

upon receiving the list of vacancies circulated periodically, express interest. The process continues until a rabbi is chosen. Rabbis or congregations attempting to circumvent this system are subject to effective sanctions. There appear now to be few or no exceptions to this method of placement.⁸ Its success recently stimulated the Reform Jewish movement to adopt a similar system.

In effect, this action approximated the creation of an internal labor market; individuals transfer from one congregation to another as if from one branch to another of the same firm. It is unlikely that the degree of central control necessary to implement such a system could be duplicated in larger, nonreligious groups. There are, at present, less than 1000 Conservative rabbis.

In this introduction, then, the basic theme has been set: personal contacts are of paramount importance in connecting people with jobs. Better jobs are found through contacts, and the best jobs, the ones with the highest pay and prestige and affording the greatest satisfaction to those in them, are most apt to be filled in this way. With a few interesting exceptions, those who do not find their jobs through personal contacts, would have liked to do so, but were prevented by "structural" factors. A few such factors were briefly sketched in this chapter, but for a deeper understanding it is necessary to ask more detailed questions about how people "use" personal contacts. Who are these "contacts" that play such a crucial role in filling the most coveted positions in our economic and social structure—what relation do they hold to respondents, and what relation to the jobs they channel respondents into? Under what circumstances does information about these jobs come to be passed? On whose initiative? These are the questions to which Part One is devoted.

8. Information on this placement procedure was secured through the courtesy of a personal interview with Rabbi Gilbert Epstein, Director of Placement, Jewish Theological Seminary, New York City.

Part One

Toward Causal Models

In this section of the book I will attempt to develop and explore causal explanations. The event to be explained is the acquisition of job-information by my respondents and my focus is heavily on cases where personal contacts are used. What it might mean to "explain" such an event is ambiguous. Causal investigations may be undertaken at many different levels. The first distinction of level to be made here is that of time frame. We may distinguish between immediate causes and those that operate over long time periods, comparable at least to that of a man's average job tenure, in some cases to his entire career. Crosscutting the dimension of time is that of scale; some causes are immediate in the sense that they involve only the respondent and his personal contacts, whereas others involve individuals and jobs unknown to the respondent, possibly at considerable social distance, in a sense to be defined later. We may abbreviate these two dimensions to long-term/short-term, and micro/macro, although the dichotomies are crude. "Long-term" is really a residual category for causes that are not immediate, and "macro" has a similar relation to "micro." Hence, both "long-term" and "macro" causes may be less long-term and less macro than many aspects of society which we are accustomed to discuss under those rubrics.

Four sequences of short-term causal questions provide the substance of Chapters 1-4. These are: 1) in what types of interpersonal situations was job information passed? The answer to this leads also to a discussion of economic theory, which labels all such situations "job search"; 2) how were personal contacts connected to respondents and to the job information which they offered?; 3) What motivated contacts to offer job information? What characteristics of inter-

personal relations and networks facilitated the movement of such information from its source to its ultimate destination? 4) How did there come to be, in the first place, an opening in the job about which information was passed? These four series of questions progress from micro to macro concerns, within the short-term time frame.

Chapters 5 and 6 take up long-term causal questions. 1) How did the respondent originally become connected to the person who ultimately gave him job information? What characteristics of the individual or of his life history contributed to this connection and its maintenance? 2) What characteristics of a person's career, of his movement through a system of jobs, affected his likelihood of finding jobs through personal contacts? Emphasis again moves, relatively speaking, from micro to macro levels. In Chapter 7 I will attempt to draw together the threads of these chapters to arrive at a somewhat integrated idea of the causal sequences involved. Figure 1 summarizes the conceptual scheme that has guided the organization of these chapters.

Figure 1. Dimensions of causality in the transmission of job information.

Scale	Time-frame	
	Short-term	Long-term
Micro	Chapter 1: Situation in which job-information was transmitted	Chapter 5: Origins of respondent-contact tie; how it was maintained
	Chapter 2: Relation of contact to respondent and to job information	
	Chapter 3: Characteristics of relations and networks that facilitated information flow	Chapter 6: Influence of overall career pattern on current job-finding experiences.
Macro	Chapter 4: Causes of vacancy	

I

“Job Search” and Economic Theory

There is some overlap between the subject matter of the present study and that of labor-market theory in economics. In the classical conception, labor is a commodity, like wheat or shoes, and is hence subject to market analysis: employers are the buyers, and employees the sellers of labor. Wages (or, in more refined formulations, the total benefits accruing to a worker by virtue of holding a given job) are analogized to price. Supply and demand operate in the usual way to establish equilibrium: the price of labor fluctuates in the short run until that single price is arrived at which clears the market. For homogeneous work, wage dispersion and unemployment are not possible; firms paying more than the equilibrium price for labor will thereby attract workers from firms paying less. This excess of supply over demand will drive down the price. Firms losing employees will similarly be constrained to raise wages. Workers unemployed in the short run may bid for work, driving down wages to the point where they, and those currently working, will all be employed at the new, lower equilibrium wage. This elegant package ties together wages, unemployment, and labor mobility.

Like perfect commodity markets, however, perfect labor markets exist only in textbooks. Unemployment, obviously, persists. On wage dispersion, a recent text on labor economics summarizes a number of empirical studies by saying that even “in the absence of collective bargaining, employers will continue indefinitely to pay diverse rates for the same grade of labor in the same locality under strictly comparable job conditions . . . There is no wage which will clear the market” (Bloom and Northrup, 1969:232). Reynolds, in a detailed empirical study of New Haven, concluded that labor

mobility and wage determination are more or less independent; the movement of labor has little effect on wages, and "voluntary movement of labor . . . seems to depend more largely on differences in availability of jobs than on differences in wage levels" (1951:230, 233). Brown, in his study of college professors, divided disciplines into those with excess supply and excess demand for teachers. He naturally assumed that job-changers in excess-demand disciplines would have received more job offers than those in fields with excess supply. Though there was some tendency in this direction, he reports that it was "not decisive," and that "repeated attempts to explain the differentials in market behavior by dividing the disciplines into excess supply and excess demand have not produced any conclusive evidence of the expected, usual relationships" (1965b: 117, 118n; for the basis of the excess supply and demand index see pages 87-91, 354, 361).

Several factors militate against perfect labor markets. Inertia as well as social and institutional pressures exert constraints on the free movement of labor contemplated in economic theory (cf. Keri 1954; Parnes, 1954). Union agreements and community restraints discourage employers from adjusting wages to meet supply and demand (cf. Reynolds, chs. 7-9). The factor most relevant to the present discussion is imperfectness of information.

The neoclassical theory of commodity markets generally takes the possession of complete information by market participants as one requirement of a perfect market. In Stigler's widely cited treatment of price theory, this is described as a *sufficient* condition (1952:56). But it is not simple to say exactly what complete information means, as Shubik noticed (1959), in trying to construct game-theoretic models for the behavior of actors in commodity markets. Alfred Marshall, a founder of the neoclassical synthesis, hedged on the issue, saying that it was not "necessary for our argument that any dealers [buyers or sellers] should have a thorough knowledge of the circumstances of the market" (1930:334). He felt that so long as each participant behaved strictly in accord with his supply or demand schedule, the equilibrium price would ultimately be reached. He does seem, in this argument, to assume that

buyers and sellers are at least aware of the *identities* of all those they might transact business with and even their current bid (or price)—only not necessarily their entire supply or demand schedules. Stigler comments that the "New York City market for domestic service is imperfect because some maids are working at wages less than some prospective employers would be willing to pay, and some maids are receiving more than unemployed maids would be willing to work for" (Stigler, 1952:56). This is caused primarily, one would guess, because the underpaid maids do not know the identity of very many potential employers, nor do the overpaying employers know who is available at a lower wage. Clearly, knowledge of the identities of these people is prerequisite to determining under what conditions they will offer (or purchase) services.

While there is disagreement on just how much information actually is possessed by workers in various labor markets, it seems clear that there is considerable ignorance. Reynolds holds that workers' "knowledge of wage and nonwage terms of employment in other companies [than their own] is very meager . . . much of what workers purport to know about other companies is inaccurate" (1951:213). Even less is known about the general state of knowledge of employers; all would agree, however, that few employers know of all or most individuals who could potentially fill vacancies they have open.

Only in the last ten years have economists begun to suggest how information is obtained and diffused in markets. Most of the models presented deal with "search" behavior, the active attempts of buyers and sellers to determine each others' identities and offers; maximization of utility by rational actors using marginal principles pervades these models. Stigler, the first to present such analyses, asserted that if "the cost of search is equated to its expected marginal return, the optimum amount of search will be found" (1961:216). In his conception, cost of search, for a consumer, is approximately measured by the number of sellers approached, "for the chief cost is time" (1961:216). He does not consider how buyers and sellers determine one another's identities, an issue of particular importance in labor markets, but also with some applica-

using up their "credit" with them, straining the relationship. There are, moreover, as Brown points out, opportunity costs in searching for a particular job (or employee): one may necessarily forego searching for others (Brown, 1965b:187). Brown's model, similar to Stigler's in its assumptions of optimal search behavior, allows for these other costs (1965b:185-198). His formulation, however, could be operationalized only via extensive survey data.

Similar difficulties arise on the benefit side; all models found measured benefits in money terms (Stigler, 1962; Brown, 1965b; McCall, 1965, 1970). Stigler and McCall recognize that the future benefits of the present search must be taken into account. McCall interprets this primarily in terms of expected length of employment in a job; Stigler's more general formulation points out that if current price offers are correlated with future ones, information now found also has future benefits. Each suggests appropriate discounting procedures. No attempts are made, however, to specify the value in the future of holding a particularly *prestigious* job now. More relevant, even, from the point of view of my study, no attempt is made to assess the value of contacts acquired in a particular position. This may be psychologically a minor factor; many of my respondents had never realized, until the time of interview, how much of their career was mediated by personal contacts acquired in previous jobs; but the actual benefits may be considerable, as discussed later on in Chapters 5 and 6.

The primary contribution of the present study to this discussion lies in an analysis of the notion of "search," as viewed from the supply side of labor markets. Of the authors surveyed, only Brown tries to work into his theory the idea that different methods of search yield different amounts of information. Brown's idea is that job-seekers, in effect, compute costs and benefits for *each method* they might use. That method with the highest expected net benefit is used first; then all calculations are repeated, and the searcher chooses a method for his second try. Search continues until marginal benefits equal marginal cost. Time, in this model, is effectively omitted as a parameter, since after any method is used, the next time period is assumed to begin (1965b:191-198).

bility to general commodity markets. Indeed, one might want to make a clear distinction between two stages of search: 1) finding the buyers (or sellers), and 2) determining their offers. Adapting some comments of Rees (1966), we might call the first part the extensive aspect of search, and the second, the intensive. This dichotomy applies less to markets in highly standardized commodities, where the nature of an offer is as straightforward as the identity of the person making it. But in, for example, labor markets, there are many subtleties in the nature of a bid to employ or to offer services, and gathering information about each such bid may be much more time-consuming than finding out who is making bids. In practice, a job-searcher must make a tradeoff between the two aspects: the more people he discovers who are bidding, the less he will be able to find out about each bid.

Of course, *some* intensive activity will precede hiring, especially in higher level jobs. In commodity markets, the knowledge that a given person is offering wheat at K dollars per bushel ordinarily suffices to be sure that *you* will be able to buy it from him. At worst, he might sell you less than you want (wheat being entirely divisible, as classical commodities should be). But having specified an employer offering an acceptable wage, or having found an employee offering his labor at a price one is willing to pay, does not by any means guarantee the consummation of the transaction. Especially in higher-level jobs, a direct inquiry is generally felt to be necessary, in which prospective employer and employee learn more about each other and decide whether a job should be offered, and if offered, accepted.

In general, measuring the costs and benefits of search poses quite difficult problems. The proposal to consider time as the main cost (see also McCall, 1970) is more appropriate for blue-collar workers who cannot easily search during 9-to-5 jobs, than for PTM workers. A very important cost for them, on the other hand, involves their frequent use of personal contacts. In my sample, more than 80 percent of the personal contacts used not only told the respondent about his new job, but also "put in a good word" for him. Contacts cannot be asked to do this too often without the respondents'

While this account is closer than others to my empirical findings on labor-market behavior, it is nevertheless inadequate. One of my original motives in choosing a PTM sample for study was, in fact, my interest in observing sophisticated search procedures; I assumed that if anyone would be likely to search in a careful, effective way, it would be people in PTM jobs. My results, however, lead me to doubt that information in labor markets, at least in PTM markets, is diffused primarily by "search."

For blue-collar markets, Reynolds holds that "the core of the effective labor supply at any time . . . consists of . . . people who are entering the market for the first time, who have been discharged, who have quit their previous jobs because of dissatisfaction, or who have been unemployed long enough for their benefit rights to be exhausted" (1951:106). It is reasonable that all such people *will* be searching for jobs, whereas those employed full-time at the blue-collar level would do so only with difficulty. Yet, Reynolds reports that 25 percent of those in his sample who changed jobs had lined up a new job before quitting, and moved to better jobs than those who quit or were discharged without having set up a new job first (1951:215). Given the 9-to-5 character of most blue-collar work it seems doubtful that those who found a new job before leaving the old one did much searching.

While PTM workers probably have more time to search, evidence indicates that this is often not the route to job-change. Brown reports that 26 percent of his sample of college professors, when asked how they found their present job, said that they "did nothing and were recruited" (1967:119). In my PTM sample, 29 percent of the respondents answered "no" to the question of whether there was a "period of time when you were actively searching for a new job" (before finding the current one).

Moreover, whether a respondent actively searched is systematically related to the method by which he found his job, and to the nature and quality of job obtained. Stage of career is of some importance in predicting search behavior. Table 7 indicates that those in their first job, or in sixth or subsequent jobs were most likely to have searched; the latter cases are individuals changing jobs

Table 7. Job-search activity, by career length of respondent.

Searched for present job?	Number of (full-time) jobs held in career				Total
	1	2-3	4-5	6-10	
Yes	93.3%	79.1%	62.1%	81.8%	76.5%
No	6.7%	20.9%	37.9%	18.2%	23.5%
N ^a	15	43	29	11	98

$p = 0.11$

^aInterview sample only.

Table 8. Job-search activity, by prestige of college attended by respondent.

Searched for present job?	Prestige of college granting B.A. or B.S. ^a			Total
	Lowest 60%	Top 10-40%	Top 10%	
Yes	85.1%	50.0%	63.6%	69.6%
No	14.9%	50.0%	36.4%	30.4%
N	47	24	44	115

$p = 0.006$

^aThe college reported by each respondent was ranked according to the index provided by Brown (1965b:333-352), based on eight factors, including percent of faculty with Ph.D.'s, faculty-student ratio, average faculty salaries, and similar measures. Since any such index is somewhat arbitrary, it seemed sensible to use one recently employed in a related study.

frequently on account of dissatisfaction. The tendency to search decreases with age; those under 34 searched in 78.6 percent of the cases, those 34 or over in 63.9 percent ($p = 0.01$).

Amount of education is unrelated to search behavior, but a measure of the prestige and quality of college attended for bachelor's degree shows interesting results. Table 8 shows that far fewer of those who attended colleges in the "top" 40 percent searched for their jobs than those in lower prestige colleges. A very similar table could be produced for the ranking of institutions granting graduate degrees to these respondents.

A first temptation is to conclude that the quality of education received in better colleges makes one more desirable afterwards; it is also possible is that those attending better schools are pre-selected, regardless of educational quality of the schools, so that they would be more likely to be sought out later. While there may be some truth in each of these ideas, I would also suggest that contacts acquired at higher prestige colleges are generally better placed in the occupational structure and will ultimately be of more help to their protégés—more likely to be in a position from which they can seek them out to offer or inform them of a job.

It is of special interest that, as shown in Table 9, higher-income jobs are less likely to go to those searching for them. Moreover, in the PTM group (see Table 10), managers are least likely to find their jobs through search, and technical workers most likely. This is

Table 9. Job-search activity, by level of income of respondent from present job.

Searched for present job?	Income		Total
	Less than \$10,000	\$10,000–24,999	
Yes	75.7%	61.0%	71.4%
No	24.3%	39.0%	28.6%
<i>N</i>	74	77	269

$p = 0.006$

Table 10. Job-search activity, by occupational category of respondent.

Searched for present job?	Occupation		Total
	Professional	Technical	
Yes	71.3%	85.1%	71.0%
No	28.7%	14.9%	29.0%
<i>N</i>	129	67	276

$p = 0.002$

a logical result of the greater reliance of the latter on formal means and direct application.

How one's job was found is closely related to search behavior. The use of formal means or direct application implies active search; in such cases, the search does lead to the information that yields a new job. For those finding a new job through contacts, however, the situation is more complex. First, only 57.4 percent of these individuals report having actively searched. Moreover, in many cases, the job taken was not found as a result of this search. When a contact was the source of job information, therefore, it is interesting to ask on whose *initiative*—respondent's or contact's—the job-information was passed. If the respondent was not searching, his contact is likely to have taken the initiative; but this is often true also when the respondent was searching, as when the contact heard through the "grapevine" of the search, or passed the information without knowing that any search was in progress.

For 57.9 percent of the individuals finding their new job through contacts ($N = 157$), the interaction during which job information was passed was, in fact, initiated by the contact. In about half these cases, he knew that the respondent was looking for a new job; this means that a little over a quarter of the time, initiative came from someone who had not been approached and did not know whether his friend would even be *interested*. In another 20.9 percent of the instances, the respondent contacted his friend, asked him if he knew of anything, and was told about the job he subsequently took; 8.3 percent of the respondents were contacted by someone they did not know and were told that they had been recommended for a job. The person doing the recommending turned out to be a personal contact of the respondent. In 13.4 percent of the cases, the respondent and his personal contact were interacting for some purpose unrelated to job information; in the course of this meeting, the information happened to be transmitted. Some of these were instances of "bumping into" friends on the street or at professional meetings; others involved prearranged meetings, but for other purposes. (The "interaction unrelated to job information" category is probably underestimated since it was not available as a choice in

the mail sample—a few cases would be coded that way from written-in comments. Over 24 percent of interview cases fall in this classification, but only 5.5 percent of mail surveys.)

Several cases will illustrate situations in which interaction was not initiated for the purpose of passing job information:

Case #2: Carl Y. was doing commission sales for an encyclopedia firm, but was not doing well. He decided he would have to find a different job; meanwhile, he started driving a cab to bring in extra money. One passenger asked to be taken to the train station where he had to meet a friend. This friend turned out to be an old friend of Carl Y's, and asked him "what're you doing driving a cab?" When Mr. Y. explained, the friend offered him the job he now holds—labor relations manager for a small company, owned by his friend.

Case #3: Edward A. had graduated from high school and been in the service. After returning, he resumed his practice of driving to the local park, in the evening, where his friends hung around; bars and restaurants in the vicinity made the area a popular teen-age hangout. The usual procedure was to drive by and see if anyone was there that you knew. On one such occasion he ran into an older friend employed by an engineering firm. The friend told him that there was an opening for a draftsman in this firm; Mr. A. applied and accepted this job.

Case #4: Franklin B. was an executive in a Philadelphia brokerage firm, which he had decided to leave. Through a contact, he received an offer in the Boston area, and was considering it. Meanwhile, he and another executive from the Philadelphia firm came to the Boston area on other business; Mr. B.'s companion suggested that they have lunch with Robert M., president of a Boston brokerage firm, simply because he would be a pleasant lunch companion. Both Mr. B. and his companion knew Mr. M. slightly from business. During lunch, Mr. B. mentioned that he might be taking a new job in Boston; afterward, Mr. M. collared him privately and made a better offer, which he subsequently accepted.

To see the relation between the various categories of initiative and the respondents' search behavior, we must ask what proportion of respondents in each initiative category reported having searched actively. These are as follows: 67.3 percent of respondents con-

tacted by a friend who "knew" they were searching; 19.5 percent of those whose contact didn't know whether they wanted a new job; 65.0 percent in cases where respondent and contact were meeting for other purposes; 84.6 percent of respondents who were recommended by people they knew, and 75.0 percent of those who asked a friend, who then told them about the job. Two contradictions are apparent; 1) in one-third of the cases where a respondent was contacted by a friend who "knew he was looking for something new" the respondent reported he had *not* been actively searching; 2) in one-quarter of the cases where respondent asked a friend who told him about a job, he reported himself as not having actively searched. The difficulty apparently lies in the perception of the word "actively"; a PTM worker who is on the lookout for a new job may not consider himself to be "actively" searching—merely keeping his ears open and asking an occasional question. In contrast to blue-collar workers, it is difficult to tell when a PTM worker is "in the market."

This ambiguity may cast doubt on results obtained by use of the subjective appraisal of the respondent as to whether he was searching. It would be more objective to consider whether a given respondent received information about the job he took as the result of a search or not. We may count information as resulting from a search if the respondent used formal means or direct application, asked a friend who told him about the job, or if he was contacted by a friend who knew he was searching. If the respondent was contacted by a friend who didn't know whether he wanted a new job, learned of the job in the course of interaction with a different original purpose, or heard from someone he didn't know (to whom he had been recommended by a personal contact), then no search was involved in producing the information.

A crucial earlier finding was that those in higher-income jobs were less likely to have searched actively for them. Table 11 shows that the correlation is even stronger if we use the relatively more objective measure outlined here: the higher the income, the less likely that information about the job was found through a search.

Table 11. Relation of locating job through a search to level of income of respondent from present job.

Information from search	Income			Total
	Less than \$10,000	\$10,000-14,999	\$15,000-24,999 or more	
Yes	82.7%	80.2%	57.4%	71.1%
No	17.3%	19.8%	42.6%	28.9%
N	75	86	68	27

$p < 0.001$

Thus, the finding holds up under two somewhat independent measures of the significance of job search.¹

A difficult conceptual issue here boils down to what is to be characterized as the object of "search." Presumably, a job-hunter is searching for elements of the set of all jobs which he might be invited, potentially, to fill. The employer is searching for elements of the set of all those who might be willing and able to fill the job(s) he has to offer. But do such sets exist? In certain important ways, the answer is "no." It is not generally possible to define in PTM work, who is "in the market." Partly this is because it is considered a liability to seem to be very obviously looking for something new. Many PTM workers play what Brown (1967) calls "reluctant maiden": it is suspected that those who are searching would not if they didn't have to, and wouldn't have to if they were good enough. But beyond this, many PTM workers cannot say whether they are in the market for a new job. I asked each respondent in my interview sample, "Have you recently thought about looking for a different job?" Although 38.4 percent answered that

1. Two arguments can be made against Table 11. One is that those using personal contacts are over-represented among those with high incomes and also among those not using information from a search; thus, the finding may be an artifact. It is not, however, since it holds nearly as strongly when we construct the same table, confining it to those who used contacts. The other is that those contacted by people they didn't know, to whom they had been recommended, may have been so contacted because they were searching. But when these respondents are shifted over to the "yes" category, the result remains substantially the same.

they had, only half of these indicated that they had "actually done anything along these lines." A frequent answer went something like: "Sure. You always think about different jobs. If you didn't, you'd be a vegetable." Nearly one in five of my sample, then, are definitely *not* searching for a new job, but are keeping their ears open for possibilities; if the right job came along, they might be convinced to take it. But how could we identify in advance which of these would be interested in a given job? Could we have identified in advance, for example, the one-third of newly hired faculty in American colleges in 1964-65 who, according to Brown (1967:47), "would not be teaching in higher education if an active recruiter had not interested them with a specific offer?"

Comparable to those not quite "in the market" but who might be drawn in under the right circumstances, are those jobs which have not been created, but could be if the right person were available to fill them. I will refer to such people and such potential jobs as quasi-searchers and quasi-jobs. In my sample, 35.3 percent of respondents reported filling jobs which had not previously existed and which represented work not being done previously, or not previously combined in the same job. Interviews suggest that roughly half of these were designed because of a specific need and that some search went on to fill them, but that about half would not have existed had the right person not come along to fill them. Little or no recruiting was done for these jobs.²

Is it a coincidence that the proportion of jobs being filled which are quasi-jobs is about the same as the proportion of PTM workers who are quasi-searchers—about 20 percent? If quasi-jobs which become actual ones are filled by quasi-searchers, it would be a great help for "search" models, since such jobs and men could then be segregated from the rest of the normal search process in labor markets, and their peculiar behavior analyzed separately. Evidence does not support this hypothesis, however. Sixty-five percent of

2. Of course, the numbers here are too small to be taken as more than suggestive, and the fact that this information about the demand side of the labor market came from employees rather than employers gives a further reason for caution.

those holding newly created jobs ($N = 94$) reported that they were searching actively for a job before taking this one.

A very important part of labor-market behavior is thus described inadequately by search models. This is especially significant in view of the finding that those least involved in search behavior are over-represented in jobs of the highest income level. Even if search models were adequate, the habit, ingrained in economic theory, of looking separately at the supply and demand sides of a market would make them difficult to apply. Between jobs and men, a *matching* process goes on, which search models do not treat explicitly (see White 1970, ch. 8). How is the "search" of suppliers supposed to be coordinated with that of demanders? Stigler discusses both types, while Brown and McCall confine themselves to the problem of the workers seeking jobs. In traditional economic analysis, supply and demand *may* be analyzed separately because they are united via the medium of price; equilibrium prices clear the market and render superfluous a discussion of how buyers and sellers find one another. Of the authors surveyed, only Holt and David (1966) attempted to explain how the searches of employees and employers are brought together; to do so, they fell back on the notion of price. Their idea is that those who are unemployed, and those who control vacancies, each engage in "random" search. Each starts out knowing what wage he will offer or accept. Those who encounter one another are matched if the wage offered is within the range of the acceptable wage. As workers continue to search, they are said to reduce their wage demands, and as job-controllers continue to search, they increase their offers (and/or lower standards). "Stochastic equilibrium" is ultimately reached.

Unhappily, the model fails even from the standpoint of economics. Price is well-known not to behave empirically in labor markets as described. Lester concludes that the theory "applies rather widely to the pre-1940 situation and to some industries still, such as agriculture, domestic service and other types of small-scale enterprise, where seniority, promotion ladders and unions are absent. Otherwise the theory lacks relevance" (1966a:119). That is, employers are generally prevented by a host of institutional

constraints from adjusting wages upward and downward as jobs are easier or harder to fill.

If price does not match men with jobs, we are left with the question of what does. The argument of the present study is that the relevant factors are social; that job-finding behavior is more than a rational economic process—it is heavily embedded in other social processes that closely constrain and determine its course and results. It is the purpose of the present study to elucidate such processes. Even if these *are* exogenous to the economic frame of reference, of course, there is no reason why they could not be used as input to an economic model.

Contacts and Their Information

Further analysis of the use of personal contacts requires that we move beyond the respondents themselves, to ask: 1) what kind of relationships typically existed between respondents and their contacts, and 2) how these contacts were connected to the job information that they offered.

Where respondents found their current job through a personal contact, I asked: "How did you happen to know this friend?" Though responses were highly disparate, they can be reduced to two categories: 1) the person was a relative, a friend of the family, or a social friend; these I will call "family-social" contacts; 2) he was a person known from a work situation. Logically, of course, the two categories are not mutually exclusive; in practice, however, they are nearly so. In the interview survey, respondents were asked whether they ever saw their personal contact socially. In cases where the primary relationship was a working one, 88.9 percent answered "never" or "rarely." The few ambiguous cases have been coded in accordance with what seemed to be the primary aspect of the relationship—occupational or social. The issue was nearly always clearcut. "Teacher" is somewhat of an intermediate category, but is actually much closer to "work contacts," because two-thirds of those who reported using teachers as contacts are currently college professors. When high school teachers were used as contacts, some specialized field, such as art, was usually involved, and the contact again seemed primarily occupational. Hence, teachers have been classified as work contacts.

Of the individuals who found their job through a contact, 31.4 percent indicated that the contact was a family or social one; 68.7

percent named a work contact—11.8 percent a teacher, 56.9 percent other work contacts ($N = 153$). In the interview sample, respondents were asked whether *they* had recently told anyone they knew about a job; those who had, indicated, similarly, that the person told was a family or social contact of *theirs* in 34.1 percent of the cases ($N = 44$). Thus, the figure for family-social contacts seems to be fairly stable, though this is hardly a conclusive test.

While this result may be congruent with a general expectation that, in PTM work, family and social contacts are not as useful as in less “modernized” sectors of the economy, such a conclusion should not be drawn until comparable data are available for blue-collar workers. Actually, it is hard to know what baseline to use for comparison, since the sociological or economic theories currently in use afford only vague predictions on such matters.

Some insight may be gained, however, by comparing the incidence of various categories of contact in different subgroups of the sample. Table 12 shows that those who are younger, who grew up in Massachusetts, and whose job is located in Newton or a contiguous town, are considerably more likely to use family-social contacts. All three groups are comparatively badly placed in the metropolitan Boston job market.

Younger workers, whose careers are still taking shape, have not yet acquired as large a number of professional colleagues who can be of assistance as have those who have been working fifteen or thirty years. In Chapter 1 we saw that younger PTM workers are less likely, in general, to use personal contacts. Now we see that when they do, the contacts are more likely to be friends and relatives than professional ones. The effect is even stronger if we divide the sample into those holding first jobs, and those holding subsequent ones: 63.6 percent of the former used family-social contacts; for the latter, the figure is 26.8 percent ($N = 67$, interview sample only).

That natives of Massachusetts are more likely to have used family-social contacts seems plausible; those who have left their home state may have left most of their extended family behind, and not yet established firm social ties in Newton. This is especially

Table 12. Proportion of sample subgroups finding job through family-social contacts.

Subgroup	Used family-social contacts	Total	N^a	p
Those whose age is—		31.6%	152	0.15
Under 34	38.0%			
34 or over	25.9%			
Those who grew up in—		31.6%	152	0.004
Massachusetts	47.6%			
Other states in North	17.8%			
South and West	28.6%			
Outside U.S.	11.1%			
Those whose job is—		31.4%	153	n.s. ^b
In Newton or contiguous	41.0%			
In Boston-Cambridge	30.0%			
In another community				
in Massachusetts	25.0%			
Outside Massachusetts	0.0%			

^aIncludes only respondents finding current job through contacts.

^bSignificance levels of 0.20 or less are reported; otherwise n.s. (= not significant) is indicated.

likely since most non-natives in this sample are recent migrants. Nevertheless, literature on working-class patterns might lead us to expect something different. In “chain migration” (MacDonald and MacDonald, 1964), individuals move to another area in the train of others—family and social contacts—who have moved there before them, and who smooth the way in finding housing and employment. This kind of migration appears, then, to be atypical of the upper-middle class.¹

I would argue that what this finding reflects is the tendency of the more provincial members of the sample, in the sense of being natives to use such contacts more often: it is nearly as strong in the older half of the sample as the younger, and even stronger among the upper half in income than the lower half. It can therefore, not be an artifact of heavy incidence of Massachusetts birth among the young or low-income members of the sample, though such incidence exists.

tied to a local area, to make use of family and social contacts. This suggestion is further supported by the finding that those working locally are most likely to have been channeled to their job via this route. An important question is whether this provincialism is related to the desirability of one's labor-market position.

First, it is of interest that 38.8 percent of those who reported searching actively for their present job used family-social contacts, as compared to 21.2 percent of those who reported no such search ($p = 0.03$).² This suggests that the use of family or social contacts is less natural than that of other types; it is more likely to be resorted to in situations where there is time pressure. Those who searched actively probably had some good reason to do so; it can be assumed that, compared to those who found their present job without a search, they were more reluctant to remain in their previous job, or did not have the option. (For example, only 11 percent of the sample reported a period of time between their previous and current jobs when they were not working. Of those who searched, however, 15.4 percent reported such a period, but only 1.4 percent of those who did not search ($N = 237$; $p = 0.003$). More directly, 70.0 percent of those who reported this period of unemployment, compared to 28.6 percent of those who did not, had used family-social contacts ($N = 136$; $p = 0.02$; counting only those who used contacts). Under the circumstances it is not surprising that they would turn to individuals closer to them, who would be more motivated to help. When there is less pressure, information through work contacts is more common.

Two further findings support the hypothesis that those with access to better jobs are more likely to use work contacts: these concern education and income. Educational level makes no difference until we reach the people who hold doctorates or law degrees; 18.9 percent of them, but 38.0 percent of others, used family-social contacts ($N = 153$, $p = 0.007$). There is also a strong tendency for the use of family-social contacts to decrease as the prestige of college

2. Alternatively, 70.2 percent of those using family-social contacts were actively searching compared to 50.0 percent of those using work contacts.

Table 13. Type of personal contact, by level of income of respondent from present job.

Type of contact	Income			Total
	\$10,000 or less	\$10,000-14,999	\$15,000-24,999 or more	
Family-social	42.9%	28.6%	30.4%	20.0%
Work	57.1%	71.4%	69.6%	80.0%
<i>N</i>	35	49	46	20

$p = n.s.^a$

^aSignificance levels of 0.20 or less are reported; otherwise n.s. (= not significant) is indicated.

awarding B.A. increases. (For the basis of prestige measurements, see Table 8.) Table 13 shows that jobs in the lowest income category are most likely, and those in the highest, least likely to have been found through family-social contacts.³

Having established some findings concerning the relationship between respondent and contact, I will now trace the connection between contact and job information, but it will first be useful to make further distinctions within the category "work contacts." This category can be subclassified into: 1) employers, including

3. One interesting finding may be added to the above discussion—it seems unrelated. I indicated in the previous chapter that none of the major three religious groups was more likely than the others to use personal contacts. However, when we confine ourselves to those who found their jobs through contacts, Jewish respondents are more likely to use family-social contacts than are Protestants or Catholics (36.5 percent as against 30.2 percent and 27.1 percent). Common assumptions about the importance of family ties and close-knit community structure in Jewish culture may help explain this. It is all the more remarkable when one considers that Jews in this sample are generally over-represented in those categories of people prone to use work-contacts; they are the least likely of the religious groups to work in Newton (and contiguous cities), least likely to be holding first jobs, most likely to hold a Ph.D. or LL.B., most likely to have earned a B.A. from a high-prestige college, and, as a group, show the highest average income and age of the three. Only in the proportion who have grown up in Massachusetts (50.0 percent, compared to 27.3 percent of Protestants and 60.2 percent of Catholics,) do Jews not fall into the category that leads one to expect heavy use of work contacts.

direct supervisors; for the mail survey, this was coded from the response "I once worked under him"; 2) colleagues within the same company; 3) colleagues in different companies and 4) teachers. These accounted for 21, 36, 25.7 and 17.3 percent, ($N = 105$) respectively, of all work contacts.⁴

Respondents were asked, in all cases where contacts were used, how the contact knew about the job. 33.1 percent indicated that the contact was the new employer himself; 37.7 percent said that the contact knew by virtue of working in the same firm where the job opened up, though not as employer; 19.9 percent described his knowledge as resulting from being a "business friend of the employer." Other answers accounted for 9.3 percent remaining. Table 14 shows, for each type of personal contact, how the contact knew about the job. Important sequences can be partially reconstructed from this table. Consider first those whose contacts were employers (in some job previous to the current one). It is clear enough in such cases how the respondent was initially related to the contact person. It can also be seen that in two-thirds of such cases, compared to less than one-third, in general, these former employers knew about the new job because they were again the employer. This is sensible enough, since former employers are likely to be of higher status and position than other kinds of contacts, and thus more likely to be in a position to offer new jobs. The question of how the new employer knew about the new job does not, by definition, arise, making this the most straightforward possible sequence.⁵

Colleagues from different companies are also especially likely to transmit job information *qua* employer. While this finding is

4. This may be misleading, however; in the mail survey, the answer "I once worked with him" was interpreted to mean as colleague in the same company. In only 10.4 percent of the cases of work contacts did a mail respondent make it clear that the person was working in a different company; in the interview survey, by contrast, 50 percent of work contacts were colleagues from different firms. Thus, the figure given here probably underestimates the proportion of work contacts not working in the same company as the respondent, when the relationship was operative.

5. This situation is different from the category "returned to previous employer" often found in blue-collar studies, in that respondents here are not returning to a company previously worked for; rather, the former employer has changed companies.

Table 14. Contact's connection to job information, by type of contact.

Type of contact	Work	Colleagues in different company	Total
Contacts	47.8%	38.5%	39.0%
Family-social	17.4%	31.5%	19.9%
Contact was teacher	11.1%	9.6%	11.5%
Contact was employer	44.4%	11.4%	44.4%
Contact was employer	66.7%	14.3%	4.8%
Colleagues in same company	62.9%	11.4%	23.8%
Colleagues in different company	14.3%	11.4%	11.1%
Was business friend	4.8%	11.4%	15.2%
Job opened up	33.3%	11.1%	18
Was employer	4.8%	4.8%	21
Was business friend	4.8%	4.8%	35
Other	4.8%	4.8%	26
Worked in company where	4.8%	4.8%	146

$p > 0.001$

reported only as being suggestive.) The following cases, which resulted in satisfying outcomes for the respondents, illustrate the point:

Case #5 (Pilot Study): George C. was working as a technician for an electrical firm, with a salary of about \$8000, and little apparent chance for advancement. While courting his future wife, he met her downstairs neighbor, the manager of a candy shop, a concession leased from a national chain. After they were married, Mr. C. continued to see him when visiting his mother-in-law. The neighbor finally talked him into entering a trainee program for the chain, and arranged an interview for him. Within three years, Mr. C. was earning nearly \$30,000, in this business. (He found his story as remarkable as I did, saying: "Every morning I pinch myself to see if it's still true!")

Case #6: Herman D. was the owner of a fruit and vegetable store, which he sold (at age 45) because of ill health. He took a vacation; meanwhile his brother, a business executive, attended a meeting where a colleague mentioned that he was looking for someone to do inventory management. Mr. D. had done similar work before buying his store, and his brother therefore suggested him. He was hired several days later.

Case #7: Gerald F. was a salesman for a wholesale liquor distributor. A friend who was a doctor asked him if we would be interested in managing a nursing home, and if so, to put together a resume. One of the references Mr. F. used for the resume was his wife's cousin, owner of a fashionable antique shop. When the nursing home job didn't come through, the wife's cousin, now aware that Mr. F. was considering changing jobs, offered him a job as business manager of his shop, which he accepted.

It is not surprising that a major change in type of work would not be mediated through work contacts. The people one meets in the course of his work are naturally those in roughly similar or perhaps complementary lines of work. Opportunities they are able to make possible are highly likely to involve more or less similar activities to those one already is engaged in. Social and family contacts, on the other hand, may have little in common occupationally. Laumann found, for instance, in an intensive study of

somewhat problematical, it may be that higher status people are more likely to be the ones who develop contacts outside their own company. Their concerns are more general, requiring them to deal with the environment of the organization more frequently than those with a more restricted purview. This would accord with a general finding in sociological studies that individuals of higher status have wider social contacts (Homans, 1950:144-145).

Former teachers of my respondents were especially likely to pass information gained by being "business colleagues" of the employer. Since "former teachers" consists mostly of college teachers, this is readily explicable in terms of the tendency of professors to align themselves more with members of their own field than with any particular institution at which they happen currently to find themselves. Thus their awareness of the employment situation in other departments in their field is much greater than is the knowledge of the members of most organizations about the situation in other organizations. Research on "professionalization" might lead us to expect this pattern generally for professionals, more than for technical or managerial personnel. (See Blau and Scott, 1962:60-74, 244-247.)

Especially interesting in Table 14 is the strong tendency of family-social contacts to be passing on job information obtained more because of proximity to the situation—working in the same company—than because of any particular control over it. This accords with my argument above that use of family and social contacts is, in some sense, a less natural method than use of work contacts. One winds up, even when the method works, having to settle for information that is not really from the "inside," and may eventuate in a less lucrative placement than if work contacts had been available.

While family-social contacts may not, *in general*, lead to the best jobs or be the most efficient type of contact, they do appear to be highly satisfactory in some cases. There is evidence, for instance, that such contacts are especially likely to have been used when an individual has made a major change in his *type* of work. (Because of the small number of such cases in this sample, this relationship is

friendship patterns in Cambridge, Massachusetts, that "a relative reported as a friend is more likely to be higher or lower in status (not in the same occupational category) than the respondent, whereas a nonrelative reported as a friend is more likely to be in the same occupational category as the respondent" (1966:70).

The most general formulation would suggest that one's probability of making a major occupational change is roughly proportional to the percentage of one's personal contacts who are in occupations different, in a major way, from one's own. Any basis for personal relationship other than occupational activity increases the proportion of such friends; kinship is one example of this phenomenon, and as such, it may remain rather important in a society where the common assumption is that kinship has declined in its economic functions. Social acquaintance on any basis other than occupational should serve a similar function. Friends from fraternal organizations, sports, recreational or hobby groups, neighborhood, college or summer vacations, to name a few possibilities, may all be expected to be over-represented as the operative personal contacts in major changes of work type.

Having described the nature of the connections between respondent and contact, and between contact and job-information, I must now pay closer attention to those factors that activate and/or facilitate the flow of information through these channels. The economist S. Ozga (1960) has proposed the model of information flow in market structures which comes closest to my findings. His assumptions are quite different from those of other economists described in Chapter 1, who posit that information moves via search: he assumes, rather, that it moves entirely by diffusion through social processes *unrelated* to market behavior. Each person is assumed to pass the relevant information to some fixed proportion of all those with whom he has contact; random mixing is assumed in the population—that is, the probability of telling someone who already "knows" is exactly equal to the proportion in the group who already do "know" (1960:31). (This implies that the people who have told *you* are no more likely to have told your friends than anyone else in the population; but since people who are friends have more overlap in their acquaintance circles than those who are not, the assumption is an idealization [See Rapoport 1963].) Given this fixed proportion, and the number who "know" initially, it is easy to compute, by differential equations, the number who will "know" after a given time period. Under these assumptions, the entire group will ultimately receive the piece of information in question, the time elapsed before this depending on values of the two parameters.

The model is made more realistic by adding population growth and attrition to the analysis. Ozga shows that even if advertising

is introduced to offset the influx of new, ignorant members and the outflow of those *with* the information, imperfect markets *necessarily* result—that is, in the more realistic model, there is no tendency for the information, even theoretically, to reach the entire population. The proportion reached depends on the relative values of the four rates: population growth and attrition, information spread, and advertising. He proceeds to indicate how his ideas can be integrated into the standard supply-demand, marginal analysis of neoclassical economics.

This account agrees with mine in that rather than being mediated by search, I find that much labor-market information actually *is* transmitted as a byproduct of other social processes. But the model probably would work better (and is, indeed, intended) for commodity markets than for labor. There, one can make rough assumptions like that of people passing on information about commodities to a fixed proportion of all contacts; in labor markets, however, it seems clear that much of the information passed is clearly earmarked for a given person, rather than being spread at random. In labor markets, moreover, the time dimension in Ozga's process is truncated. Most products continue over a substantial period to be offered at a similar price, so that his equations, predicting the ultimate proportion hearing of them, may run their course. But once a *job* is taken, information about it no longer is of interest or value, and, in practice, only a tiny proportion of those who might plausibly fill any given job ever hear of it.

We must, therefore, begin to ask specific questions about under what circumstances people are *motivated* to give job information to their friends, and whether some of one's contacts are more "strategically" placed to provide information than others. These two questions interact. A natural *a priori* idea might be, for instance, that those with whom one has strong ties would be more motivated to help with job information. There is, however, a structural tendency for those to whom one is only *weakly* tied, to have better access to job information one does not already have. Acquaintances, as compared to close friends, are more prone to move in different circles than one's self. Those to whom one is closest are likely to

have the greatest overlap in contact with those one already knows, so that the information to which they are privy is likely to be much the same as that which one already has (Laumann and Schuman, 1967; Rapoport and Horvath, 1961).

Rapoport and Horvath (1961) have shown that, other things being equal, information transmitted via weak ties would ultimately reach a larger number of people than if sent through strong ties; people strongly tied to each other would pass the information to the same people, given their greater overlap of contacts. The point is not that job information passed through weak ties reaches a larger number of people; usually it is earmarked fairly specifically for one person. But the number of people who are *potential* recipients of job information is greater when weak ties are involved, so that we would expect such ties to be especially useful.

Although it is difficult to talk precisely about the strength of an interpersonal tie, we may take as a crude measure of that strength the amount of time spent together by the two people.¹ Respondents in my survey were asked how often they saw their personal contact around the time that he passed on job information to them. (It is possible, of course, that someone who is not seen very often *now* was once a close friend, and that the tie is still perceived as much stronger than a contact-frequency measure would suggest. Relations of adults with parents are typical of this situation. My impression from interviews, however, is that few or none of the cases reported here fall into this category.)

I have used the following categories for frequency of contact: "often"—at least twice a week; "occasionally"—more than once a year but less than twice a week; "rarely"—once a year or less. Of those in the interview sample who found their job through contacts, 16.7 percent reported that they were seeing their contact "often," 55.6 percent "occasionally," while 27.8 percent saw him "rarely" ($N = 54$). The skew is to the weak side of the continuum. Moreover, those who found their job through weaker ties reported much more

1. A more comprehensive definition, and discussion of the relation of weak ties to information flow is given in my paper "The Strength of Weak Ties" (1973).

often that their contacts "put in a good word" for them, as well as telling them about the job. *All* of those who saw their contact "rarely;" 89.7 percent of those who saw him occasionally; and 66.7 percent of those who saw him often indicated that he did so ($N = 53, p = 0.04$). This is a clear indication of the primacy of structure over motivation; close friends might indeed have been more *disposed* than acquaintances to use influence, but were simply less often in a position to do so.

The paradox that acquaintances are more likely to pass job information than close friends is partly resolved by the finding that when weak ties are used, respondents are not likely to be under any particular pressure. None of those who saw their contact rarely reported a period of unemployment between their present and previous job; but 4.2 percent of those seeing him occasionally and 20 percent of those seeing him often report such a period ($N = 50, p = .07$). When a respondent was in real job trouble, therefore, close friends were more likely than acquaintances to have helped him with job-information. Users of strong ties are also likely to be younger than those using weak ties. Partly this is because they are more prone to family-social contacts, which are generally stronger than work contacts.

Aside from other reasons so far cited, there may also be a general reluctance to find work through close friends because it would complicate and strain the relationship too much. One respondent who, after being urged for some years, did finally take a job in a close friend's company, explained that he had held off for so long because his new boss "was a friend, and I wanted to keep it that way."²

2. An alternative reason to expect predominance of weak ties in transfer of job information has been suggested to me by Donald Light. He points out that if most of the people one knows are acquaintances, we would expect, on a random model, that most of those passing job information would also be acquaintances. Base-line data on acquaintance nets of individuals are lacking, so that this must remain inconclusive. But even if the premise is correct, one might expect nevertheless that greater motivation of close friends would overcome their being outnumbered. Different assumptions would yield different "random models"; it is not clear which one should be accepted as a starting point.

One might, at this point, reasonably wonder what *does* motivate the passing of job information, if not the strength of interpersonal ties. Respondents did not really know what to say to this question; usually they simply felt their informant was just "being nice"; one asked: "didn't you ever want to do a favor for somebody?" There is no reason to doubt that such motivations do exist; but they exist in a context. At the minimal level of self-interest, those offering information about jobs related to their own are presumably offering them to individuals they would *like* to work with. If, as in many organizations, there is internal factionalism, those passing job information may be attempting to recruit allies.

More generally, those who are able to recruit competent personnel may find their reputations enhanced; they will appear to be people who know how to get things done. Tangible rewards may sometimes be involved: in times of short labor supply, employees often receive "bounties" for recruitment. One respondent reported that his informant was fund-raising for a large organization, and that if the employer to whom he had referred him (the respondent) was happy with his work, and that of others sent to him by this route, he would be more easily convinced to make a substantial contribution. Aside from reputation and reward, a general sense of efficacy is involved; one person who makes a habit of passing on job information was referred to as the "kind of guy who likes to put people in places."

The above discussion can be put in a more macroscopic perspective by looking at the flow of a particular piece of information from its origins—in this case, with a prospective employer—to its destination, the subsequent job-incumbent. We can imagine tracing, for each person finding his job through personal contacts, the chain through which the information reached him; that is, if the employer told A that there was a job opening, and A told B who told C who told D who told my respondent, we have a chain with four intermediaries between origin and destination. I will argue that the number of intermediaries is an important parameter in the process, and will henceforth designate it by the expression "chain length."

ment services; and 2) diffusion of information through long chains of personal contact. In the United States, the mass media clearly do not fulfill this role. It is therefore interesting to ask to what extent long chains might.

A priori, it is perfectly plausible to suppose that many cases resemble the following one:

Case #8f: Karl E. is an engineer just out of college. His father, also an engineer, heard from a colleague that there was an opening in a nearby company. The colleague had heard about this opening from a salesman who had visited that company and heard of it from a secretary. The secretary had heard from the employer. K.E. applied, and was later accepted for the job.

This is an example of a chain of length four; it is fabricated, however, since *no chains as long as four were found in my study* (interview data only). Chains of length zero accounted for 39.1 percent of the cases; 45.3 percent had length one, and 12.5 percent length two; chains longer than two accounted for 3.1 percent of the cases ($N = 64$).⁴

It is interesting to examine the characteristics of search procedure and jobs obtained according to length of information chain; if perfect labor markets actually could be achieved via long chains, as the predominant case, this analysis would give us some inkling of

4. Since all information was collected from the respondents themselves, and not from their personal contacts, or others along the chains, some bias against the finding of long chains is introduced. If a chain were actually of length six, for instance, it is unlikely that a respondent would know more details than the identity of the person from whom his personal contact got the information. The exact length could not be coded without interviewing further along this chain of information flow; I have coded such chains as simply "greater than two." In a pilot study, I found that it was possible to interview, by telephone, everyone along the information chain until the actual employer was reached. A complete account of information flow, along with many interesting details not otherwise available, can be gotten in this way; at each step, respondents are surprisingly reluctant to divulge the name of the next link. But I did not have the time or resources to follow this procedure in my overall study. It is likely that the bias introduced is small, since in nearly all cases respondents were able to supply enough detail to leave no doubt that almost all information chains are of length 0-2; in such cases, it seems reasonable that respondents *would* be able to give a detailed and accurate account.

(Coding rules for chain length must deal with certain ambiguities. An account of these, and of the rules adopted, may be found in Appendix B.)

In the first instance, chain length gives a rough, conservative estimate of how many people have *ever* heard of the job opening filled by my respondent. If we assume that each person in such an information chain tells some fixed number of other people about the job he has heard about—call this number "N"—and if the chain is of length L, as defined above, then the number of people who finally hear about the job, including the employer, is the partial sum of a geometric series: $1 + N + N^2 + N^3 + \dots + N^L + 1 = (1 - N^{L+2})/(1 - N)$. This increases very fast, so that if the chain is of length five, and each person tells three others *who have not already heard* (a crucial assumption), more than a thousand people will have heard. If four people are told by each person, the total exceeds 5000. With $L = 8$ and $N = 5$, more than a million people receive the information. In real social networks, of course, some of the people told will have already heard from others. In addition, since, as I have argued, job information tends to be specifically earmarked for particular people, the assumption of a fixed number hearing at each remove is dubious. But if (as I will show below) the degree of "earmarking" is substantially less in long chains, the overall qualitative conclusion will still be correct: job information in long chains will reach much larger numbers of people than that passed through short chains.³

One reason to be interested in how many people hear about given job openings is that some comparisons then become possible with the perfect labor market of economic theory. That theory proposes no mechanism to account for the presumed wide spread of information in the labor market. Only two possibilities seem open: 1) mass media—including newspapers, radio-television, and public employ-

3. It was beyond my scope to attempt directly to find out, for particular jobs, how many such people there were; this would not be a simple number to find. The present measure is conservative because, as shown below, few individuals actually *find* their jobs through long chains; thus a study considering only chains by which people do find jobs has a built-in bias against long ones, as well as against any other unsuccessful ones.

Table 15. Relation of length of information chain to certain characteristics of respondents.

Proportion of each chain-length category who—	Chain length			N	p
	0	1	2 or more		
Are under age 34	28.0	48.3	60.0	64	0.15
Are very satisfied with job	76.0	53.6	40.0	63	0.08
Are in lowest income group (less than \$10,000)	16.0	25.0	30.0	63	n.s. ^a
Searched for job	48.0	72.4	77.8	63	0.11
Have recently thought about looking for a new job	20.0	34.5	70.0	64	0.02
Are unemployed between jobs	0.0	8.7	20.0	55	0.12

^aSignificance levels of 0.20 or less are reported; otherwise n.s. (= not significant) is indicated.

what such markets would look like. Table 15 shows that those in longer chains are younger, more dissatisfied, more poorly paid, more likely to have searched for the job held (and to be considering leaving it), and more likely to have been unemployed before taking the present job.

As these differences might lead us to suspect, different kinds of processes are involved in chains of different lengths. In one-chains or longer, for instance, family-social contacts are much more likely to have been used than in zero-chains; moreover, personal influence is more likely to be exerted in short chains. All of those in zero-chains said that their contact had "put in a good word" for them, 96.3 percent of those in one-chains, but only 60.0 percent of those in two-chains or more ($N = 62, p = 0.001$). This is partly tautological: a zero-chain means that the respondent's contact was the employer, who is here counted as having "put in a good word" with himself. But the large difference between one-chains and others is not attributable to this definition. Nor is it surprising that those contacts who have gotten information in a more round-about way are less likely to be in a position to exert any influence.

This situation is indeed closer to the ideal market of economic theory: information is transmitted free of influence on the recruiting process.

In brief, those using long information chains are less well placed in the labor market than those using short ones. As we put together their profile, it seems that finding jobs through long chains is more like finding them by formal means than by contacts. In an important sense, we can say that formal means are the limiting case of long chains of contacts; the longer the chains, the more people hear, and the less important any particular tie between individuals is in the transmission of the information. As with rumors, which move through long chains, it matters little from whom I hear the rumor since it is being so widely transmitted that I am likely to hear it from others even if I don't hear from some particular person. It becomes like formal means also because the process is less likely to involve influence. Just as reading about a job in the newspaper affords me no recommendation in applying for it, neither does it to have heard about it fifth-hand.

Thus, the two ways suggested earlier as mechanisms for labor markets to approach perfection—mass media and long chains—both entail similar search procedures and degrees of job satisfaction for those using them. Unless radical steps were taken to eliminate features attendant to those mechanisms that could establish perfection of markets, few in those markets would find the situation to their liking.

Chains of length two present an interesting intermediate case between those of length zero and one, where the direct contacts of the respondent are of prime importance, and the longer chains that are not so different from formal means. As such they deserve closer scrutiny. The following cases of two-chains present useful illustrative material:

Case #9: Lawrence F. was a pediatrician in private practice. A small hospital decided that it wanted to open a pediatrics section, and asked a doctor who occasionally consulted with them on related problems to recommend someone to head such a section. He didn't know of anyone, but suggested that they ask a friend of his,

teaching at a large hospital nearby. The friend recommended Lawrence F., and urged him to take the job; (Dr. F. had been trained under him). He did so.

Case #10: Norman H. was about to finish a Ph.D degree in land economics. A Boston area university had received a foundation grant with which to hire several faculty members in this area. When a foundation representative came for a site visit, they asked him if he could suggest potential candidates. He suggested that they contact an acquaintance of his who was chairman of the economics department at Mr. H.'s university, as he would be familiar with younger candidates. The chairman recommended Norman H., who subsequently took one of these positions.

Organizations moving into new areas are less closely connected, socially, to the relevant networks of individuals for the positions to be filled; they are thus likely to need more intermediaries to bridge the social-structural gaps. To the extent that their information chains become longer, the procedure comes to resemble the use of, say, advertising. The two-chain produces candidates about whom their information can be trusted better than if the candidates came with no introduction at all, but about whom more could be known with confidence if they had come recommended directly by the person initially asked. One knows roughly how well to trust the recommendation of the person one initially asks for one, and also to what extent that person is likely to feel obligated to recommend only someone especially well qualified. One knows neither of these for friends of the first person, with the same degree of confidence. With still another intermediary—chain length three—the feeling of confidence in a recommendation might well be little more than if the candidate had answered an advertisement.

Similar comments apply to the individual hearing of a job-opening through a two-chain: the degree of confidence he has in what he is told about the job may be more than if he had found it through an impersonal intermediary, but the fact remains that no one whom he knows personally has direct inside information to offer him in this case. (This will be mitigated, to some extent, if the organization is well-known and can be judged by "objective" criteria.)

The strength of one's tie to one's personal contact is also related to chain length. Of those using contacts they had seen rarely, none reported chains of length greater than one, whereas 14.3 percent of those who saw their contacts occasionally, and 37.5 percent of those seeing them often, reported two-chains or more ($N = 51, p = .09$). If it is correct that one has a greater potential exposure to information through weak ties than through strong ones, this pattern would be expected. The following examples are suggestive:

Case #11: While a graduate student in chemistry, Mark G. heard from a close friend that a local junior college was opening a natural sciences department. His friend had heard this from a girl he knew slightly, at a party; the girl taught English at the junior college. He applied, was interviewed and hired.

Case #12: Robert K. was an engineer at firm X. A close friend of his, also working at X, told him that an acquaintance working at firm W had said that anyone who wanted to switch jobs should contact him, and he would set up an interview with the employer. Mr. K. did so, and later took a job at W.

In both cases, information was passed through an acquaintance of a close friend of the respondent. If we consider those strongly tied to each other to be roughly in the same information pool, an equivalence class with respect to the diffusion of information, and those weakly tied to one another to be in different information pools, it would follow that those receiving information from close friends would tend to be in longer chains. In a certain structural sense, these two-chains can be considered one-chains, if we count as a link only the transmission of information between acquaintances and not between close friends.⁵

This reduction scheme is a reasonable device if we want to use chain length to estimate the number of people who ultimately hear

5. Ideally one would want to make this distinction according to whether one's friend had a substantial number of ties to individuals one did not know, or was mostly tied to the same people as one's self. The strength of tie is merely an indicator of this, but may be useful since it is generally impractical to collect the necessary detailed social network data.

The Dynamics of Vacancy Structure

about a given job, since it takes into account the fact that telling some close friend will result in much less spread of the information than if an acquaintance were informed. Such a method might be one way to handle the difficult problem of estimating the damping effect of an overlap of friendship circles on the otherwise exponential growth of number of people entering some diffusion process. Chain length, conceived in this way, bears an interesting and perhaps useful relation to "social distance," as this is usually thought of.

In this last chapter on short-term causation, it is useful to shift attention to the fact that one cannot enter a job that is already filled. We can ask, therefore, how the jobs filled by my respondents came to be vacated, or if new jobs, created. Broadly speaking, such an analysis need not be confined to the short term. Whether there exist vacancies or new jobs in a given industry depends on economic conditions over varying periods of time—especially on patterns of demand, investment, and training. These general trends, however, are unlikely to predict the existence of a vacancy in any *specific* job. This problem is attacked by White (1970) in a monograph on "vacancy chains." He conceives the appearance of a job-vacancy to draw in a new incumbent, who thus generates another vacancy in his previous job, which in turn draws in another incumbent, and so on, until some vacancy is filled by someone who, for whatever reason, does not leave one behind; the chain of vacancies is then ended. The model assumes that each position has as unique an identity as does the man who fills it. The creation of a job or the death (or retirement) of a man begins a vacancy chain; the "death" of a job or recruitment of a man from outside the system of jobs in question ends one.

The opening of any vacancy in the chain is due, in a clear causal sense, to the initial event in the chain; yet, it is highly unlikely that those filling such vacancies will be aware of this sequence. One may know that he is replacing K, and may even know that K left that job to replace L. The identity of M, the person replaced by L, is highly unlikely to be known. Similarly, one may know who replaces him in the job left, but probably not who replaces the

replacement, and so on. A specific analytical effort is thus required to reconstruct these chains of causality.

It would have been possible, in principle, to trace in detail the vacancy chains in which my respondents were involved, especially to see where they began, thus determining, in one sense of immediate cause, how their current job was opened. This procedure was beyond my scope, however, and I will thus limit myself to a discussion of the jobs that they took and the ones that they left.

Each respondent was asked about the vacancy status of his current job; the answers fell into three categories: 1) the respondent was replacing a particular person; 2) there were several jobs of the same type and the respondent's job was still another which was added on to these; and 3) the respondent was the first person to hold this particular job. Only in the first case can the respondent's mobility be said to have been caused by events in a vacancy chain. Proportions falling into each of the three categories are 44.9 percent, and 19.9 percent and 35.3 percent, respectively ($N = 272$). Brown, in his study of all college professors entering jobs in 1964-65, found similar figures: He found that 41 percent of vacancies were due to a predecessor's leaving, while 43 percent of jobs were newly created (1967:28). Such figures may be especially dependent on general economic conditions. One would guess, for instance, that the lower the level of aggregate demand, the higher the proportion of jobs that would be direct replacements. The proportion of new jobs in a system would also depend on the rate of technological change; the field of computer science has, for example, generated a new type of expertise, and thus continues to provide new types of jobs.

Certain properties of jobs and incumbents also affect the incidence of new-job creating. Table 16 shows that managers are more likely than technical or professional personnel to have new jobs created for them, and that professionals are most likely to be directly replacing individuals in a distinct position. White's data are drawn entirely from professionals—clergymen—and it may be that vacancy-chain analysis is especially relevant for professionals. Tables 17 through 19 show that the older the respondent, the

Table 16. Origin of job, by occupational category of respondent.

Origin of job	Occupation			Total
	Professional	Technical	Managerial	
Direct replacement	53.8%	26.2%	45.5%	44.9%
Added on	16.9%	40.0%	7.8%	19.9%
Newly created	29.2%	33.8%	46.8%	35.3%
<i>N</i>	130	65	77	272

$p < 0.001$

Table 17. Origin of job, by age of respondent.

Origin of job	Age		Total
	Under 34	34 or over	
Direct replacement	51.5%	38.1%	44.8%
Added on	26.5%	13.4%	20.0%
Newly created	22.1%	48.5%	35.2%
<i>N</i>	136	134	270

$p < 0.001$

smaller his firm, and the higher his income, the more likely he is, in each case, to be holding a newly created job. The way a respondent found out about his new job tells us a surprising amount about its vacancy status. The most likely way to find a job involving direct replacement is to apply directly to a company: 58 percent of jobs found this way are replacement jobs. Jobs added on can most probably be found by formal means: 31.4 percent of jobs found formally are added on. One's best chance of finding a job newly created is by using personal contacts: 43.8 percent of jobs found through contacts are newly created. (Cf. Table 3 and the discussion on pp. 12-13).

Table 20 analyzes, for those who found their job through personal contacts, the effect of the occasion upon which information was passed. New jobs were most likely to be created either when the personal contact took the initiative and didn't know

Table 18. Origin of job, by size of firm in which respondent is employed.

Origin of job	Number of employees in firm			Total
	Less than 20	20-99	100 or more	
Direct replacement	37.3%	46.3%	45.1%	43.1%
Added on	13.4%	17.9%	29.7%	21.3%
Newly created	49.3%	35.8%	25.3%	35.6%
N	67	67	91	225

$p = 0.02$

Table 19. Origin of job, by level of income from present job of respondent.

Origin of job	Income			Total
	Less than \$10,000	\$10,000-14,999	\$15,000-24,999 or more	
Direct replacement	62.3%	40.4%	37.7%	44.9%
Added on	21.7%	25.8%	16.9%	19.2%
Newly created	15.9%	33.7%	45.5%	35.8%
N	69	89	77	265

$p < 0.001$

whether the respondent was looking for a new job, or when the respondent and his contact were meeting for purposes *other* than the exchange of job information (including accidental meetings). This corresponds roughly to the category of people, discussed in Chapter 1, who received job information not connected to a search.¹

We may guess that when an employer has a new job in mind, one involving work not currently being done, or being done by several

1. The "roughness" of the correspondence is due to ambiguity as to whether to classify those in category 5 as having information related to a search or not. This point is discussed on p. 36 above.

Table 20. Origin of job, by nature of information—passing occasion.

Origin of job	Category of occasion ^a					Total
	(1)	(2)	(3)	(4)	(5)	
Direct replacement	55.1%	39.0%	21.1%	25.8%	53.8%	40.5%
Added on	8.2%	14.6%	10.5%	35.5%	7.7%	15.7%
Newly created	36.7%	46.3%	68.4%	38.7%	38.5%	43.8%
N	49	41	19	31	13	153

$p = 0.009$

^aCategories are as follows:

- (1) Contact approached respondent; knew he was searching.
- (2) Contact approached respondent; didn't know he wanted new job.
- (3) Contact and respondent met for purpose other than exchange of job information.
- (4) Respondent asked contact about job.
- (5) Stranger approached respondent on recommendation of contact.

different people, he may be more likely than otherwise to conceive the job *in terms of* the people with whom he is acquainted who might possibly fill it. Since most people are not actively seeking a new job at any given time, he is thus likely to think of people who are not actively in the market, and contact them. Alternatively, as occurred for several of my respondents, a meeting unrelated to an exchange of job information may crystallize, for an employer, an idea he has had in the *back* of his mind for some time, to start up a new type of work or a new branch of his company. In these cases, a showing of enthusiasm by the respondent, for the idea, redirected the purpose of the meeting and created a new job for himself.

Also, as Brown points out for college teachers (1965a:50-51) there is more pressure on an employer to hire a replacement for work that *was* actually being done until someone retired or left; new jobs, by contrast, can be left unfilled and uncreated until the employer is satisfied that he has found the right person. The procedure can then be more leisurely and is less likely to result from the search activity of potential employees. Some support for these speculations derives from the finding that for those finding jobs

through contacts and taking jobs newly created, the most common case is that in which the personal contact is the new employer himself. This occurs in 50 percent of the 64 cases.

Each respondent was also asked about the filling of the vacancy which he left behind, in taking his current job. Analysis of data resulting from this question does not apply directly to the question of how these respondents' mobility became possible. It will provide some general insight, however, into causal issues involving entire systems of jobs. Their responses fall into three categories: 1) the respondent was replaced by someone who does more or less the same work he did; 2) he was not replaced (in some cases the job was parcelled out to other employees; in others, simply dropped); 3) respondent does not know what happened. The proportions in each category are 55.1, 30.4 and 14.5 percent, respectively ($N = 214$).

Comparing these figures to those found when respondents were asked about the vacancy status of jobs they were filling, we may conceive a "demography" of jobs, where the "birth rate" is the proportion of newly occupied jobs which had no previous incumbent (that is, the sum of the jobs newly created and those "added on"), and the "death rate" is the proportion of jobs vacated that are left unfilled. In this sample, the respective rates are 55.2 and 30.4 percent. If jobs were dying faster than being born, the overall system would reach a rather depressed and stagnant state. As in population demography, given constant rates, the population size (that is, number of jobs) would fall toward zero, and unless the labor force fell similarly in size, unemployment would increase.²

But more is needed for a "healthy" economy than for the net increase in jobs to exactly parallel the number of new labor force entrants. It should be recalled that each job born triggers off a

2. To be exact, if J_i is the number of jobs existing at the beginning of time period i , D is the proportion of jobs vacated during this period which are left unfilled, and B is the proportion of jobs taken which are newly created or added on, then:

$$J_i = (J_{i-1} - DJ_{i-1}) + B(J_i), \text{ so that } J_i = J_{i-1} (1-D) / (1-B), \text{ and } J_i = J_0 [(1-D) / (1-B)]^i,$$

where J_0 is the number of jobs in the initial time period.

vacancy chain, and thus has a multiplier effect on mobility; the death of a job ends one, having a damping effect (see White 1970, chs. 2, 9). Thus, quite different levels of mobility are consistent with similar evolutions of system size, since these levels depend on both parameters (as well as on the tightness or looseness of labor markets). Readings on the birth and death rate taken periodically could indicate forthcoming changes in mobility rates.

In general, the issues are complex, and it is impossible, here, to offer a detailed account of the relation between these numbers and mobility trends. Empirical research would be necessary to determine the value of these suggestions. It may be that general economic trends could be related to a time series of the proposed index, in a useful predictive way. The relevant information could easily enough be collected as I have done; the appropriate sample is, as here, a random one of all those moving from one job to another over a given period of time. Such a group could be extracted as a subsample of the general population samples taken by various government agencies. A few coding rules would suffice: a job could be ruled "dead," for example, if unoccupied for a year or more.³

A more thorough idea about the nature of the vacancy chains in which my respondents are involved can be achieved by cross-tabulating the vacancy status of a current job with that of the previous one. In 26.2 percent of the cases, respondents are in the middle of vacancy chains: that is—they are replacing someone definite and being replaced in their former job; 20.9 percent and 7.6 percent, respectively, took newly created or added-on jobs, and were replaced in previous jobs, thus starting off a vacancy chain; 5.2 percent replaced someone but do not know if they were replaced (they are in a vacancy chain, but in an indeterminate position); 12.4 percent end vacancy chains by replacing someone but not being themselves replaced. No vacancy chains arise from the 13.4 percent and 4.8 percent of the cases where respondents

3. In a symposium on job vacancies sponsored by the National Bureau of Economic Research in 1966, a number of suggestions are made on the possible use of surveys of vacancies to indicate conditions in various sectors of the economy. But many "vacancies" have no real existence until they are filled; the present suggestion avoids this dilemma.

take new or added-on jobs but are not replaced in their old ones; 9.6 percent take new or added-on jobs but do not know whether they were replaced; thus we cannot say whether chains are generated or not ($N = 210$).

Adding up all those who are involved in vacancy chains in one way or another, we have 72.3 percent (over two-thirds).⁴ If it is generally true that such a large proportion of mobility in PTM work involves these chains, then the tools developed in White's monograph (1970) should have application far wider than the particular, narrow empirical frame (national churches and their clergy) that he chose for the initial testing and specification of the model. Note, however, that not all of those in chains are directly dependent on them for mobility: only those 43.8 percent ($26.2 + 12.4 + 5.2$) who replaced someone definite are. The rest are *generating* chains, thereby affecting the mobility of others.

It is of interest that those who are dependent on vacancy chains for mobility tend to receive lower salaries than those who are not. This trend is shown in Table 21 where those directly replacing someone are the ones dependent on vacancy chains. This finding is discussed further in the chapter on career structure.

My attempt to determine which *kinds* of jobs tend not to be filled after their incumbent leaves them found few consistent patterns. Partly, little can be said because my focus was on respondents' current jobs, and much less information was gathered on previous ones. One clear relationship is that technical jobs are least likely to be reported as having been re-filled; only about a third of such jobs are so reported, compared to about 60 percent of other jobs. This is probably due to the sensitivity of technical work to

4. White's coding rules would actually require all reported cases to be counted in vacancy chains. I have diverged in my usage of the term to include only those which involve the contingency of one man's mobility on another's. To code those taking newly created or added-on jobs and not being replaced as in vacancy chains may be appropriate in a system of definite jobs, such as the clergy studied by White. But the coding rule rests on the assumptions: 1) that the new or added-on job existed in a vacant form before it was filled, and 2) that the job left had a definite identity and was thus fillable, though not filled. I believe from my data on general PTM work that the first assumption is generally false; the second remains to be tested. (See White, 1970: Appendix C.)

Table 21. Income of respondent from present job, by dependence on vacancy chain.

Income	Dependent on vacancy chain for mobility?		Total
	Yes	No	
Less than \$10,000	36.1%	17.8%	26.0%
\$10,000-14,999	30.3%	36.3%	33.6%
\$15,000-24,999	24.4%	32.9%	29.1%
\$25,000 or more	9.2%	13.0%	11.3%
<i>N</i>	119	146	265

$p = 0.009$

fluctuations in aggregate and government demand. Many technical workers are involved on projects stemming from particular contracts; when these expire, they move on to a new project, derived from another contract. If the overall number of such contracts diminishes, many jobs may ultimately be abolished.

When a job concerns several different *functional* areas, it can more easily be split up and parceled out among various existing personnel; the person need not be replaced. One respondent referred to this as the "elevator-operator syndrome": if the elevator operator quits (assuming the elevator is not automatic), the work can't be parceled out. One either hires a new operator or uses the stairs. If, on the other hand, someone is doing both technical and sales work, two people can absorb the job, one the technical and one the sales part, without having each to double their current load. Other combinations appeared in my sample—technical + managerial work, and sales + managerial work—in which respondents indicated that the job was split along functional lines and parceled out to existing employees.

We can also imagine cases where one's work is undifferentiated but also easily split. One such case was reported by a respondent who had been responsible for supervising the research of ten individuals in an industrial laboratory; when he left, these ten were simply parceled out to other supervisors. But relatively few PTM jobs involve "piece work" of this kind.

A relevant strategy, then, for investigating this type of short-term cause of individual mobility would be, for a substantial number of cases, to trace the vacancy chains through which mobility became possible. To the extent that such chains are long and move far beyond the acquaintance circles of respondents, a more macroscopic level of causation is introduced here than I have discussed previously. What correlation would exist between distance in a vacancy chain and social distance in a more general sense (as measured, for example, by the shortest path of personal contacts needed to connect the two people in question) is far from clear on general principles, though some relation would likely be found.

Certain ambiguities could arise in our tracing procedure. One respondent reported, for example, that his job was one of *two* junior positions created when an older man retired; another said that he was able to enter his job only because another man, in an unrelated position, had left and freed vital facilities. In both cases the causal influence is clear, but does not fit cleanly into the framework of White's vacancy chains.

A more general strategy may be needed to cope with systems in which large numbers of jobs do not have identities as stable as those of particular men. One could then analyze the total number of tasks that organizations decide to perform, the total resources at their disposal, and determine how these two sets become partitioned into a structure of jobs, and how such a structure evolves over time. To a limited degree, this problem is tackled in an important but difficult operations-research issue called the "assignment problem" (March and Simon, 1958:23-25, 158). Such a procedure might be too complex to yield useful results; however, only further work will determine this.

Chapter

5

Contacts: Acquisition and Maintenance

In this chapter and the next I will take cognizance of the fact that some of the causes influencing respondents' current mobility extend back in time beyond the immediate period of that mobility. Discussions of mobility processes over time often involve "stochastic" models—that is, they deal with the probability of individuals in a given status changing to some other status during a specified time period. The question of "stochastic independence" arises: a system in which the probability of moving to any other given status is entirely unrelated to one's present status exhibits such independence. Not surprisingly, this situation is rare, since one's present status is likely to exert a considerable shaping influence on what possibilities will arise. The search for it stems from the analytical fact that it is mathematically simple; many theorems and formulas apply only if it can be assumed. The next simplest model is that which assumes a "Markov process."¹ In a Markov process, the outcome at each step is not independent of the previous one, but depends at *most* on its outcome; earlier outcomes have no influence. (Technically, this is "one-step" Markovian dependence; while it is possible to construct models which allow dependence two or more steps in the past, such models are very complex and have generally been avoided. Two recent attacks on this problem are McGinnis, 1968 and McFarland, 1970.)

Intergenerational mobility affords a useful example. Imagine a system of occupational statuses whose definitions are stable over a

1. A nontechnical account can be found in Kemeny et al., 1957: 171-177; more thorough treatments are given in Kemeny and Snell, 1960, and in Feller, 1957: 338-396.

long period of time; we may examine sequences of statuses in the male line. That is, consider the status of every male in the present population at age 35, say, and compare it to that of his father at this age, that of his father's father, and so on. Independence would require that one's present status be uncorrelated with that of his father or any preceding ancestor. The Markovian assumption is more realistic here: it would specify dependence on father's status but not on that of previous ancestors. There could, of course, be indirect dependence on previous ancestors, insofar as they helped determine father's status; but the question is one of whether all previous dependence can be "rolled up" into the status of the father. If knowing father's father's status affords predictive power beyond that known from father's, then neither the assumption of independence nor that of a Markovian process is satisfied.

Substantively, the question is one of how far into the past one need look to find causes of present events; to what extent are ongoing processes in a system limited by the history of that system. In the present case, the issue can be posed as follows; consider a career as a chain of events—a sequence of job-enterings by an individual. At each time when someone enters a job, there exist simultaneously a large number of other jobs he might also have entered, had he been properly connected. The assumption of independence would require that one's previous positions exert no influence on which of these jobs is taken. The extensive use of personal contacts acquired in the course of work casts considerable doubt on the independence assumption. Those who use formal means and direct application come closest to stochastic independence, but even for them, there is no guarantee that present or past jobs will not play an important role in whether they are *hired* for future jobs, however they hear about them.

The Markovian assumption would permit the identity of one's next job in a career to depend, at most, on one's present position. If it were correct, the present chapter would be superfluous. One way to examine the assumption, for my data, is to ask how long ago the personal contacts used in acquiring one's present job were met.²

2. The usual test requires that jobs be arranged into categories, such that the set of possible categories occupied does not change over time. Only then can

Few of these contacts were of recent vintage: 30.3 percent had been met within two years of the time of the respondent's mobility, 39.4 percent within three to seven years, and 30.3 percent were known eight or more years ($N=66$, interview subsample).

It is of special interest that one's likelihood of being "very satisfied" with his job rises as contacts are of longer standing: the percentages are 45, 60 and 80 for the three categories of contact length ($p = 0.06$; $N = 65$). Income figures show a similar though less strong relation. We can also ask whether the contact was met in the course of the job held immediately prior to the most recent mobility, or earlier than this. Excluding those holding first jobs, 47.2 percent of remaining respondents had met that contact in their immediately previous job, and 52.8 percent earlier ($N = 53$). Of those met earlier, 61 percent were met before one's first job, 39 percent during a job earlier than one's immediately prior one. These percentages remain quite constant across age groups and different stage of career. Intensive attempts to find subgroups in the sample which differed markedly on this variable failed. The only apparent relationship is that work contacts are much more likely than family-social ones to have been acquired during the immediately previous job (56.8 percent compared to 5.3 percent; $N = 63$; $p = 0.001$).

Since the contacts named by respondents were not necessarily, or even typically, individuals recently met in straightforward job-related interaction, the question of how and when they were acquired as friends becomes problematic, as does that of how the contact was maintained over the time between first acquaintance and passage of job-information. Investigation of these questions constitutes an important aspect of the causal analysis attempted here, since the acquisition and maintenance of these contacts is a direct cause of subsequent mobility.

stable probabilities be computed for the movement from one category to another. Single jobs cannot constitute such categories because they are born and die with some frequency, and because there would be too many, each being unique. It might be desirable to divide up the jobs according to some measure of their location in the social structure, to facilitate the type of question I am asking, but no clear criterion of "location" in this sense is available; thus I have avoided the usual categorizing.

In Chapter 1 I divided personal contacts into family/social and work-related ones. In the interview subsample, more detailed information was obtained, from which we can reconstruct the origins and maintenance of contacts. Of the 31.4 percent of contacts who were family/social, 16.5 percent were met because they were relatives or friends of relatives, 9 percent were fellow students of the respondent at some stage of his educational career, and 5.9 percent were social friends met in miscellaneous ways (grew up in same neighborhood, friend of friend, neighbor). Of the 68.7 percent who were work contacts, 13.7 percent had been teachers, 27.5 percent had worked in the same company, and 27.5 percent in different companies, at the time of first meeting. These figures are based on a sample of 66 and, as such, can hardly be taken as more than suggestive.³ Accordingly, I will present, here, an extended series of case abstracts, illustrating the content of these various categories. This detail will suggest hypotheses for further testing. This method is particularly useful for discussion of how contacts are *maintained*. This question, though important, has been thoroughly neglected by sociologists, and it is not even clear what the appropriate categories would be for a statistical breakdown, were the data more complete. The following four cases illustrate how kinship ties affect the flow of information and influence:

Case #3 (see also p. 34): Edward A., during high school, went to a party given by a girl he knew. There, he met her older sister's boy friend, who was ten years older than himself. Three years later, when he had just gotten out of the service, he ran into him in a local hangout. In conversation, the boy friend mentioned to Mr. A. that his company had an opening for a draftsman; Mr. A. applied for this job and was hired.

Case #13: While Michael E.'s older sister (by five or six years) was in high school, he met George W., a friend of hers. Some years later,

3. The proportion of family/social contacts in the interview subsample is almost identical to that in the overall sample. In the mail survey, however, only 5.8 percent of contacts were met via the family, and 24.4 percent as social friends (N=86). Some of this difference must result from the alternatives offered in question 7 on the mail survey: none mention the family.

after he had graduated from college and decided against teaching (his previous plan), he happened to be at a baseball game with his sister, her husband, and George W. The latter asked what Michael was working at, and when told he was "up in the air," asked if he would be interested in being assistant manager of the real estate office where he was manager. After the formality of an interview, he was hired.

Case #14: Dominick F.'s father worked in an engineering firm, and introduced him to Robert M., the son of a workmate of his. The two did not become particularly friendly, but years later, when Mr. F. had graduated from high school, his father suggested that he ask Robert if he knew of any jobs. He did so, and was told of an opening in his company which he subsequently filled.

Case #15: Kenneth E. is now produce manager of a supermarket. Six years ago, he had worked under his present employer, but in a different store. He changed jobs and did not see the employer for five years. But it happened that both had mutual friends in the same family: the employer knew the oldest brother in this family, because he had sponsored him to come to the U.S. from Germany, where he had also known the parents. Mr. E. knew the *youngest* brother because the latter had married a cousin of his wife. When the sister of these two brothers got married, in 1968, Mr. E. and his former employer both attended the wedding; they got to talking, and he was offered his current job. (He adds that he had once worked with the employer's sister, which reinforced the relationship.)

A fundamental demographic fact is that a wide span of ages is represented within any nuclear family. For relatively young people, the only personal contacts which will be useful will be those somewhat older than themselves; they must have some way of getting connected to such people. Three of the examples above show that this can be accomplished by the age spread among siblings. One's own siblings need not be involved; anyone one knows may have older siblings who have friends. Indeed, the case of Michael E., whose own sibling is involved, may be less common, since one can have many friends with older siblings, but a limited number of one's own siblings. The case of Dominick F. shows that even members of one's *own* generation may be reached through older

relatives. The general point, that relatives and friends' relatives may serve as connectors to the rest of the community has been made especially well by Young and Willmott (1962). As one would expect from their study, this phenomenon is associated with low residential mobility. Respondents in the first three cases had all grown up in Newton. Kenneth E. had not, but his case is different. The actual initial contact was not due to the connective power of siblings' age differences (and was not, in fact, even a family or social contact), but the maintenance of the tie and the ultimate job offer stem clearly from this.

The following case offers still another variation on the connective power of family age-spread:

Case #16: Norman G.'s daughter was in nursery school, where she met the daughter of a lawyer who consequently became friendly with him. When Mr. G. quit his job, the lawyer told him of an opening in the accounting area of a firm which was one of his clients. He applied, and was hired.

In cases of respondents who knew their contacts because they had been students together, the interesting question is not how they met, which is fairly straightforward, but how the contact was maintained. The following three examples are suggestive:

Case #17: Nicholas L., originally from Czechoslovakia, attended engineering school in London from 1941-1945. He wanted to come to the United States after the war, but this was difficult. He applied to emigrate to several countries from which it would ultimately be easier to enter the U.S., and went to the first one which accepted him. In Bolivia he found an engineering job which he held for ten years. Before leaving London, he had told a friend about a notice he had seen on a bulletin board, about an opening for someone to teach engineering at a midwestern American university; it was too late for him to follow this up, but his friend did and was hired. During his ten years in Bolivia, Mr. L. sent his friend two letters, to keep in touch, and received two back. The second informed him of another opening in the midwestern university, which he successfully applied for. After three years there, he became bored; while visiting

San Francisco for a vacation, he met a friend of his wife's brother, who got his engineering firm to take him on.

After three years in California, he felt again that he would like to try something new, and went to Boston to look around. He first looked up a friend with whom he had worked in Bolivia; this friend told him that there was an engineer in Boston who had attended the same school as Mr. L. This turned out to be an old friend, whom he had not seen in twenty years. When Mr. L. went to see him, he suggested that he apply to his current firm. He did so and was hired. After two years, a senior member of that firm formed a spin-off company, and asked Mr. L. to join him. This is his current job.

Case #18: William P. was a graduate student in French literature when he met Mark W., a fellow student, in the dining commons. They roomed together in 1951 and 1952. From 1953 to 1955 they both still lived in the college town and saw each other occasionally. After receiving his M.A., Mr. P. went to a small women's college in New England to teach. From 1957-59, his friend Mr. W. taught nearby at a state college, and visited him a few times. In 1960, Mr. P. received his Ph.D. and went to a larger school in upstate New York. His friend's family lived in a nearby town, and so, in 1962, while visiting them, he also stopped by to see Mr. P. In 1964, the latter took a better job in a large university in Pennsylvania. Mr. W., meanwhile, was teaching in a university near the one where he and Mr. P. had been students. During the summers, Mr. P. started returning to that university for research, since their library facilities were unusually good for his particular scholarly interest. He saw Mark W. about once each summer between 1964 and 1967. On one of these occasions, he was asked by him whether he would be interested in teaching in his own department. Two years later when Mr. P. realized that he would not receive tenure where he was, he contacted his friend and asked if there was still an opening. There was, and he took it.

Case #19: David M. had been, as a boy, bat boy for the Brooklyn Dodgers, and later became manager of the food concession at Ebbets Field (their ballpark). Meanwhile he worked his way through a local college, graduating in 1940. He then took a marketing position with one of the food distributors he had dealt with at Ebbets Field; in 1961, he decided to go into business for himself, and opened a restaurant on the Massachusetts North Shore, where

he had relatives. In mid-1966, a customer saw Mr. M's name on the liquor license, and asked him if he was the same David M. he had known 27 years earlier in college; he was.

They got to talking, and the friend became a regular customer. He was director of a large, private social welfare program in northern Massachusetts, and, after several months of discussions, decided that Mr. M. would be the right person to manage one of his programs: re-training handicapped workers. After several months, Mr. M. accepted the job.

Mr. M. stressed that he had been only "acquaintances" in college with his new employer, and admitted that he began the new job with no expertise whatever. He asserted, however, that expertise did not really exist in this field, so that a layman could, in fact, work successfully at it.

These cases illustrate the argument (made in chapter 3) that the ties to those who help one find a job may be rather weak ones. In two of these cases, a twenty-year or more hiatus separated one occasion of contact from another. Cases like this are particularly damaging to Markovian assumptions. The case of David M. also is an example of a major change of work-type being mediated by a nonwork contact. (Cf. Ch. 2, 48-50). It may be that, in general, major changes of work type are less likely to follow the Markovian model. Most work contacts, as noted above, are acquired on one's immediately previous job.

The cases cited so far in this chapter here involved, almost exclusively, family or social contacts. There are some interesting findings concerning how respondents became connected to work contacts in companies *other than their own*. Discussion of these will be found in Chapter 8, on interorganizational relationships. When work contacts are established within the same company, there is little to be explained about how the contact was made.⁴

Given prevailing rates of mobility, the set of people one meets during any given job (whether they were in one's own company or not) will, in the future, be distributed over a number of firms and areas, in which they may act as personal contacts, "inducing" or at

4. This would be a subject of interest, however, if I were to put more emphasis on the internal dynamics of formal organizations.

least facilitating one's mobility to that location. As with family social contacts, we may ask how these relationships are maintained in the intervening period. Professional meetings and activities appear to be important in this respect, as is the information people secure about one another from mutual friends. The question is less problematical for work contacts since the average intervening period is much shorter.

Important theoretical issues are implicit in the discussion of how job contacts are acquired and maintained. Of special interest is the question of whether the mechanisms involved are substantially different from those which people use to acquire and maintain social contacts in general. Unfortunately (and remarkably) baseline data are lacking; there are no systematic studies of social contact formation and maintenance for general populations. I would guess that acquisition is somewhat different, here, since the tie created is likely to be to individuals with access to a substantially different information pool; hence, those mechanisms which bridge social distance (in the sense specified in Chapter 3) should be over-represented. This point is especially clear in the cases where young men were connected to older ones via family age-spreads. The general formulation here might be that we should analyze formation of the ties individuals have with others whose status is substantially different from their own, since such ties will connect them, potentially, to *others* of different status.

The mechanisms for maintenance are not unexpected ones. The custom of visiting friends when passing through their area is common to all cultures and periods. The same is true of weddings, funerals and other ritual occasions. Kinship ties often not only generate a contact, but, given some residential immobility, provide occasions for its renewal. Some methods are more contrived; many tribal societies have periodic events involving considerable travel, and the ceremonial exchange of symbolic objects; the Kula ring of the Trobriand Islanders is a famous example (Malinowski, 1922). Professional meetings serve a similar function for us; the exchange of papers is widely acknowledged to be secondary to keeping in touch with others in one's field at a personal level, and keeping up

with the gossip—a good part of which concerns who is now working where; hence, even those who do not attend may be affected by having knowledge of their whereabouts spread among former friends, via mutual acquaintances (Katz 1958, Granovetter 1973).

What is perhaps more surprising, though consistent with the emphasis on weak ties in Chapter 3, is that some ties which are used had barely *been* maintained at all over long periods. It is a remarkable fact that one may receive crucial information from individuals whose existence one has nearly forgotten. The paucity of “maintenance events” makes the following hypothetical research project imaginable: for each individual under study, construct a chart to keep track of his total social interaction. Let each column represent a given time period, and each row one individual he knows. Construct enough columns for his entire lifetime and enough rows for every person he has ever known on a first-name basis (over some minimal period of interaction). In each cell of this box enter the amount, type and occasions of interaction for the time period chosen; we would then have a lifetime record of which ties the individual has maintained, and how. The cases cited in this chapter may be seen as subsets of rows on these hypothetical charts.

The problem, of course, is that these cases are chosen *post hoc* after we know which particular contact has been relevant. Causal chains must, naturally, be constructed so that we can pick out the important elements *before* the event at the end of the chain actually occurs (cf. Hempel 1965). Operationally, some version of these charts can be imagined. Over some time period, ten years, say, individuals could keep charts like those suggested. Gurevitch's study (1961) shows that people are capable of an even more complex task—keeping a record of every person with whom they come in contact every single day. Time periods for the study proposed here could be easier to manage, perhaps as long as a quarter-year, and entries for those frequently seen during the quarter could give merely rough estimates of amounts of interaction. Much could be learned from such a demonstration project since we could find out not only who does offer useful job information, but who offers no information and who offers information which turns out not to

be used. (The present study suffers from inability to collect these last two types of data.) Interviews with these three groups of people could be quite illuminating. Ultimately, one would hope that the relevant causal chains could be constructed with the help of only short-term data, once it was clear what the important variables were. Though the method proposed may seem wasteful of effort, I find it hard to imagine how else one could find out whether there was anything unusual about those who provide job information, as compared, say, to a random sample of one's everyday contacts.