knowledge stage in the innovation-decision process. However, in Saucío 43 percent of the sources or channels reported by farmers at the knowledge stage for innovations involved face-to-face communication with other farmers in the village. Only five farmers reported using mass media sources or channels at the knowledge stage in adopting an innovation. This heavy dependence on interpersonal communication in Saucío seemed to slow the diffusion process, especially that of the first two innovations, a process that began during the 1930s. Their S-curves had a long "tail" to the left, in which five to ten years were required before the rate of adoption took off. So word of mouth was particularly important in the diffusion process in the peasant village of Saucío.

The Ryan and Gross (1943) hybrid seed corn study found that most farmers did not adopt an innovation until they had tried it on an experimental basis on their own farm. The typical Iowa farmer adopted the new seed only after

several years of trial planting. In contrast, most Saucío villagers went directly to full-scale use of the six innovations without first trying them out. Perhaps such impulsive behavior occurred because the Colombian villagers, due to their low level of formal education, did not have a "scientific" learning-from-experience attitude. Deutschmann and Fals Borda (1962b) suggested that such plunge-type decisions may have been due to the conditioning of Colombian peasants to respond immediately to authoritarian sources. The more recently introduced innovations in Saucío, however, were more likely to be adopted on a trial basis, suggesting that the peasant farmers were learning to evaluate agricultural innovations on the basis of their own experimental experience.

Although exposure to mass media in Saucío was very limited, innovators had much higher exposure than did laggards, averaging a mass media exposure score (composed of radio, newspapers, and books) of 26, while laggards averaged only 4. Innovators were more likely than laggards to utilize mass media sources or channels at the knowledge stage, 11 percent to 2 percent. Innovators were also more cosmopolite at the knowledge stage, using sources or channels from outside the village, 33 percent to 17 percent. The innovators played an important role in launching the diffusion of each innovation in the village, as they utilized communication channels that brought new ideas into the system. Once an innovation was introduced from cosmopolite and mass media sources, the diffusion process could take off in a self-sustaining nature by means of interpersonal communication channels within the village.

The Saucío study became a diffusion classic, opening the way for hundreds of diffusion investigations to be conducted in developing countries in the years that followed. The Deutschmann and Fals Borda (1962b) study particularly demonstrated the usefulness of the conceptual tools of innovativeness and adopter categories.

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*This case illustration is based on Deutschmann and Fals Borda (1962b).

Classifying Adopter Categories on the Basis of Innovativeness

Titles of adopter categories were once about as numerous as diffusion researchers themselves. The inability of researchers in the early days of diffusion research to agree on common semantic ground in assigning terminology led to this plethora of adopter descriptions. The most innovative individuals were termed "progressists," "high-triers," "experimentals," "lighthouses," "advance scouts," and "ultraadopters." The least innovative individuals were called "drones," "parochials," and "diehards." This disarray of adopter categories and methods of categorization emphasized the need for standardization. How could a reader compare research findings about adopter categories from one study to another until there was standardization of both the nomenclature and the classification system? Fortunately, one method of adopter categorization, based upon the S-shaped curve of adoption, gained a dominant position in the early 1960s (Rogers, 1962).

The S-Shaped Curve of Adoption and Normality

The time element of the diffusion process allows us to classify adopter categories and to draw diffusion curves. The adoption of an innovation usually follows a normal, bell-shaped curve when plotted over time on a frequency basis. If the cumulative number of adopters is plotted, the result is an S-shaped curve. Figure 7–1 utilizes data from the Iowa hybrid corn study to show that the rate of adoption for an innovation can be represented by either a bell-shaped (frequency) curve or an S-shaped (cumulative) curve. These are just two different ways to display the same data.

The S-shaped adopter distribution rises slowly at first, when there are only a few adopters in each time period. The curve then accelerates to a maximum until half of the individuals in the system have adopted. Then it increases at a gradually slower rate as fewer and fewer remaining individuals adopt the innovation. This S-shaped curve is normal. Why?

Many human traits are normally distributed, whether the trait is a physical characteristic, such as weight or height, or a behavioral trait, such as intelligence or the learning of new information. Hence, a variable such as the degree of innovativeness is also expected to be normally distributed. If a social system is substituted for the individual in the learning curve, it seems reasonable to expect that experience with the innovation is gained as each successive member in the social system adopts it. Each adoption in the social system is in a sense equivalent to a learning trial by an individual (in fact, if the individual tries the innovation prior to adoption, each adoption is indeed a learning trial).

Figure 7-1. The Number of New Adopters Each Year, and the Cumulative Number of Adopters, of Hybrid

Seed Corn in Two Iowa Communities
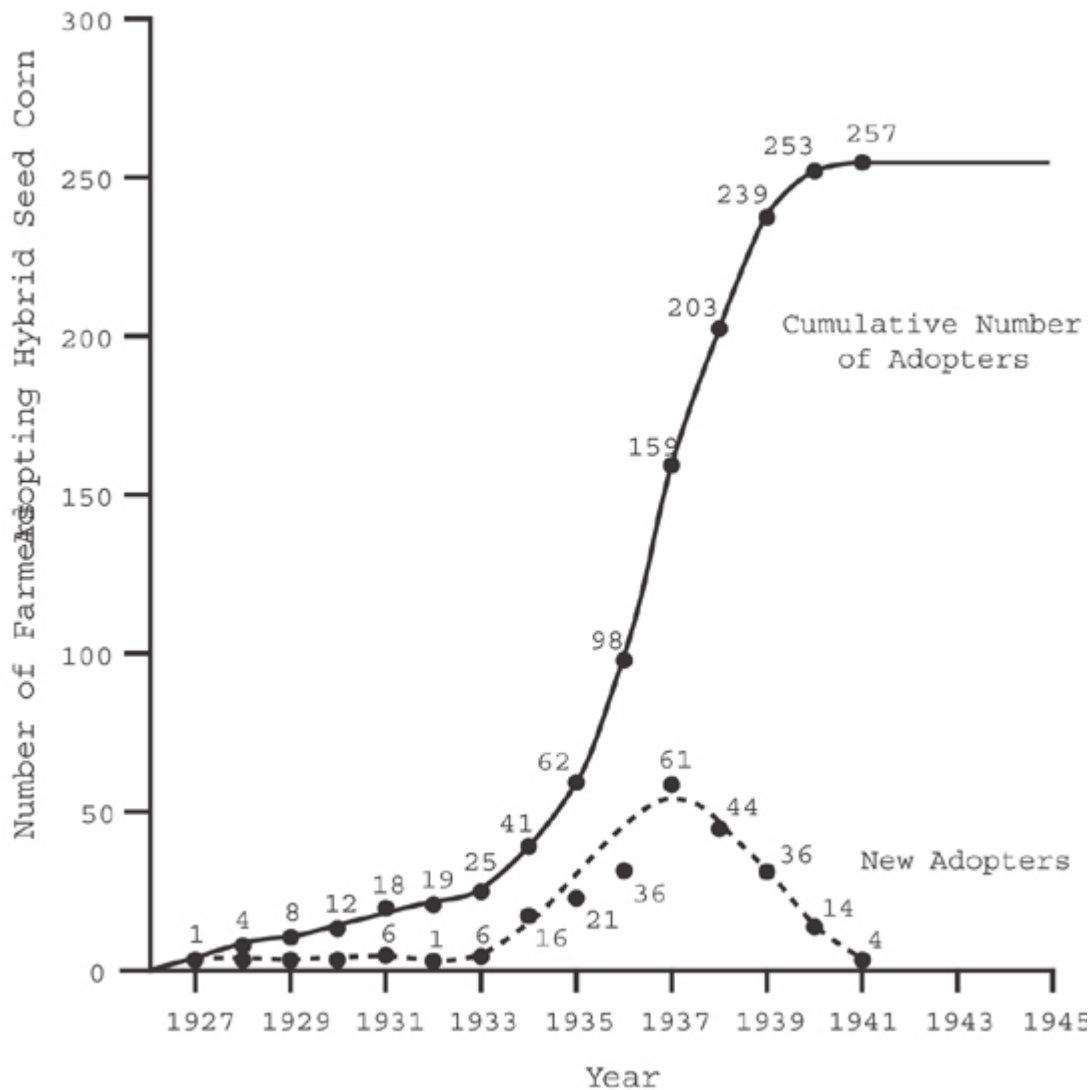
The cumulative number of adopters of hybrid seed corn approaches an S-shaped curve over time, while the frequency distribution of the number of mean adopters per year approaches a normal, bell-shaped curve. Early in the diffusion process, relatively few individuals adopt in each time period. Gradually, however, the rate of adoption speeds up until all (or almost all) members of the system adopt the innovation.

Source: Based on Ryan and Gross (1943).

We expect a normal adopter distribution for an innovation because of the cumulatively increasing influences upon an individual to adopt or reject an innovation, resulting from the activation of peer networks about the innovation in a system (see Chapter 8). This influence results from the increasing rate of knowledge and adoption (or rejection) of the innovation in the system. We know that the adoption of a new idea results from information exchange through interpersonal networks. If the first adopter of an innovation discusses it with two other members of the system, each of these two adopters passes the new idea along to two peers, and so forth, the resulting distribution follows a binomial expansion, a mathematical function that follows a normal shape when plotted over a series of successive generations. The process is similar to that of an unchecked infectious epidemic (Bailey, 1957/1975).

Of course, several assumptions underlying this hypothetical example are seldom found in real life. For instance, members of a system do not have completely free access to interact with all other members. Status differences, geographical barriers, and other variables affect who talks to whom about an innovation. The

S-shaped diffusion curve begins to level off after half of the individuals in a social system have adopted, because each new adopter finds it increasingly difficult to tell the new idea to a peer who has not yet adopted, for such nonknowers become increasingly scarce.

The S-shaped curve of diffusion "takes off" once interpersonal networks become activated in spreading individuals' subjective evaluations of an innovation from peer to peer in a system (see Figure 7–1). The part of the diffusion curve from about 10 percent adoption to 20 percent adoption is the heart of the diffusion process. After that point, it is often impossible to stop the further diffusion of a new idea, even if one wished to do so.

Ryan and Gross (1943) tested the S-shaped diffusion curve for the adoption of hybrid seed corn in Iowa, using the chi square goodness-of-fit test to determine whether or not the rate of adoption deviated significantly from a cumulative normal curve. It did in the years 1935 and 1936, just prior to the average year of adoption in 1937, as fewer Iowa farmers adopted the innovation in these years than were expected to do so on the basis of the normal curve (see Figure 7–1). Then, in the immediately following period, during 1937, more farmers adopted the new seed than predicted by a normal curve. There seemed to be rather strong resistance to the new idea in the early part of the diffusion process, which was then overcome, perhaps after a critical mass of satisfied adopters was achieved. Nevertheless, the overall rate of adoption over time generally approached a normal S-curve, with year-to-year deviations from normality (noted above) tending to cancel one another out over the total diffusion process.

Generalization 7-1 states that: *Adopter distributions follow a bell-shaped curve over time and approach normality.* Evidence supporting this statement comes from investigations of many agricultural, consumer, and other innovations in a variety of systems, in the United States and in other nations (see e.g., Ryan, 1948; Dimit, 1954; Rogers, 1958; Beal and Rogers, 1960; Bose, 1964; Hamblin et al., 1973). A variety of different mathematical formulae have been proposed to fit the shape of adopter distributions. This research shows that S-shaped diffusion curves are essentially normal, a conclusion that is very useful for classifying adopter categories.

The S-curve, it must be remembered, is innovation-specific and system-specific, describing the diffusion of a particular new idea among the member units of a specific system. The S-shaped curve describes only cases of successful innovation, in which an innovation spreads to almost all of the potential adopters in a social system. Many innovations are not successful. For example, thousands of new consumer products appear on store shelves and in media advertisements each year. Most fail (Goldsmith and Flynn, 1992). After being adopted by only a few people in a system, the innovation may ultimately be rejected, so that its rate of adoption levels off and, through discontinuance, nose-dives.

Measuring Organizational Innovativeness

When *organizations*' time of adoption of an innovation is plotted over time, the cumulative distribution of adopters usually forms an S-shaped curve. An example is the diffusion of hate crime laws in the United States (Grattet, Jenness, and Curry, 1998). Since the 1970s, in response to a perceived escalation of racial, religious, and ethnic group conflict, hate-motivated intimidation, and violence, many states passed legislation that criminalized such behavior. California passed the first hate crime law in 1978, and then, after a three-year period, Oregon and Washington, two other West Coast states, adopted. In the following two years, seven other states, scattered across the continent, adopted. By 1995, seventeen years after California's initial adoption, only seventeen of the fifty states had not adopted hate crime laws. The cumulative rate of adoption formed the usual S-shaped curve (Figure 7–2).

Figure 7-2. Year in Which Each U.S. State Adopted a Hate Crime Law
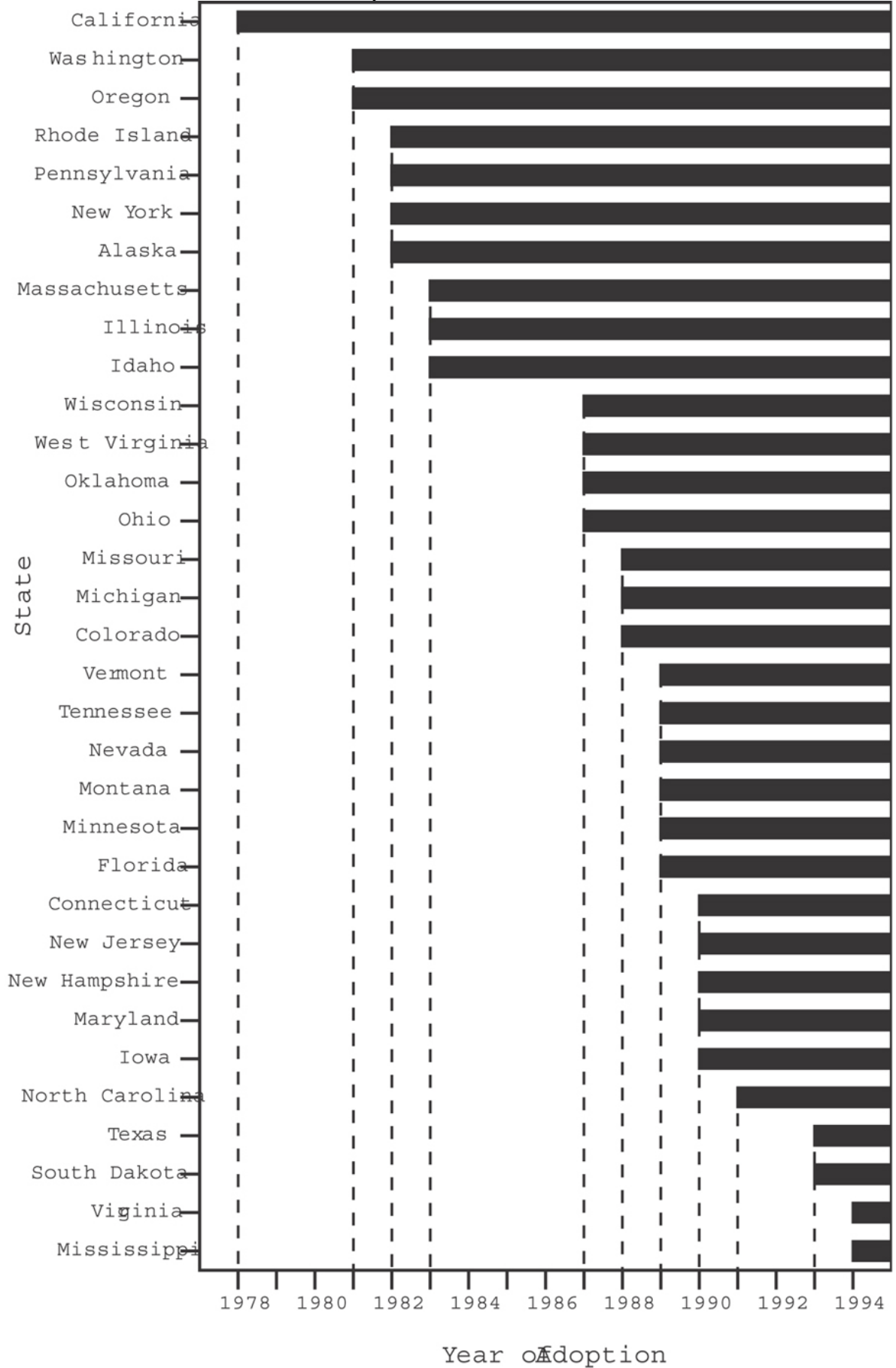
Here the date of adoption of an innovation is shown in a bar graph rather than in the customary S-shaped curve, which plots the cumulative number of adopters over time. At the time the data were gathered on hate crime laws, seventeen American states had not yet adopted. The more innovative states were larger and richer and had a more liberal and progressive tradition. They also tended to have neighboring states that had previously adopted a hate crime law.

Source: Adapted from Grattet, Jenness, and Curry (1998).

So organizations, like individuals, adopt an innovation in a manner that suggests various degrees of resistance to the new idea. More innovative states, such as California, possess a political culture that is progressive and liberal and have a reputation for being innovative in adopting new laws and programs (Walker, 1969). Innovative states also bordered on other states that had adopted previously. Oregon and Washington are also progressive states and seem to have followed the lead of California (see Figure 7–2). So communication networks, based in part on spatial propinquity, explain a certain degree of a state's innovativeness in adopting hate crime laws. As these laws spread among the American states, considerable re-invention occurred, as the exact details of each state's law varied. For example, some state laws prohibited hate crimes on the basis of gender or sexual orientation in addition to race, religion, and ethnic group.

The S-curve of diffusion is so ubiquitous that students of diffusion often expect every innovation to be adopted over time in an S-shaped pattern. However, certain innovations do not display an S-shaped rate of adoption, perhaps for some idiosyncratic reason. Perhaps the innovation is taboo in nature, so that individuals cannot discuss it freely. Perhaps the new idea is applicable only to certain unique population groups within the total population. For example, adopting "safe sex" may be most appropriate for individuals who are at high risk for contracting HIV/AIDS, such as users of injected drugs, gay men, and sexually promiscuous individuals with many partners. In this case, the diffusion curve for the idea of safe sex will not be S-shaped for the entire population, although it may be for a specific population segment. Also, HIV prevention is a preventive innovation and hence likely to diffuse slowly (see Chapter 6).

The main point here is not to assume that an S-shaped rate of adoption is an inevitability. Rather, the shape of the adopter distribution for a particular innovation ought to be regarded as an open question, to be determined empirically. In most cases when this has been done in past research, an adopter distribution is found to follow a bell-shaped, normal curve or is S-shaped on a cumulative basis.

Who Adopts?

The early diffusion studies of Iowa farmers and Illinois doctors headed diffusion scholars into assuming that individuals should usually be their units of analysis. Later, when studying organizational innovativeness, diffusion scholars initially gathered data from the top official in the organizations about its innovativeness (see Chapter 10). Then, a few decades back, serious attention began to be given to the issue of who makes the innovation-decisions in a system. For example, although a school principal may provide data about a school's adoption of innovations, that individual's personal and social characteristics may prove to have little relationship to the school's innovativeness. Perhaps someone else, or a set of other individuals, in the school's organizational structure actually initiated or implemented the innovations of study. This realization led to investigation of the innovation process in organizations, rather than assuming that the top official was necessarily responsible for an organization's innovativeness.

Similarly, in very recent years, other diffusion scholars have pointed out how important it is to identify exactly who makes the innovation-decisions of study in other systems. For instance, in an agricultural diffusion study conducted in eastern Nigeria, the author and his research team initially assumed that the male head of a farm household would be interviewed in their survey (as had been the case in previous diffusion studies in the United States, Colombia, Bangladesh, Brazil, and India). During a pretest interview in a Nigerian village, we learned otherwise. The male head of the first household that we contacted actually proved to know very little about the agricultural innovations that had been adopted on his farm. He told us that we would have to talk to his various wives, each of whom was responsible for operating a plot of farmland, about their innovation adoptions, as they, not he, made such decisions. We found that some of his wives had adopted an innovation such as chemical fertilizer on their farm, while other wives had not. We came to see that the *farm,* and whoever made the innovation-decisions for it, should be our unit of analysis in Nigeria. Only occasionally would the decision maker be the male head of household. Just what constituted a farm in Nigeria was not easily apparent. Was it the household, consisting of a male head and multiple wives, or was it the land that each wife operated?

An illustration of the complexities sometimes encountered in determining who adopts is provided by Soniia David's (1998) study of the diffusion of hedgerow intercropping in Africa. This innovation (also called "alley cropping") involves planting fast-growing, nitrogen-fixing trees in hedges along fencerows so as to provide firewood, with the foliage used for livestock feed and as a mulch and green manure on the crops planted between the hedges. This innovation was introduced to African farmers as a replacement for the traditional slash-and-burn fallow system that had been followed in the past. Hedgerow intercropping was diffused to

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farmers by international agricultural agencies, who sought to evaluate their development program by measuring the rate of adoption of the innovation.

Deciding who adopts hedgerow intercropping did not turn out to be an easy question to answer. For instance, as in the author's Nigerian study, mentioned above, gender roles varied from place to place. In eastern Nigeria, Igbo men traditionally made decisions about tree planting, while women decided when to plant crops in the alley plots and they cut fodder for their livestock. These gender roles led to conflict when the women excessively pruned the nitrogen-fixing trees during the dry season to feed their goats, which killed many of the trees. In western Kenya, among the Luo and Luhya, many males have emigrated to find off-farm work, so that almost half of the farms are headed by females. They do not have enough strength to trim tree branches, which requires a single upward slash with a machete. In any case, they define this work as a male task; by custom Luhya women are not allowed to cut trees planted by their husband. However, when the trees are not trimmed regularly, they shade the crops, which are the women's responsibility, and decrease yields.

So who is the adopter of the innovation of hedgerow intercropping in Africa?

Adopter Categorization

The dominant method of adopter categorization was developed when the author was a doctoral student at Iowa State University. I was discouraged by the confusing disarray of terms used for adopter categories and the looseness of methods of categorization. I was studying for a minor in statistics, so of course I knew about the mean and standard deviation and how these statistics could be utilized to lay off categories containing standard portions of a normal distribution. Further, I knew of standard classifications used in other fields, such as the selection of candidates for Air Force pilot training. I first published the method of adopter categorization described here in a 1958 journal article (Rogers, 1958), and in the first edition of *Diffusion of Innovations* (Rogers, 1962).

Anyone seeking to standardize adopter categories must decide on (1) the number of adopter categories, (2) the portion of the members of a system to include in each category, and (3) the method, statistical or otherwise, of defining the adopter categories.

The criterion for adopter categorization is *innovativeness,* the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a social system. Innovativeness is a relative dimension, in that an individual has more or less of this variable than others in a system. Innovativeness is a continuous variable, and partitioning it into discrete categories is a conceptual device, much like dividing the continuum of social status into upper, middle, and lower classes. Such classification is a simplification that aids the understanding of human behavior, although it loses some information as a result of grouping individuals.

Ideally, a set of categories should be (1) *exhaustive,* including all the units of study, (2) *mutually exclusive,* by excluding a unit of study that appears in one category from also appearing in any other category, and (3) derived from a single *classificatory principle.*

We have previously demonstrated that S-shaped adopter distributions closely approach normality. The normal frequency distribution has several characteristics that are useful in classifying adopters. One characteristic or parameter is the mean ($\bar{x}$), or average, of the individuals in the system. Another parameter of a distribution is its standard deviation (sd), a measure of dispersion or variation about the mean. The standard deviation indicates the average amount of variance from the mean for a sample individuals.

These two statistics, the mean ($\bar{x}$) and the standard deviation (sd), are used to divide a normal adopter distribution into five categories. Vertical lines are drawn to mark off the standard deviations on either side of the mean so that the normal curve is divided into categories with a standardized percentage of respondents in each category. Figure 7–3 shows the normal frequency distribution divided into five adopter categories: (1) innovators, (2) early adopters, (3) early majority, (4) later majority, and (5) laggards. These five adopter categories and the approximate percentage of individuals included in each are located on the normal adopter distribution in the figure.

The area lying to the left of the mean time of adoption (of an innovation) minus two standard deviations includes the first 2.5 percent of the individuals in a system to adopt an innovation, the *innovators*. The next 13.5 percent to adopt the new idea are included in the area between the mean minus one standard deviation and the mean minus two standard deviations; they are labeled *early adopters*. The next 34 percent of the adopters, called the *early majority,* are included in the area between the mean date of adoption and the mean minus one

standard deviation. Between the mean and one standard deviation to the right of the mean are the next 34 percent to adopt the new idea, the *late majority*. The last 16 percent to adopt are called *laggards*.

Figure 7-3. Adopter Categorization on the Basis of Innovativeness
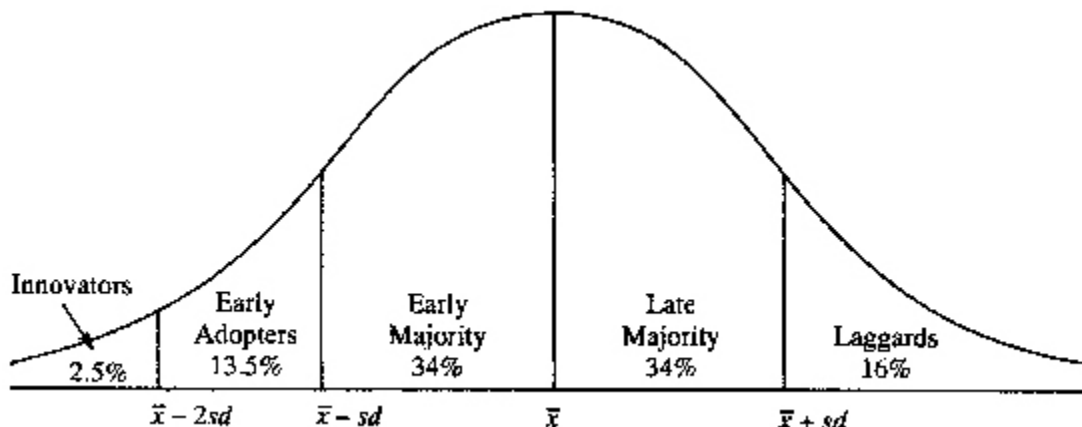
The innovativeness dimension, as measured by the time at which an individual adopts an innovation or innovations, is continuous. The innovativeness variable is partitioned into five adopter categories by laying off standard deviations (sd) from the average time of adoption ($\bar{x}$).

This adopter classification system is not symmetrical, in that there are three adopter categories to the left of the mean and only two to the right. One solution would be to break laggards into two categories, such as early and late laggards, but laggards seem to form a fairly homogeneous category. Similarly, innovators and early adopters could be combined into a single category to achieve symmetry, but their quite different characteristics suggest that they are two distinct adopter categories.

One difficulty with this method of adopter classification is incomplete adoption, which occurs for innovations that have not reached 100 percent use. For example, two of the 259 Iowa farmers in Ryan and Gross's (1943) hybrid seed corn study had not adopted the innovation at the time of the 1941 diffusion survey. Such incomplete adoption means that the fivefold classification scheme is not exhaustive. The problem of incomplete adoption or nonadoption can be avoided when a series of innovations are combined into a composite innovativeness scale (as in Deutschmann and Fals Borda's Saucío study, described previously).

Innovativeness as a criterion for adopter categorization fulfills each of the three principles of categorization suggested previously. The five adopter categories are exhaustive (except for nonadopters), mutually exclusive, and derived from one classification principle. The method of adopter categorization just described is the most widely used in diffusion research today. It is essentially the only method of adopter categorization. Terms such as "innovators" and "early adopters" are widely used and understood by the public.

Adopter Categories as Ideal Types

The five adopter categories set forth in this chapter are *ideal types,* concepts based on observations of reality that are designed to make comparisons possible. Ideal types are not simply an average of all observations about an adopter category. Exceptions to the ideal types can be found. If no exceptions or deviations existed, ideal types would not be necessary. Ideal types are based on abstractions from empirical investigations. Pronounced breaks in the innovativeness continuum do not occur between each of the five categories, although some scholars claimed that a discontinuity exists between the innovators and early adopters versus the early majority, late majority, and laggards (Moore, 1991). Past research shows no support for this claim of a "chasm" between certain adopter categories. On the contrary, innovativeness, if measured properly, is a continuous variable and there are no sharp breaks or discontinuities between adjacent adopter categories (although there are important differences between them).

We now present an overview of the main characteristics and values of each adopter category, which will be followed by more detailed generalizations.

Innovators: Venturesome

Venturesomeness is almost an obsession with innovators. Their interest in new ideas leads them out of a local circle of peer networks and into more cosmopolite social relationships. Communication patterns and friendships among a clique of innovators are common, even though these individuals may be quite geographically distanced. Being an innovator has several prerequisites. Control of substantial financial resources is helpful in absorbing the possible losses from an unprofitable innovation. The ability to understand and apply complex technical knowledge is also needed. The innovator must be able to cope with a high degree of uncertainty about an innovation at the time he or she adopts.

必须有能力应对不确定性

The salient value of the innovator is venturesomeness, due to a desire for the rash, the daring, and the risky. The innovator must also be willing to accept an occasional setback when a new idea proves unsuccessful, as inevitably happens. While an innovator may not be respected by other members of a local system, the innovator plays an important role in the diffusion process: that of launching the new idea in the system by importing the innovation from outside of the system's boundaries. Thus, the innovator plays a gatekeeping role in the flow of new ideas into a system.

Early Adopters: Respect

Early adopters are a more integrated part of the local social system than are innovators. Whereas innovators are cosmopolites, early adopters are localites. This adopter category, more than any other, has the highest degree of opinion leadership in most systems. Potential adopters look to early adopters for advice and information about an innovation. The early adopter is considered by many to be "the individual to check with" before adopting a new idea. This adopter category is generally sought by change agents as a local missionary for speeding the diffusion process. Because early adopters are not too far ahead of the average individual in innovativeness, they serve as a role model for many other members of a social system. Early adopters help trigger the critical mass when they adopt an innovation.

The early adopter is respected by his or her peers, and is the embodiment of successful, discrete use of new ideas. The early adopter knows that to continue to earn this esteem of colleagues and to maintain a central position in the communication networks of the system, he or she must make judicious innovation-decisions. The early adopter decreases uncertainty about a new idea by adopting it, and then conveying a subjective evaluation of the innovation to near peers through interpersonal networks. In one sense, early adopters put their stamp of approval on a new idea by adopting it.

早期采用者通过采用新想法来减少不确定性 然后通过人际网络将对创新的主观评价传达给同伴

Early Majority: Deliberate

The early majority adopt new ideas just before the average member of a system. The early majority interact frequently with their peers but seldom hold positions of opinion leadership in a system. The early majority's unique location between the very early and the relatively late to adopt makes them an important link in the diffusion process. They provide interconnectedness in the system's interpersonal networks. The early majority are one of the most numerous adopter categories, making up one third of all members of a system.

The early majority may deliberate for some time before completely adopting a new idea. Their innovation-decision period is relatively longer than that of the innovators and the early adopters (see Chapter 5). "Be not the first by which the new is tried, nor the last to lay the old aside," quoted at the beginning of this chapter, particularly fits the thinking of the early majority. They follow with deliberate willingness in adopting innovations but seldom lead.

Late Majority: Skeptical

The late majority adopt new ideas just after the average member of a system. Like the early majority, the late majority make up one third of the members of a system. Adoption may be both an economic necessity for the late majority and the result of increasing peer pressures. Innovations are approached with a skeptical and cautious air, and the late majority do not adopt until most others in their system have already done so. The weight of system norms must definitely favor an innovation before the late majority are convinced to adopt. The pressure of peers is necessary to motivate adoption. Their relatively scarce resources mean that most of the uncertainty about a new idea must be removed before the late majority feel that it is safe to adopt. 大多数不确定性必须被消除

Laggards: Traditional

Laggards are the last in a social system to adopt an innovation. They possess almost no opinion leadership. Laggards are the most localite of all adopter categories in their outlook. Many are near isolates in the social networks of their system. The point of reference for the laggard is the past. Decisions are often made in terms of what has been done previously, and these individuals interact primarily with others who also have relatively traditional values. Laggards tend to be suspicious of innovations and of change agents. Their innovation-decision process is relatively lengthy, with adoption and use lagging far behind awareness-knowledge of a new idea. Resistance to innovations on the part of laggards may be entirely rational from the laggards' viewpoint, as their resources are limited and they must be certain that a new idea will not fail before they can adopt. The laggard's precarious economic position forces the individual to be extremely cautious in adopting innovations.

   "Laggard" might sound like a bad name. This title of the adopter category carries an invidious distinction (in much the same way that "lower class" is a negative nomenclature). Laggard is a bad name because most nonlaggards have a strong pro-innovation bias (see Chapter 3). Diffusion scholars who use adopter categories in their research do not mean any particular disrespect by the term "laggard." Indeed, if they used any other term instead of laggards, such as "late adopters," it would soon have a similar negative connotation. But it is a mistake to imply that laggards are somehow at fault for being relatively late to adopt. System-blame may more accurately describe the reality of the laggards' situation (see Chapter 3).

People Who Said No to Innovation: The Old Order Amish*

If you were an Old Order Amish person living in the United States today, you would not believe in using buttons (instead you would fasten your clothing with hooks and eyes), tractors, automobiles (which are considered "worldly"), family planning, wallpaper, cigarettes, wristwatches, or neckties; you would not engage in dating, military service, or voting; and you would not be educated beyond the eighth grade. You would believe that large families are good (the average Amish family has seven to nine children), that the only proper occupation is farming, and that you should marry an Amish partner.

   The Amish are a religious sect that began in Switzerland during the 1690s when the followers of Jakob Ammann (hence the name "Amish") split off from existing Christian religions. The Amish were persecuted in Europe, and began migrating to Pennsylvania prior to the Revolutionary War of 1775. About five hundred Amish came during this initial wave; later, three thousand more Amish came after the War of 1812.

   Today an estimated 100,000 Old Order Amish live in rural communities in the United States. In recent decades, the number of Amish in America has increased manifold. Ohio has the largest Amish population, followed by Pennsylvania and Indiana, and Amish communities are also located in Michigan, Iowa, Kansas, Kentucky, Florida, and other states.

   It is impossible to remain Amish without marriage to an Amish mate, so inbreeding is a problem. Only eight family names account for nearly 80 percent of all Amish people in Ohio, Pennsylvania, and Indiana. Virtually all of the several thousand Amish people in Lancaster County, Pennsylvania, for instance, are descendants of Christian Fisher, who was born in 1757. The selection of marriage partners among the Amish is limited by their horse-and-buggy transportation, as they seldom marry an individual living outside their local community.

   When an Amish person deviates from church teachings, he or she is punished by a form of excommunication known as shunning *(Meidung)*. When a person is shunned, no other Amish person may speak to the individual. As the Old Order Amish know only others of the same faith, shunning means that the individual may not have a friend in the world. Even the member's children, brothers, sisters, and spouse must refuse to speak to the individual and even to eat

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at the same table. Marital relations are forbidden. Only upon public repentance by the sinner is the excommunication lifted. For example, a young Amishman in Ohio was shunned for driving a car. After a week of shunning, he went before the local congregation and repented symbolically by tearing up his driver's license.

Despite the social pressure exerted by Amish parents on their youth, an estimated 20 percent defect. The high birthrates of the Amish, however, more than make up for this attrition. Many who leave the Amish faith join the Mennonite church, which is closely related in its lifestyle but is less strict in rejecting change.

Amish children have almost no contact with the non-Amish world around them. Television, radio, magazines, and non-Amish schooling are forbidden. Friendships with non-Amish children are banned. Amish teenagers are forbidden to attend public high schools, where their parents fear they will be lost to popular music, cars, and dating. A distinctive language is also important in maintaining socialization of the young into the Old Order Amish culture. The Amish speak a special German dialect, which also sets them apart from the non-Amish.

Religious persecution of the Amish during their European beginnings several centuries ago led to a strong value on separation from the society in which they live. The Amish stress this history of persecution in socializing their children; each schoolchild reads about the Amish martyrs who were tortured, raped, and killed by Christians in Europe.

One key ingredient in Amish survival is rich soil, which the Amish farm in a labor-intensive manner, growing tobacco, vegetables, fruit, and specialty crops. They operate such intensive livestock enterprises as dairying and raising chickens. The Amish family seeks to set up each of its offspring in farming. Tractors are rejected in order to maintain labor opportunities for Amish children. Hard work and high fertility go hand in hand for the Amish, as they seek to balance their rapidly increasing population with their local environment. In recent years, escalating land prices have threatened the Amish way of life. Today about half of the adult Amish people in Lancaster County work in such nonfarm employment as carpentry, blacksmithing, crafts, or cheese making, or in restaurants. One Amish business converts tractor-drawn farm implements to horse-drawn equipment, replacing pneumatic tires with metal rims.

While the Amish say "no" to most consumer innovations and to many agricultural innovations, they are very innovative in adopting new ideas that fit with their religious and family values. For example, Sommers and Napier (1993) gathered personal interview data from a sample of 366 Amish and non-Amish farmers living in three Ohio counties. The Amish farmers were greatly concerned with the problem of groundwater pollution due to agricultural chemicals. Such protection of soil and water resources is believed by the Amish to have a religious significance. Living in harmony with nature is highly valued, understandably so because the Amish way of life is dependent on high agricultural productivity. Community norms among the Amish reflect this value on conservation, so the same interpersonal pressures that oppose adoption of farm machinery, automobiles, and tractors encourage farmers to apply less fertilizer and pesticides.

Amish families are culturally forbidden to use modern technologies such as household water filtering systems or to purchase bottled water (Sommers and Napier, 1993). Accordingly, the adoption of such farm conservation innovations such as lower chemical applications to their crops is the most appropriate means for Amish farm families to avoid groundwater pollution.

So while the Amish are relatively uninnovative in a general sense, they are very innovative in adopting innovations that are consistent with Amish cultural values.

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*This case illustration is based on Hostetler (1980, 1987).

Characteristics of Adopter Categories

A voluminous research literature has accumulated about variables related to innovativeness. Here we summarize this diffusion research in a series of generalizations under three headings: (1) socioeconomic status, (2) personality values, and (3) communication behavior.

Socioeconomic Characteristics

Generalization 7-2: *Earlier adopters are no different from later adopters in age.* There is inconsistent evidence about the relationship of age and innovativeness. About half of the many diffusion studies on this subject show no relationship, a few found that earlier adopters are younger, and some indicate they are older.

Generalization 7-3: *Earlier adopters have more years of formal education than do later adopters.*

Generalization 7-4: *Earlier adopters are more likely to be literate than are later adopters.*

Generalization 7-5: *Earlier adopters have higher social status than do later adopters.* Status is indicated by such variables as income, level of living, possession of wealth, occupational prestige, self-perceived identification with a social class, and the like. However measured, social status is usually positively related with

innovativeness.

Generalization 7-6: *Earlier adopters have a greater degree of upward social mobility than do later adopters.* Evidence suggests that earlier adopters are not only of higher status but are on the move in the direction of still higher levels of social status. In fact, they may be using the adoption of innovations as one means of getting there.

Generalization 7-7: *Earlier adopters have larger-sized units (farms, schools, companies, and so on) than do later adopters.* The social characteristics of earlier adopters mark them as more educated, of higher social status, and the like. They are wealthier and have large-sized units. Socioeconomic status and innovativeness appear to go hand in hand. Do innovators innovate because they are richer, or are they richer because they innovate? This cause-and-effect question cannot be answered solely on the basis of available cross-sectional data. But there are understandable reasons why social status and innovativeness vary together. Some new ideas are costly to adopt and require large initial outlays of capital. Only the wealthy units in a system may be able to adopt these innovations. Greatest profits usually go to the first to adopt; therefore, the innovator gains a financial advantage through relatively early adoption of the innovation. The innovators become richer and the laggards become relatively poorer as a result of this process.

新想法采用成本很高
需要大量初始资本
只有富人能干这个
但落后者就更穷

Because the innovator is the first to adopt, risks must be taken that can be avoided by later adopters who do not wish to cope with the high degree of uncertainty concerning the innovation when it is first introduced into a system. Certain of the innovator's new ideas inevitably are likely to fail. He or she must be wealthy enough to absorb the loss from these occasional failures. Although wealth and innovativeness are highly related, economic factors do not offer a complete explanation of innovative behavior (or even approach doing so). For example, although agricultural innovators tend to be wealthy, there are many rich farmers who are *not* innovators.

Personality Variables

Personality variables associated with innovativeness have not yet received much research attention, in part because of difficulties in measuring personality dimensions in diffusion surveys.

Generalization 7-8: *Earlier adopters have greater empathy than do later adopters. Empathy* is the ability of an individual to project himself or herself into the role of another person. This ability is an important quality for an innovator, who must be able to think counterfactually, to be particularly imaginative, and to take the roles of heterophilous other individuals in order to exchange information effectively with them. To a certain extent, the innovator must be able to project into the role of individuals outside of his or her local system (as the innovator is the first to adopt in the local system): innovators in other systems, change agents, and scientists and R&D workers.

Generalization 7-9: *Earlier adopters may be less dogmatic than are later adopters. Dogmatism* is the degree to which an individual has a relatively closed belief system, that is, a set of beliefs which are strongly held. A highly dogmatic person would not welcome new ideas. Such an individual would instead prefer to hew to the past. Evidence in support of this generalization is not very strong, consisting of only several research studies.

Generalization 7-10: *Earlier adopters have a greater ability to deal with abstractions than do later adopters.* Innovators must be able to adopt a new idea largely on the basis of rather abstract stimuli, such as are received from the mass media. Later adopters can observe the innovation in the here-and-now of a peer's operation. They need less ability to deal with abstractions.

Generalization 7-11: *Earlier adopters have greater rationality than do later adopters. Rationality* is use of the most effective means to reach a given end.

Generalization 7-12: *Earlier adopters have more intelligence than do later adopters.*

Generalization 7-13: *Earlier adopters have a more favorable attitude toward change than do later adopters.*

Generalization 7-14: *Earlier adopters are better able to cope with uncertainty and risk than are later adopters.*

Generalization 7-15: *Earlier adopters have a more favorable attitude toward science than do later adopters.* Because innovations are often the product of scientific research, it is logical that innovators are more favorably inclined toward science.

Generalization 7-16: *Earlier adopters are less fatalistic than are later adopters. Fatalism* is the degree to which an individual perceives a lack of ability to control his or her future. An individual is more likely to adopt an innovation if he or she has more self-efficacy and believes that he or she is in control, rather than thinking that the future is determined by fate (Bandura, 1997).

Generalization 7-17: *Earlier adopters have higher aspirations (for formal education, higher status, occupations, and so on) than do later adopters.*

Communication Behavior

Generalization 7-18: *Earlier adopters have more social participation than do later adopters.*

Generalization 7-19: *Earlier adopters are more highly interconnected through interpersonal networks in their social system than are later adopters. Connectedness* is the degree to which an individual is linked to others.

Generalization 7-20: *Earlier adopters are more cosmopolite than are later adopters.* Innovators' interpersonal networks are more likely to be outside, rather than within, their system. They travel widely and are involved in matters beyond the boundaries of their local system. For instance, Iowa hybrid corn innovators traveled to urban centers such as Des Moines more often than did the average farmer (Ryan and Gross, 1943). Medical doctors who innovated in adopting a new drug attended more out-of-town professional meetings than did noninnovators (Coleman et al., 1966). *Cosmopoliteness* is the degree to which an individual is oriented outside a social system.

Innovators act like the early German sociologist Georg Simmel's (1908/1964, pp. 404–405) "stranger," whose special perspective stems from a lack of integration into the local system: "He is not radically committed to the unique ingredients and peculiar tendencies of the group, and . . . is bound by no commitments which could prejudice his perception, understanding, and evaluation of the given." The stranger's orientation outside of the group allows him or her to import information from the wider society (Rogers, 1999). The *stranger* was defined by Simmel (1908/1969) as an individual who is a member of a system but who is not strongly attached to the system (see Chapter 2).

The model for Simmel's stranger was the itinerant trader, who was often a Jew. Simmel was the son of Jewish parents who converted to Christianity, and he experienced anti-Semitism during his academic career in Germany. Perhaps the stranger is a recent immigrant into the system who retains the freedom of coming and going. Because the stranger is socially distant from others in the system, the stranger is relatively free from the system's norms. Further, the stranger sees the system in a different light than do others, and with greater objectivity. In fact, the Chicago School, which flourished at the University of Chicago from 1915 to 1935, applied Simmel's concept of the stranger to the empirical study of social problems, thus emphasizing the objectivity with which social scientists should view their respondents. Social scientists were trained to adopt the perspective of strangers. The concept of the stranger stimulated such intellectual offspring as the concepts of social distance (see Chapter 8), heterophily, and cosmopoliteness.

Obviously, our present conceptualization of the innovator has much in common with Georg Simmel's stranger. The innovator is a member of a system but is a cosmopolite, oriented outside of the system. The innovator has weak ties to other members of the system. This orientation frees the innovator from the constraints of the local system and allows him or her the personal freedom to try out previously untried new ideas.

Generalization 7-21: *Earlier adopters have more contact with change agents than do later adopters.*

Generalization 7-22: *Earlier adopters have greater exposure to mass media communication channels than do later adopters.*

Generalization 7-23: *Earlier adopters have greater exposure to interpersonal communication channels than do later adopters.*

Generalization 7-24: *Earlier adopters seek information about innovations more actively than do later adopters.*

Generalization 7-25: *Earlier adopters have greater knowledge of innovations than do later adopters.*

Generalization 7-26: *Earlier adopters have a higher degree of opinion leadership than do later adopters.* Although innovativeness and opinion leadership are positively related, the degree to which these two variables are related depends in part on the norms of the social system. In a system with norms favorable to change, opinion leaders are more innovative (see Chapter 8).

A fairly typical mini–case study of opinion leadership and adopter categories is shown in Figure 7–4. These data come from a neighborhood composed of fourteen farmers in Collins, Iowa, the community studied by the author for his doctoral dissertation. The innovator in this neighborhood, who adopted a new weed spray in 1948, the first year this innovation was available, received only one sociometric vote as an opinion leader (this

vote came from an early adopter). The next individual to adopt (in 1950), an early adopter, was named by eight of the other thirteen farmers as their source or channel of communication for the new weed spray. When this early adopter began using the weed spray, many of his neighbors soon followed. In one sense, however, the innovator was *indirectly* very influential in that he influenced the opinion leader, who in turn influenced eight other farmers to adopt.

Audience Segmentation and Adopter Categories

In most of the generalizations above, an independent variable is positively related to innovativeness. This relationship means that innovators score higher on these independent variables than do laggards. For instance, Rogers with Svenning (1969) found that in traditional Colombian villages the innovators averaged thirty trips a year to cities, whereas the laggards averaged only 0.3 trips. A few variables, such as dogmatism and fatalism, are negatively related to innovativeness, and opinion leadership is greatest for early adopters, at least in most systems.

These characteristics of each adopter category have emerged from diffusion research. The important differences among these adopter categories suggest that change agents should use a different approach with each adopter category, or audience segmentation. *Audience segmentation* is a strategy in which different communication channels or messages are used to reach each subaudience. This strategy breaks down a heterophilous audience into a series of relatively more homophilous subaudiences. Thus, one might appeal to innovators who adopted an innovation because it was soundly tested and developed by credible scientists, but this approach would not be effective with the late majority and laggards, who have a less favorable attitude toward science. They will not adopt a new idea until they feel that most uncertainty about the innovation's performance has been removed. These later adopters place greatest credibility in their peers' subjective experiences with the innovation, conveyed to them through interpersonal networks.

Figure 7-4. The Diffusion of a New Weed Spray in an Iowa Farm Neighborhood
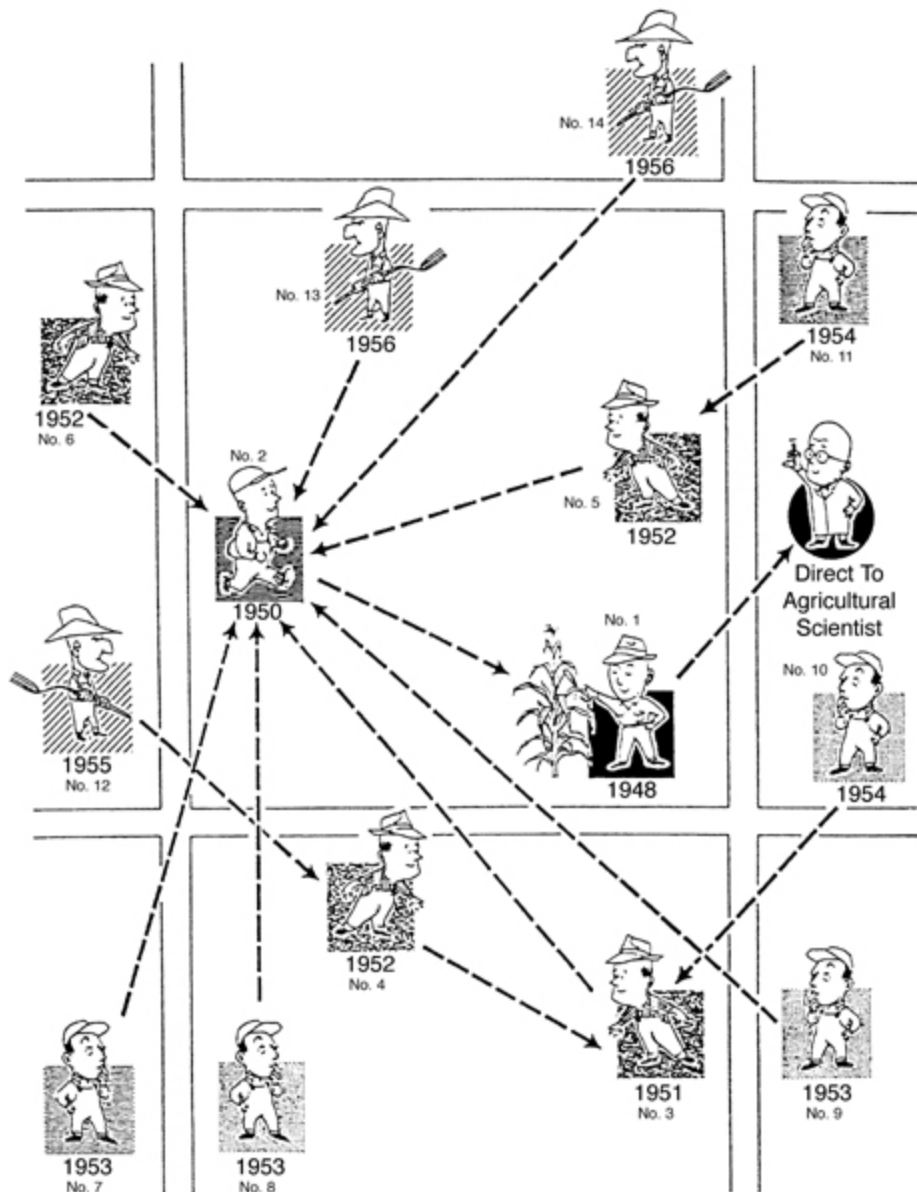
The fourteen Iowa farmers in this neighborhood network were asked by the author, "Where or from whom did you obtain information that convinced you to adopt 2,4-D weed spray?" The innovator, who adopted in 1948, said that he had learned about the innovation from an agricultural scientist. The early adopter served as an opinion leader for eight of the thirteen other farmers in this small system.

Source: Bohlen and others (1958).

Cell Phone Laggards in Hong Kong*

Perhaps because change agencies are more interested in innovators and early adopters, relatively few diffusion studies are conducted of laggards, although interesting understandings could be derived from such research. A series of pioneering studies by Professors Ran Wei and Louis Leong at the Chinese University of Hong Kong of cell phone laggards proves this point. Hong Kong has one of the highest rates of cell phone adoption in the world (77 percent in late 2000, when the study was conducted). Data were gathered by telephone interviews from large samples of Hong Kong households in 1998 and 2000. These samples were large enough that 388 cell phone have-nots were included in 1998, and 202 in 2000. The characteristics of these 590 cell phone laggards were compared with the adopters at each of the two points in time.

As in many other countries, the first adopters of cell phones in Hong Kong were businesspeople, who were well

educated, with higher incomes, and of higher socioeconomic status. For these relative elites, the cell phone was a technology that allowed business to be conducted on the run. Cell phones were advertised as a prestige consumer item, and fancy phone kits came with tailor-made leather covers and custom-designed ringing signals. Cell phones, along with other communication technologies such as karaoke, DVDs, and cable television, contributed to the increasingly popular self-centered lifestyle in Hong Kong, in which owning these technologies was considered part of enjoying life.

Then cell phones became much cheaper in cost. They diffused to later adopter categories and lower-status individuals such as blue-collar workers, homemakers, and students. The socioeconomic differences between adopters versus nonadopters began to diminish, suggesting that as the diffusion of a new communication technology takes place, socioeconomic factors become less important (Dutton et al., 1987). Later adopters of cell phones mainly used them for emotional rather than business functions, such as to talk with their family members and to convey affection. Laggards, who had not adopted at the time of the 1998 and 2000 surveys in Hong Kong, said they did not have a cell phone because of (1) its complexity ("The cell phone services are confusing"), (2) incompatibility with their values ("Public phones are everywhere and are inexpensive"), and (3) relative disadvantage ("I have no need for a cell phone, and it usually has poor transmission").

The Hong Kong diffusion studies of laggards help us understand the diffusion process from their perspective. An innovation that almost everyone is adopting looks quite different when seen from the perspective of laggards.

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*This case illustration is based on Wei (2001), Wei and Leung (1998), and Leung and Wei (2000).

The Innovativeness/Needs Paradox and the Strategy of Least Resistance

悖论:
需要创新的往往是最后采用的
制造创新的却是最不需要其所带来好处的

The individuals or other units in a system who most need the benefits of a new idea (the less educated, less wealthy, and the like) are generally the last to adopt an innovation. The units in a system who adopt first generally least need the benefits of the innovation. This paradoxical relationship between innovativeness and need for the benefits of an innovation tends to widen socioeconomic gaps between the higher- and lower-socioeconomic individuals in a system (see Chapter 11).

One illustration of the innovativeness/needs paradox is the adoption of contraceptive innovations in Third World nations. Elite families in these societies are already relatively small-sized, even though these families could well afford to raise many children. When a national family-planning program is launched by the national government, these elite families are the first to adopt contraceptives (Rogers, 1973). While socioeconomically elite families average only two or three children each, lower-status families average five or six children, which they often cannot afford to feed, clothe, or educate. The poorer families generally do not adopt contraceptives, even though one might think that they would feel a stronger need for family planning and for smaller-sized families. But they do not. And they wonder suspiciously why their government claims that it is providing free contraceptives for their benefit. Thus, the paradox occurs in which those individuals who might need an innovation most are the last to adopt.

What creates this paradox? In the case of family planning, poor families believe that having many children (especially sons) is an economic asset, in that the sons provide labor. Poor parents do not believe the government officials who tell them that a small family is a happy family. A second reason for the paradoxical tendency of those who most need an innovation to adopt it last, is that change agents often follow a segmentation strategy of *least resistance*, in that they especially contact socioeconomic elites, who are most receptive to innovations. The adoption of most contraceptive methods requires some degree of resources, skills, and/or training, which the nonelite members of a system are less likely to possess. For example, family-planning innovations are used more easily and more effectively by elites, as these contraceptive technologies require planning behavior, understanding the human reproductive function, and other knowledge and skills. So even when family-planning methods are provided to individuals at no cost by a government program, in most countries the socioeconomic elites adopt first.

The innovativeness/needs paradox need not occur. Change agents could pursue a segmentation strategy of *greatest resistance*, in which communication efforts are concentrated on the subaudiences who are lowest in socioeconomic status, who feel the least need for the innovation, and who would ordinarily be the last to adopt. An unfortunate consequence of the tendency of change agents to concentrate their efforts on elite clients, while largely ignoring the hard-to-reach subaudience of late majority and laggards, is widening gaps between the information-rich and the information-poor in a social system (see Chapter 11).

Today, the Internet may offer a new means of overcoming the innovativeness/needs paradox. Later adopters

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can now be reached with highly targeted, individualized messages about an innovation, delivered via the Internet. Such Internet targeting has been widely utilized to reach lower-income, less-educated individuals (who have access to computers) with health messages.

Network Influences on Innovativeness

Much past diffusion research focused on individual characteristics related to innovativeness, such as formal education, socioeconomic status, and other factors. In recent years, several diffusion scholars also investigated the role of an individual's network partners in explaining the focal individual's innovativeness. For example, Foster and Rozenzweig (1995) analyzed data from a nationwide sample of Indian farmers to show that neighbors' experience with agricultural innovations contributed to a farmer's innovativeness (and profitability), especially as the diffusion process for an innovation continued. In the following chapter, we discuss Shaheed Mohammed's (2001) study of how an individual's personal network variables influenced that individual's adoption of family planning innovations in Tanzania. For example, individuals with more adopters of family planning among their network partners were more likely to adopt family-planning methods themselves.

Similar results have been reported by diffusion scholars (mainly general sociologists and political scientists) studying the spread of such innovations as hate crime laws (Grattet, Jenness, and Curry, 1998), state lotteries (Berry and Berry, 1990), and so forth through the American states. Having a previously adopting neighbor state can facilitate a state's adoption of these innovations, as we saw earlier for California's influence on Oregon and Washington's adoption of hate crime laws. Not surprisingly, in the face of a high level of uncertainty about an innovative policy, a state's politicians and officials turn to other states who already have experience with the innovation they are considering for adoption. Here again we see that diffusion is a social process, with an innovation moving through interpersonal networks.

A similar kind of research has been conducted with regions in Italy as the units of analysis. Putnam (1993) computed an innovativeness score, composed of twelve new laws, for each of the twenty-one regional governments in Italy. The new laws included strip-mining regulation, fisheries promotion, and air and water pollution control. Adoption or rejection of each of the twelve laws was determined, and more points were awarded in the innovativeness score to regional governments that adopted a new law relatively earlier (this is a similar procedure to that used in the Saucío community study, discussed earlier in this chapter). The most innovative regional governments tended to influence their neighbors.

Further research is needed on network influences on individual's (and organizations') innovativeness.

Summary

Adopter categories are the classifications of the members of a social system on the basis of *innovativeness,* the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a system. A variety of categorization systems and titles for adopters have been used in past studies. This chapter described the standard five adopter categories that are widely followed today in diffusion research, and their applications.

Adopter distributions tend to follow an S-shaped curve over time and to approach normality (Generalization 7-1). The continuum of innovativeness can be partitioned into five adopter categories (innovators, early adopters, early majority, late majority, and laggards) on the basis of two characteristics of a normal distribution, the mean and the standard deviation. The dominant attributes of each category are: Innovators—venturesome; early adopters—respect; early majority—deliberate; late majority—skeptical; and laggards—traditional. The relatively earlier adopters in a social system are no different from later adopters in age (Generalization 7-2), but they have more years of formal education (Generalization 7-3), are more likely to be literate (Generalization 7-4), and have higher social status (Generalization 7-5), a greater degree of upward social mobility (Generalization 7-6), and larger-sized units, such as farms, companies, schools, and so on (Generalization 7-7). These characteristics of adopter categories indicate that earlier adopters have generally higher socioeconomic status than do later adopters.

Earlier adopters in a system also differ from later adopters in personality variables. Earlier adopters have greater empathy (Generalization 7-8), less dogmatism (Generalization 7-9), a greater ability to deal with abstractions (Generalization 7-10), greater rationality (Generalization 7-11), greater intelligence (Generalization 7-12), a more favorable attitude toward change (Generalization 7-13), a greater ability to cope with uncertainty

and risk (Generalization 7-14), a more favorable attitude toward science (Generalization 7-15), less fatalism and greater self-efficacy (Generalization 7-16), and higher aspirations for formal education, higher-status occupations, and so on (Generalization 7-17).

Finally, the adopter categories have different communication behavior. Earlier adopters have more social participation (Generalization 7-18), are more highly interconnected in the interpersonal networks of their system (Generalization 7-19), are more cosmopolite (Generalization 7-20), have more contact with change agents (Generalization 7-21), greater exposure to mass media channels (Generalization 7-22), and greater exposure to interpersonal communication channels (Generalization 7-23), engage in more active information seeking (Generalization 7-24), and have greater knowledge of innovations (Generalization 7-25) and a higher degree of opinion leadership (Generalization 7-26).

Past research thus shows many important differences between earlier and later adopters of innovations in (1) socioeconomic status, (2) personality variables, and (3) communication behavior. The distinctive characteristics of the five adopter categories mean that these adopter categories can be used for *audience segmentation,* a strategy in which different communication channels and/or messages are used to reach each subaudience.