

Conditions for Second Language Learning

Introduction to a general theory

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Preface

It is more than a little humbling to find that a book one has spent much of one's professional career trying to write can claim to be no more than an introduction. The ideas in it have developed over twenty years. Whenever I can, I have said where they come from, but I am certain that there will be many sources that I do not recall, notions and phrases I have absorbed from reading and teaching and listening, and that I pass on into the public domain of knowledge. I take this opportunity to thank my teachers, colleagues, and students.

Apart from the longish incubation period, the writing of this book took a number of years. An unexpected gap in a teaching programme gave me the opportunity to prepare a dozen or so lectures on current theories of second language learning; this later formed the basis for a paper I was invited to give at the University of Wisconsin-Milwaukee conference in 1985. From these initial notes, the book started to take shape, but the bulk of the work of writing waited for a year's leave from Bar-Ilan University; without the sabbatical, I doubt that it would have been finished.

I am grateful therefore to Bar-Ilan University for the time to write the book, to the University of London Institute of Education, which made me a research fellow while I was writing, and to Carmel College, which provided me with an ideal setting for scholarly work. In particular, I must thank my colleagues at Bar-Ilan, who allowed me a year free from departmental responsibility; Henry Widdowson, who took a deep interest in the book and whose questions I have tried to answer, often unsuccessfully, but always feeling it was worth trying; Peter Skehan, who provided access to computers and—even more important—a fund of useful information and a continuing availability for discussion; and the Headmaster, Phillip Skelker, of Carmel College, its staff, and pupils, who encouraged and suffered and shared in the case study. I also want to thank a number of universities in Britain, Japan, the Netherlands, and New Zealand, which during the year I was on sabbatical leave gave me the opportunity to try out some of the formulations on captive audiences; questions raised in those lectures led to much necessary rethinking.

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Jerusalem
February 1988

Introduction

The need for a general theory

The task of a general theory

Like many other workers faced with difficult and often unrewarding tasks, language teachers long for someone to offer them a simple and effective method that will suit all kinds of learners. Responding to this demand, scholars who have built theories of second language learning have often set as their main criterion not the elegant parsimony expected of a scientific theory but the stark appeal of a crisp advertising slogan. Translatability (even translation) into a teaching method rather than accounting for the empirical facts has been the goal pursued by many theory builders.

With the toppling of the Audio-Lingual Method from its throne, however, it seemed for a while that a general acceptance of eclecticism in language teaching would relax pressure on theorists and let them get on with their own particular job. All indications were, Stern (1985) remarked, that the profession would get over the ‘century-old obsession’ with finding a panacea and that ‘a more sophisticated analysis of pedagogy would no longer be satisfied with the global and ill-defined method concept’. We might even have hoped that the sound notion of informed language teaching described by Strevens (1985) would come to hold sway, but the seventies and eighties have continued the search for the pot of gold, and there has been a new method boom. Where once they were faced with Berlitz Methods, and Army Methods, and Ollendorf Methods, and Direct Methods, and Series Methods, language teachers are now offered the Total Physical Response, Community Counselling, and Suggestopedia. Even scholars who started in solid theoretical research have caught the methods fever, as Oller and Richard-Amato (1983) published *Methods that Work* and Stephen Krashen, who made an important attempt to assemble current research into an integrated theory, latched on to the Natural Approach¹ and went from theorizing to promotion.

There are two points that I want to make: the first is that there are serious weaknesses with the theoretical bases of these various methods, not excluding Krashen’s method and the theory it is based on;² the

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second is the more general point that any theory of second language learning that leads to a single method is obviously wrong. If you look at the complexity of the circumstances under which second languages are learned, or fail to be learned, you immediately see that a theory must not only be equally complex but must also be able to account for the success and failures of the many different methods that have been and are used throughout the language teaching world.

The goal of this book then is certainly not to propose a new method but rather to explore the requirements for a general theory of second language learning by examining the conditions under which languages are learned, and to consider the relevance of such a theory for language teaching. I describe the theory as *general* to distinguish it from theories of formal classroom learning,³ or of informal natural learning,⁴ or the learning of one part of a language, such as sentence-level syntax.⁵ I use the term *theory*⁶ to mean a hypothesis or set of hypotheses⁷ that has been or can be verified empirically.⁸ I use the term *second language learning* to refer to the acquisition of a language once a first language has been learned, say after the age of two,⁹ without any technical definition or jargon or in-group implication for the words *learning* or *acquisition*.¹⁰ Within these definitions, I see the task of a theory of second language learning as being to account both for the fact that people can learn more than one language, and for the generalizable individual differences that occur in such learning.

First, it is always the case that some individuals are more successful than others in mastering the language, even though the language experience has in all cases been ostensibly identical. Second, for a particular individual, some aspects of language learning are mastered more easily than are others. (Bialystok 1978: 69)

This makes the task similar in many ways to that of understanding first language learning at more advanced stages, although it must be pointed out that current psycholinguistic interest in first language acquisition has focused on the initial stages of learning and on the universal acquisition of language rather than on the individual variations in ultimate accomplishment.

A general theory of second language learning such as I am seeking to develop will need to relate in significant ways to a theory of first language learning. Ideally, rather than seeking separate theories of first and second language learning, I should perhaps be pursuing a unified theory of language learning (Carroll 1981), which would, within itself, distinguish between first and second language learning,¹¹ including, for instance, the fact that in the case of second language learning, learners have already succeeded in such crucial issues as distinguishing the sounds of language from the noise around them, and recognizing the basic working of speech acts. Omitting this initial stage of first language

acquisition, much of what I propose here can easily and usefully be applied to mother tongue learning, to the learning of additional dialects and registers, to the development of control of standardized and classical varieties of one's first language, and to the complex variation of individual achievement in all language learning.

In spite of the attractiveness of this challenge, I have chosen at this stage to accept the constraint of working to develop a theory of second language learning independently, accepting the common scientific practice when dealing with complex systems of attempting to deal with one definable part at a time. But, as is clear in the use of the term 'general' and will be shown in more detail, it is an essential part of my approach to consider all kinds of second language learning together, calling on the model (and not some a priori limitation of scope) to show the differences proposed between, for example, second and foreign language learning and formal and informal learning.

If I may use a rhetorical form that is favoured by Joshua Fishman, the critical issues to be dealt with may be set out in the following question:

Who learns how much of what language under what conditions?

Using this as a mnemonic, a theory of second language learning must account for:

who: differences in the learner. This includes such factors as age, ability, intelligence, specific abilities (for example, hearing acuity), special aptitudes, attitudes (to learning, to a language, and to its speakers), motivation, choice among strategies, personality. These factors form a continuum from permanence (for example, those that are biologically given) to modifiability (under various controls).

learns: the process itself. How many kinds of learning are there? What is already there, preprogrammed in some way? What is the difference between conscious (explicit) and unconscious (implicit) knowledge? Between knowing and being able to? Between learning a single item and gaining control of functional skill? How does transfer work? How does learning vary individually and culturally?

how much of: What is the criterion for having learned? What part of language is learned (for example, phonology versus grammar versus semantics versus culture)? How does one account for learning single items? How different is the development of functional proficiency?

what language or variety, or mode, or dialect. And what about culture?
under what conditions: Is it amount or kind of exposure that makes the difference? How does exposure lead to learning? Who is the best person to learn from?

And how does each of these factors interact with the others? What kind of person prefers what kind of strategy? Who learns best under what conditions? What kind of person learns what parts of language? What

variety of language is best learned by what kind of learner under what kind of circumstances?

This brief analysis helps us see the complexity of the question and suggests something about the nature of the model that might provide a satisfying solution to it. It is most unlikely to be a simple basic principle such as those proposed by any of the New Key Methods,¹² or even a more sophisticated combination of half a dozen hypotheses such as Stephen Krashen has proposed. The claims behind these method-supporting theories of course all have a modicum of truth; they are 'correct' with certain interpretations under certain conditions; they capture certain facts; but they are either so loosely worded as to be meaningless, or when they are made precise, they are wrong. Rather, as I will try to show in this book, a general theory of second language learning is best expressed as a complex collection of typical and categorical rules or conditions. As I will suggest in Chapter 1, it can be most appropriately stated in terms similar to the preference model in linguistics proposed by Jackendoff (1983), and not by models consisting only of well-formedness conditions nor certainly by single factor or simple models. Language learning results, the theory will claim, from the interaction and integration of a large number of factors and not from any single factor.

Two preliminary questions arise. First, one might ask how theory relates to practice. A theory of second language learning will need to explain (that is to say, it will be testable against) any kind of example of second language learning; it will not be useful to have, for instance, a separate theory of adult second language learning, or of immersion learning, but at the same time, a theory will be expected to explain differences observable between these various kinds of learning. A complete theory will thus be a heuristic for studying the effect of various modifications of teaching goals, situations and approaches rather than a prescription for how to teach. Teaching practice will in essence serve as a method of testing a theory empirically, rather than being its direct outcome. A theory of second language learning, then, will have implications for teaching and not direct applications.¹³ It will be relevant to any model of language teaching, but will not be its only component. In other words, it will need to avoid both the Scylla of imperialistic application and the Charybdis of scholarly irresponsibility: both theory and practice must work in mutual respect, for, as Widdowson (1984a: 36) summed it up, 'The effectiveness of practice depends on relevant theory; the relevance of theory depends on effective practice.' One of my main tasks in this book is to try to clarify the notions of relevance and effectiveness.

A second important question is whether or not a theory of second language learning needs to be a processing model, proposing a working model of exactly how language learning takes place. I think the answer

is, not yet. While there is some value in the metaphors provided by building models that simulate the process of language use or learning, there is also a cost, for a metaphor, once it has been created, tends to dominate our thought. Having made up a name like a 'language acquisition device' or a 'monitor' or an 'affective filter', or having drawn a 'model' with labelled boxes, it is easy to fall into the trap of believing that this now accounts for the process. If it is to be productive, a metaphor or model may serve us only as a starting point, for the challenge remains to specify exactly how such a model could work in the human brain as we know it. And, as I shall argue later, it is too early to do this with any feeling of certainty.

My goal in this book, then, will not be to establish a model of how language is learned, but rather to explore how to specify, as exactly as possible, the conditions under which learning takes place. As such, while this study will set out specifications that must be met by a processing model and while it aims to be consistent with what little is known about language in the brain, it will make no claims as to the nature of such processing nor rely on any guesses from neurophysiology. In the last chapter, however, I will speculate on more process-oriented approaches, when I consider the possible application of expert systems, or, more challenging, the revolutionary implications of research on Parallel Distributed Processing.

Other models

In the light of the discussion so far, it is understandable that there are very few adequate candidates for the title of a general theory (although there is a great deal of evidence and theorizing that needs to be taken into account in developing such a theory). The most vigorous is probably Krashen's Monitor Model, which with all its fundamental weaknesses makes the best attempt at a comprehensive theory accounting for current research in second language learning. In critical ways that I have discussed elsewhere (Spolsky 1985c), Krashen's model is too vague for our purposes.

The closest models in spirit and completeness to my approach are the informal presentation of second language learning theory in Stern (1982–3) and the socio-educational model proposed by Gardner (1983, 1985). Stern sets out a balanced description of the state of the art, cautioning where he sees uncertainty. As will become clear, I not only accept this uncertainty but attempt to integrate it into the theory by using the insights of Preference Linguistics. Gardner builds on Lambert's and his own earlier work with attitudes and motivations to develop a causal model that can be empirically tested. My differences from him are partly in details of the theory and partly in the implications of the preference model. I will also attempt to make clear my relations to

current views of language learning called Second Language Acquisition theory and ably summarized by Ellis (1985)¹⁴ and Klein (1986). While my approach is what Stevens (1985) would have to label a 'theory-dominated paradigm' because it is interested in theory, it attempts to avoid the constraints Stevens sees in the paradigm's lack of interest in practice.

The failure of models like Krashen's to stand up to detailed scrutiny has discouraged many scholars from expecting any kind of useful results from theorizing, and many others from expecting that theory will have any practical relevance. The most extreme view is perhaps that restated by Hughes (1983: 1–2): 'It must be said at the outset that it is not at all certain that at the present time there are any clear implications for language teaching to be drawn from the study of second language learning.' Similar concern is expressed by many others. It is not easy at this time even to be clear on the nature of the model that will succeed. As Wode concludes in his excellent review of issues in second language learning, a comprehensive view is necessary but 'No neurophysiological model of the functioning of the human brain, no linguistic theory, and no psychological learning theory—whether behaviouristic, cognitive, or other—is presently available which seems suited to describe the facts empirically observable when human beings learn language' (Wode 1981: 8).

But if we are to persist in our search for a general theory, where can we look? One strategy is always to guess that someone else might have the answer. This is essentially what happens with those of our colleagues who go to neurophysiology, but the answers they receive are far from conclusive. In an introduction to the field of psycholinguistics from the point of view of second language learning, Hatch describes the neurolinguistic basis of language as something still to be established: 'Where messages go and what happens to them are two of our most intriguing unanswered questions. We do, of course, know a great deal about the brain, but although we have learned to name all the parts, we still do not truly understand what happens to language input or how language output is formed' (Hatch 1983: 198). The black box in other words remains opaque, but there are a number of more or less informed and more or less plausible guesses about how it might work, and some rather imaginative guesses about the implication of these guesses for second language learning. In spite of the optimism of scholars like Lamendella (1977), there seem to be more solid grounds for the caution expressed by people who have looked at implications of neurophysiology for second language learning; I refer readers in particular to Hatch, Galloway (1981), Cohen (1982), Seliger (1982), Genesee (1982), and Scovel (1982).

If we eschew neurophysiology, there are alternative approaches. One is to start with our own knowledge, as linguists or language teachers,

and set out to build a learning theory that fits that knowledge. This is what Lado (1985) does, describing in more or less linguistic terms his observations of the complexity of first language learning. It is salutary, for instance, to be reminded that children have as hard a job learning their first as any subsequent language. Lado's four stages are interesting to look at in the light of Krashen's very different hypotheses; Lado too sees the importance of meaning for 'completion of the communication cycle' which is the first stage of learning; he adds an important role for conscious knowledge in the second stage of 'assimilation'; he recognizes the place of practice in the 'development of facility' (something that Krashen seems to omit completely); and adds a further stage of going beyond language learning to language use, which seems to suggest that any use in the first stages is limited. It would be interesting to see these ideas developed into a full blown-theory of second language learning.

Another complete model that deserves attention is that proposed by Gloria Sampson (1982) who, in an intriguing paper, starts with a baker's dozen of facts, some controversial but many fair statements of current consensuses, goes on to note that one of the main problems in language learning is to explain how quantitative changes (for example, in the ratio of incorrect to correct forms) lead to qualitative changes (the move from one system to a new one), and proposes as a solution a dialectical model of function and form. What is especially important is that Sampson tries to deal with the social influence on the biological unfolding of language. Like all dichotomous models, hers is a powerful one, enabling her to explain away for instance the morpheme-ordering studies by the fact that they were all done with students taught in classrooms with similarly restricted functions, and providing socio-political support for evidence of fossilization in the second language learning of the underprivileged classes. This last point fits in very interestingly with Schumann's (and others') observations about second language learning and pidginization.¹⁵

Another field has claim to attention. As linguists often tend to forget, learning theory is the special province of psychology. Lulled by the belief that Chomsky overthrew Skinner who had earlier cast aside Pavlov, we have been trying to build our own models of learning, and the results of amateur work show up. But it is surely to be expected that there would be psychologists who have tried not to abandon but, in the traditional way of all good paradigms, to patch up old models by seeing what they can incorporate of the new. We have been fortunate (although we have not taken full enough advantage of this) to have John Carroll who in his long and productive career has worked to convince both psychology and linguistics of the relevance of the other field, and has constantly been willing to consider the practical implications of each field for language teaching or testing. I cannot do justice to one of his most recent (1981) attempts at sketching what he calls a unified theory of language

learning—it aims to include first as well as second language learning, postulating a way to distinguish between them. As he describes it, his model starts with a traditional learning theory of the Thorndikian or Skinnerian variety but varies from that theory in a number of ways: most fundamentally, it allows conscious response selection, which makes it a cognitive theory; it also allows for antecedent effects (explaining how it is possible to recognize a stimulus as of a specific type); and it distinguishes between controlled and automatic processes. It further includes a kind of ‘performance grammar’ (Carroll’s own term, but similar, he points out, to models proposed by Halliday and Schlesinger). His model will, I hope, be further explained and developed; it deserves very careful attention as one possible map to follow.

One of the key problems with reconciling current theories of second language learning is the lack of clarity over the level of focus of their application. A theory of second language learning may try to account for an individual learning a single item: to predict or explain the learning of, for instance, a particular grammatical, phonological, or lexical item.¹⁶ The task given to the theory may be made more complicated in various ways: it may be asked to account for more than one individual (or to distinguish among individuals or groups), or for more than one kind of learning, or for learning to more than one kind of criterion level; or it may be applied to various parts of the language or various clusters of functions and uses. Further, it may be called on to deal with various levels of this complication. Some studies, then, are concerned with a small group of individuals developing sufficient control of a few selected defined items to pass a test on them:¹⁷ others aim to make generalizations about the degree of second language proficiency attained by a certain national population.

Once the enormous variation (as well as complexity) involved has been recognized, it is possible to understand both the difficulty of reaching valid and supportable generalizations and the fascination and appeal of such simplified claims as are regularly made in simple powerful models. The constant cries of developers hawking new methods of teaching second languages is the best evidence one can have of the complexity of the practical problems faced by those who would teach or learn. At the same time, the dissatisfaction continually expressed with new proposals that try to account for the nature of language learning confirms that the problem is theoretical as well as practical. There is an attraction in attempts to simplify, and one can appreciate Krashen’s urge to fit the large body of facts he has mastered into a easily communicable five-point model. In doing this, he has done a major service in providing a worthwhile target, reminded us of the value of comprehensive models and challenged others to develop their own. But comprehensive models must be, I believe, more complex than his if they are to account not just for the material he covers but for the full

complexity of the ways in which people develop the complex ability to use more than one language. Such a model will be explored in the rest of this book.

Notes

- 1 The Natural Approach is set out in Krashen and Terrell (1983); a review by Krahnke (1985) shows the dangers of the presentation of an absolutist set of claims, many of them sensible, that appears to justify just about any method of instruction.
- 2 See for detailed discussion McLaughlin (1978, 1987), Gregg (1984), and Spolsky (1985b, 1985c). Klein (1986:29) points out also that Krashen's Monitor Model is 'not a model of language acquisition in general' but an attempt to explain how acquisition might be 'influenced by conscious awareness'.
- 3 For example, that proposed by Robert Gardner, although Gardner now concedes that his theory might be more general than he originally proposed.
- 4 For example, John Schumann's acculturation model, although Schumann has now been persuaded that it might be relevant to classroom learning too.
- 5 For example, Second Language Acquisition (SLA) is generally restricted to this level.
- 6 For a discussion of various uses in language learning of the term *theory*, see Stern (1983:25ff).
- 7 The major hypothesis of the book is that second language learning can be accounted for by a set of hypotheses that will be stated informally as conditions for learning.
- 8 Given the complexity of studies involving human beings, not all hypotheses can be formally tested, but one should expect to be shown how they might be falsified.
- 9 Klein (1986: 15) would set this age a little higher: 'at the age of 3 or 4'. He draws attention to the fine distinctions that occur when two languages are acquired early between 'second language learning' and 'bilingual first language acquisition'. Dodson (1985) points out that even if two languages are acquired as first languages, one is generally preferred for each area of experience.
- 10 As will become clearer, the post-Chomskyan distinction between these two, carried to its ultimate in Krashen's first hypothesis, turns out to be confusing and unnecessary.
- 11 A general model of this kind is sketched out in Titone (1982) and Titone and Danesi (1985).
- 12 Gouin, Lozanov, Gattegno, and Asher all surely have made important contributions, but none of their panaceas can be said to fill the need for an overall theory.

- 13 Compare Spolsky (1969b). Similar approaches are accepted in Titone and Danesi (1985); see also Widdowson (1984a:28–36) and Lightbown (1985).
- 14 The eleven hypotheses with which Ellis (1985:278–80) concludes are not proposed as a single or necessarily consistent theory, but are an excellent summary of the present state of knowledge of the learning of some important features of the grammar of a second language.
- 15 See Cazden, Cancino, Rosansky, and Schumann (1975), Corder (1975), Schumann (1978a, 1978b), Stauble (1978).
- 16 Of course it is far from simple to define in any precise way what is meant by a single item.
- 17 Researchers in the Second Language Acquisition (SLA) tradition tend, as Ellis (1985) regularly and wisely points out, to concentrate their attention on studies of learning a restricted number of morphological and syntactic items.

1 A general theory of second language learning

Features of a general theory

The model that I am proposing in this book derives its strength from five features. The first of these is its unabashed immodesty in attempting to be general, to combine in a single theory all aspects of second language learning. Its very generality makes it possible to consider within one model (and so to attempt to understand and describe the relevant differences that exist between) second and foreign language learning, learning for general and specific purposes, formal and informal learning, developing knowledge and skills, to mention just a few of the ways theories are sometimes specialized.

While general, the theory is restricted to second language learning. As I said in the Introduction, this avoids the challenge of dealing with the special problems of first language acquisition. It leaves out, in other words, the important but distinct problems of how a child differentiates language from noise, the critical role of innate mechanisms in developing a grammar for the first language, the problem of how children come to acquire the grammatical, semantic, and pragmatic rules that they do with their first language. The restriction to second language learning permits a concentration not on the universality that is the concern of first language acquisition study but on the explanation of individual differences that is the focus of second language learning research. The examples that I cite are in the main selected from second and foreign language learning, but the principles are, I believe, equally applicable to the issues of second or standard dialect learning and the development of more sophisticated skills and knowledge in the mother tongue.

There is a danger, as McLaughlin (1987: 157) remarks, in a general theory becoming too broad, and so blurring the details. A necessary result of this broadness of coverage, then, is the second feature of my approach, the emphasis on the fundamental need to be precise and clear on the nature of the goals and outcomes of learning. The theory requires us to recognize the complexity of the concept 'knowing a second language', which can vary almost without restriction in both kind and amount. There is no simple and single criterion according to which one can be said to know a language. There are varying criteria for successful

learning that can be described in terms of linguistic knowledge (as the items of a grammar or a lexicon, for instance); in terms of generalized skills (reading, writing, speaking, listening); in terms of pragmatic or communicative functions (persuading, asking, apologizing, etc.); in terms of topic (for example, 'He knows enough French to read a sports page', 'She can give a lecture in Japanese on nuclear physics'), situation (for example, 'He knows kitchen French'), or interlocutor (for example, 'She knows enough German to talk to a Swiss banker'); or in terms of ability to perform a described task, usually a test (for example, 'He scored 625 on TOEFL, but the students in his section still cannot understand him'). A general theory of second language learning must not only be able to define all these possible outcomes, but it will also need to show how various combinations of conditions will be most likely to lead to each of them. Thus, a general theory of second language learning must allow for all the complexity of what it means to know and use a language. In doing this, it will need in particular to account both for the macrolevel of various kinds of functional proficiency and the microlevel of specific items and structures.

The third important feature of the model is that it is integrated and interactive: it assumes that all or many parts of it apply to any specific kind of learning, and that there is close interaction among the various parts of the model. In some cases, some of the components of the theory may not be relevant but all are potentially so, and when they work, they work together. For example, the theory will attempt to show not just how motivation affects learning, but how a particular strength and kind of motivation, with a particular kind of learning, leads to specific kinds of learning of certain parts of language in certain circumstances. Its generality requires that all potential connections be tested.¹

The fourth feature of the model, and a major innovation in second language learning theory, is the use of an approach that includes a formally valued eclecticism. This is achieved through a model which recognizes that the various conditions for language learning are not all of them necessary conditions, without which learning will not take place; many of them are graded conditions (the more something is true, the more its consequence is likely to occur) and others are typicality conditions (that apply typically but not necessarily).² Many readers will recognize that I am drawing here on the preference model proposed by Ray Jackendoff and applied to semantics (Jackendoff 1983) and music (Lerdahl and Jackendoff 1983) and to literary interpretation (Schauber and E. Spolsky 1986). For those to whom the preference model is unknown, a brief summary will be useful.

Jackendoff sets out his argument for the power and ubiquity of preference rules in Chapter 8 of his book on semantics (1983). He distinguishes between well-formedness or necessary conditions on the one hand and typicality or preference conditions on the other, tracing

his work to problems tackled by Gestalt psychologists such as Wertheimer (1923) in their attempts to deal with problems of grouping. The key point of this work was to establish the notion of stronger and weaker judgements that result from the convergence or the conflict of competing criteria. Lerdahl and Jackendoff (1983) show how these and similar principles apply to groupings in music. Jackendoff (1983) demonstrates the principle as it applies to word meanings; it provides in particular formal properties that will account for:

. . . the gradation of judgements and . . . the existence of exceptions to many apparently defining conditions. We can thus include in word meanings all those conditions that people seem to consider crucial, such as stripedness in tigers, two-leggedness in humans, and competition in games; they are simply marked as typicality conditions rather than as necessary conditions. (Jackendoff 1983: 139)

After a number of examples relevant to semantics, Jackendoff concludes with the argument that preference rules are to be found throughout the range of human psychological processes.

I see a preference rule system as a way to accomplish what psychological systems do well but computers do very badly: deriving a quasi-determinative result from unreliable data. In a preference rule system there are multiple converging sources of evidence for a judgement. In the ideal (stereotypical) case these sources are redundant; but no single one of the sources is essential, and in the worst case the system can make do with any one alone. Used as default values, the rules are invaluable in setting a course of action in the face of insufficient evidence. At higher levels of organization, they are a source of great flexibility and adaptivity in the overall conceptual system. (op. cit.:157)

As will become evident, I find Jackendoff's proposal to be of importance in two ways: first, it suggests important characterizations about the nature of language, and thus sets some of the parameters involved in learning a second language. To the extent that it is true of some aspects of language competence, it must be accounted for in a general theory of second language learning. Second, it makes important claims about the nature of learning itself, and so provides a model for the form of the theory of second language learning. Ellen Spolsky (1985) has shown that a preference model, with its rejection of purely binary logic, is consistent with current knowledge of the physiology of the brain. The preference model, while still at a level of gross generalization, is a further step towards the complexity of a model like that envisaged in Parallel Distributed Processing, as will be discussed in the last chapter.

The fifth feature of the model proposed in this book is its acceptance of the need to establish a general theory of second language learning

firmly and clearly in a social context. Language learning is individual, but occurs in society, and while the social factors are not necessarily direct in their influence, they have strong and traceable indirect effects on the model at several critical instances.

Conditions for second language learning

Using the preference model as my base, then, I propose a first form of a general theory of second language learning as follows. The achievement of the various possible outcomes in second language learning depends on meeting a number of conditions. Some of these are necessary conditions,³ without which learning is impossible; many are graded conditions, in which there is a relation between the amount or extent to which a condition is met and the nature of the outcome; others again are typicality conditions, that apply typically but not necessarily. All this allows, therefore, for the existence of a varied but limited set of alternative paths to the various possible outcomes.

Having mentioned what I consider strengths of the model, it is only fair to acknowledge weaknesses, ways in which I recognize that what I am proposing constitutes the prolegomena to a general theory rather than the theory itself. First, the fully developed model will need not just to be internally consistent but to make verifiable claims. While the enormous complexity of any studies of human beings means that verification in practice might be difficult or even impossible, the theory must make clear what kind of evidence will show that its claims are wrong. As will be argued in more detail in Chapter 13, falsifying a necessary condition is relatively simple, for one needs only to present counter-evidence. Typicality conditions are more of a problem; they can be shown to be necessary if there are no cases where they do not apply, but it is more difficult to pin down empirically claims that rules sometimes apply and sometimes do not. Larger arrays of preference rules may perhaps be falsifiable by statistical techniques (for example, if it is shown that the proposed condition is not a relevant factor in accounting for outcomes) and by being shown to be irrelevant to expert systems. But I am fully aware of the informality with which the conditions set out later in this chapter are expressed, looking in many cases much more like postulates or premises than the formal rules of linguists or the precise hypotheses of experimental psychologists.

There is a second problem. If I have risked upsetting the theorists by my lack of formalization, I may at the same time disappoint language teachers who are looking for a clear set of guidelines to their practice. Because the model shows that there are in fact multiple paths to a complex set of outcomes, it is likely to have been oversimplified if it seems to have direct applications or lead to a single approach to

language teaching. Any intelligent and disinterested observer knows that there are many ways to learn languages and many ways to teach them,⁴ that some ways work with some students in some circumstances and fail with others. This is why good language teachers are and always have been eclectic: they are open to new proposals, and flexible to the needs of their students and the changing goals of their course. At best, the theory will aim to explain these variable successes; at the same time, it might suggest the possibility of modifications in practice, and the evaluation of methods that are most appropriate, for given kinds of students with certain kinds of motivation, to achieve certain defined kinds of second language knowledge and skills.

As an overview, one way of attempting to present a model of second language learning, a formalization that will permit empirical testing, is in the form of an underspecified mathematical formula. In later parts of the book I will try to show the nature of the underspecification and consider how the formula might be refined and made more sophisticated.

Let us call the linguistic outcome in which we are interested K , a symbol standing for the knowledge and skills in the second language of the learner. We can then say that K_f (knowledge and skills at some future time) is a result of four groups of factors: K_p (knowledge and skills at the moment including general knowledge of the learner's first and any other languages), A (a symbol intended to represent various components of ability including physiological, biological, intellectual, and cognitive skills), M (a symbol to include various affective factors such as personality, attitudes, motivation, and anxiety), and O (or opportunity for learning the language, consisting of time multiplied by kind, the latter covering the range of formal and informal situations in which the learner is exposed to the language).⁵

Simply stated, the formula $K_f = K_p + A + M + O$ is then a claim that each of the parts will make a difference to the result: if any one is absent, there can be no learning, and the greater any one is, the greater the amount of learning. In this form, it encompasses such cases as the specially able or the highly motivated learner who takes advantage of minimal opportunity, or the critical importance of amount of opportunity (time) in accounting for success. It will receive greater specification, so that we will see not just the composition and contribution of each of the factors, but the degree to which differentiation in one element can lead to different results. In its initial simplicity, then, it invites the elaboration that will capture the complexity of the phenomenon being studied.⁶

The special interest of the formula is that it is applicable not just to the macrolevel, the development of larger levels of proficiency especially dealt with by the descriptive model, but also to the microlevel, the learning of single items. For learning a language involves learning one

item—sound, word, structure, speech formula, usage, whatever—at a time (although it must be noted that adding an element can often lead to the restructuring of what is already there into new larger units): the larger proficiencies are made up of the smaller particles. At the macrolevel, the elements of the formula are complex, but in the learning of single items, they are necessarily more simple and compressed effects of other factors. Thus, whereas the conditions making up *M* in developing a general proficiency have a strong enough effect to vary according to the kind as well as strength of motivation, *M* in learning a single item is more likely to be a single measure of willingness to persist in the effort to understand, memorize or practise the item. It is here that one might look for the connection between microlevel and macrolevel.

The additive model suggested by the formula is a useful starting point, and forms the basis for some of the statistical models used in the case study discussed in Chapter 13. But it does not go far enough in capturing the complex interaction or all the interlocking influences that a preference model will demonstrate.

The preference model involves the interaction of several clusters of interrelated conditions. In this chapter I shall give with minimum comment a list of 74 conditions which I propose are relevant to second language learning. These conditions will be further discussed in the rest of the book where they will be shown to be the natural and logical conclusion of current research in second language learning. They form, in other words, a statement of the ‘state of the art’, but it must be stressed that they are not presented as novel or original (although there will be some where it is clear that my position is different from that of other scholars); the originality is in the claim that they all interact to form a general theory.

The first argument that will be presented is the need for precise specification of the linguistic knowledge that is the outcome of second language learning. In Chapter 2 I deal with what it means to know a language, and propose that the best summary of our present understanding of the nature of language knowledge and how to measure it is provided by the following conditions:

Condition 1

Language as System condition (necessary): A second language learner’s knowledge of a second language forms a systematic whole.

Condition 2

Native Speaker Target condition (typical, graded): Second language learner language aims to approximate native speaker language.

Condition 3

Variability condition (necessary): Like first language knowledge, second language knowledge is marked by variability.

Condition 4

Unanalysed Knowledge condition (necessary, graded): Unanalysed knowledge (memorized chunks of the second language) may be used by second language learners, but unanalysed knowledge by itself provides for very restricted, language-like behaviour.

Condition 5

Analysed Knowledge condition (necessary, graded): As linguistic knowledge is analysed into its constituent parts, it becomes available for recombination; this creative language use may be enriched with unanalysed knowledge.

Condition 6

Specific Variety condition (necessary): When one learns a second language, one learns one or more varieties of that language. As a corollary, goals for a formal course of instruction need to specify the variety or varieties of language being taught.

Condition 7

Academic Skills condition (typical, graded): Learning of a second language may be associated to varying degrees with the development of academic language skills.

In Chapter 3 the importance of language use is stressed, and the following conditions are introduced:

Condition 8

Productive/Receptive Skills condition (necessary, graded): Individual language learners vary in their productive and receptive skills.

Condition 9

Receptive Skills stronger than Productive condition (typical, graded): Receptive language skills (understanding speech or written text) usually develop before productive skills (speaking, writing) and usually develop to a higher level.

Condition 10

Implicit Knowledge condition (typical, graded): Language knowledge, analysed and so available for recombination, may be intuitive and so not be consciously available to the learner.

Condition 11

Explicit Knowledge condition (typical, graded): Analysed language knowledge may be consciously available to the speaker who is able to state a rule or explain the reason for a decision to use a certain form.

Condition 12

Automaticity condition (necessary, graded): Ability to use language knowledge varies in automaticity; this is shown by the fluency with which a person speaks.

Condition 13

Accuracy condition (necessary, graded): Ability to use language knowledge varies in accuracy.

Condition 14

Dual Knowledge condition (necessary): When one learns a second language, one develops both knowledge and skills in using that knowledge. As a corollary, goals for a formal course of instruction or tests of proficiency need to distinguish between knowledge and use, as well as between various levels of automaticity and accuracy in use.

Condition 15

Communicative Goal condition (typical, graded): Language learners may aim to achieve various degrees of control of a language for communicative purposes.

Chapter 4 begins a consideration of the measurement of language knowledge and skills, and discusses the functional and structural aspects of testing. From this discussion, the following conditions are derived:

Condition 16

Discrete Item condition (necessary): Knowing a language involves knowing a number of the discrete structural items (sounds, words, structures, etc.) that make it up.

Condition 17

Integrated Function condition (necessary): Knowledge of a language involves control of one or more integrated functional skills.

Condition 18

Integrated Skills Weighting/Ordering condition (typical, graded): The weighting (relative importance) and ordering of integrated skills are dependent on individually or socially determined goals for learning the language.

In Chapter 5 the implication of overall proficiency is considered, and a general summarizing condition for second language knowledge and skills is proposed:

Condition 19

Overall Proficiency condition (necessary): As a result of its systematicity, the existence of redundancy, and the overlap in the usefulness of structural items, knowledge of a language may be characterized as a general proficiency and measured.

Condition 20

Linguistic Outcome condition (typical, graded): Prefer to say that someone knows a second language if one or more criteria (to be specified) are met. The criteria are specifiable:

- (a) *as underlying knowledge or skills (Dual Knowledge condition)*
- (b) *analysed or unanalysed (Analysed Knowledge condition; Unanalysed Knowledge condition)*
- (c) *implicit or explicit (Implicit Knowledge condition; Explicit Knowledge condition)*
- (d) *of individual structural items (sounds, lexical items, grammatical structures) (Discrete Item condition)*
- (e) *which integrate into larger units (Language as System condition)*
- (f) *such as functional skills (Integrated Function condition)*
- (g) *for specified purposes (see, for instance, Academic Skills condition, Communicative Goal condition)*
- (h) *or as overall proficiency (Overall Proficiency condition)*
- (i) *productive or receptive (Productive/Receptive Skills condition)*
- (j) *with a specified degree of accuracy (Variability condition; Accuracy condition)*
- (k) *with a specified degree of fluency (Automaticity condition)*
- (l) *and with a specified approximation to native speaker usage (Native Speaker Target condition)*
- (m) *of one or more specified varieties of language (Specific Variety condition).*

In Chapter 6 I start to look at individual factors that affect learning, and set out the psycholinguistic basis for second language learning. The following conditions derived from the overview of present knowledge are proposed and discussed:

Condition 21

Human Learner condition (necessary, postulate): A general theory of second language learning deals with the learning of a second or later language by a human being who has already learned a first language.

Condition 22

Physiological Normality condition (necessary): Any physiological or biological limitations that block the learning of a first language will similarly block the learning of a second language.

Condition 23

Native Pronunciation condition (typical, graded): The younger one starts to learn a second language, the better chance one has to develop a native-like pronunciation.

Condition 24

Abstract Skills condition (typical, graded): Formal classroom learning of a second language is favoured by the development of skills of abstraction and analysis.

Condition 25

Child's Openness condition (typical, graded): The greater openness to

external influence of a child favours the learning of a second language in informal situations.

Condition 26

Child's Dependence condition (typical, graded): The social situation faced by a child in a second language environment favours second language learning.

Chapter 7 looks at individual differences in ability and in personality. These conditions are identified:

Condition 27

Intelligence condition (typical, graded): The ability to perform well in standard intelligence tests correlates highly with school-related second language learning (i.e. in functional terms, such tasks as reading and writing of academic material in formal language, and as performing abstract tests of structural knowledge) but is unrelated to the learning of a second language for informal and social functions, except perhaps in the case of older learners.

Condition 28

Sound Discrimination condition (necessary, graded): The better a learner can discriminate between the sounds of the language and recognize the constituent parts, the more successful his or her learning of speaking and understanding a second language will be.

Condition 29

Memory condition (necessary, graded): In learning a new language, the better the learner's memory, the faster he or she will learn new items and the larger his or her vocabulary will be. This ability may vary for learning words aurally and visually.

Condition 30

Grammatical Sensitivity condition (necessary, graded): Beyond the necessary minimum ability to 'derive a grammar' implicitly, the better a learner's ability to recognize constituents and develop or understand generalizations about recombination and meaning (whether from explicit or implicit generalizations, in whatever forms), the faster he or she will develop control of the grammatical (and pragmatic) structure of a second language.

Condition 31

Learning Style Preference condition (typical, graded): Learners vary (both individually and according to such characteristics as age, level, and cultural origin) in their preference for learning style (visual, auditory, kinaesthetic, and tactile) and mode (group or individual); as a result, learning is best when the learning opportunity matches the learner's preference.

Condition 32

Expectations condition (typical, graded): A learner's expectations of the outcome of language learning interact with the learner's personality to control the selection of preferred learning strategies.

Condition 33

Second Language Learning Anxiety condition (typical, graded): Some learners, typically those with low initial proficiency, low motivation, and high general anxiety, develop levels of anxiety in learning and using a second language that interfere with the learning.

In Chapter 8 a discussion of the linguistic basis for second language provides the following conditions:

Condition 34

Language Distance condition (necessary, graded): The closer two languages are to each other genetically and typologically, the quicker a speaker of one will learn the other.

Condition 35

Shared Feature condition (necessary, graded): When two languages share a feature, learning is facilitated.

Condition 36

Contrastive Feature condition (necessary, graded): Differences between two languages interfere when speakers of one set out to learn the other.

Condition 37

Markedness Differential condition (necessary, graded): Marked features are more difficult to learn than unmarked.

Condition 38

Shared Parameter condition (necessary): When both native and target language have the same setting for some parameter of Universal Grammar (= have the same rule), minimal experience will be needed to trigger the correct form of the grammar.

Condition 39

Unmarked Parameter condition (typical): Prefer to use the unmarked (core, Universal Grammar) setting of the parameter.

Condition 40

Native Language Parameter condition (typical): Prefer to use the native language setting of the parameter.

Condition 41

Most Frequent Parameter condition (typical, graded): Prefer to use the most frequent setting of the parameter.

Chapter 9 turns to the social context in which second language

learning takes place, and conditions are proposed that affect attitudes to and opportunities for learning:

Condition 42

Number of Speakers condition (typical, graded): The number of people who speak a language as a first or second language influences the desire of others to learn it.

Condition 43

Standard Language condition (necessary): Formal teaching situations are possible only with standardized languages.

Condition 44

Vitality condition (necessary): Informal learning situations are possible only with languages with vitality.

Condition 45

Official Use condition (typical, graded): Prefer to teach or learn a language which is officially used or recognized.

Condition 46

Modernized Language condition (typical, graded): Prefer to teach or learn a language which is standardized and which has been modernized.

Condition 47

Great Tradition condition (typical, graded): Prefer to teach or learn a language which has a desirable Great Tradition (including a religion) associated with it.

Condition 48

Linguistic Convergence condition (typical, graded): Prefer to learn a language when

- (a) you desire the social approval of its speakers, and/or*
- (b) you see strong value in being able to communicate with its speakers, and/or*
- (c) there are no social norms providing other methods of communicating with speakers of that language, and/or*
- (d) your learning is reinforced or encouraged by speakers of the language.*

Condition 49

Linguistic Divergence condition (typical, graded): Prefer not to learn a language if

- (a) you wish to stress your continued membership of your own language community, and/or*
- (b) you wish to stress your dissociation from speakers of the language, and/or*
- (c) you wish speakers of that language to learn your language.*

Against this social background, Chapter 10 proposes conditions relating to attitudes and motivation of the second language learner:

Condition 50

Aptitude condition (typical, graded): The greater a learner's aptitude, the faster he or she will learn all parts of the second language.

Condition 51

Exposure condition (necessary, graded): The more time spent learning any aspect of a second language, the more will be learned.

Condition 52

Motivation condition (typical, graded): The more motivation a learner has, the more time he or she will spend learning an aspect of a second language.

Condition 53

Attitude condition (typical, graded): A learner's attitudes affect the development of motivation.

Condition 54

Integrative Motivation condition (typical, graded): Integrative orientation, a cluster of favourable attitudes to the speakers of the target language, has a positive effect on the learning of a second language, and in particular on the development of a native-like pronunciation and semantic system.

Condition 55

Instrumental Language Learning or Teaching condition (typical, graded): If you need to speak to someone who does not know your language, you can learn that person's language or help that person to learn your language.

Condition 56

Language Values condition (graded, typical): The social and individual values which underlie language choice also determine the value an individual assigns to the learning of a specific language.

Chapter 11 begins the discussion of conditions to be met by learning opportunities:

Condition 57

Opportunity for Analysis condition (necessary, graded): Learning a language involves an opportunity to analyse it, consciously or unconsciously, into its constituent parts.

Condition 58

Opportunity for Synthesis condition (necessary, graded): Learning a language involves an opportunity to learn how its constituent parts are recombining grammatically into larger units.

Condition 59

Opportunity for Contextual Embedding condition (necessary, graded): Learning a language involves an opportunity to learn how its elements are embedded in linguistic and non-linguistic contexts.

Condition 60

Opportunity for Matching condition (necessary, graded): Learning a language involves an opportunity for the learner to match his or her own knowledge with that of native speakers or other targets.

Condition 61

Opportunity for Remembering condition (necessary, graded): Learning a language involves an opportunity for new items to be remembered.

Condition 62

Opportunity for Practice condition (necessary, graded): Learning a language involves an opportunity for the new skills to be practised; the result is fluency.

Condition 63

Communication condition (typical of natural learning, graded): The language is being used for communication.

Condition 64

Learning Goal condition (typical of formal learning, graded): The language is being used so that it can be learned.

Condition 65

Fluent Speakers condition (typical of natural learning, graded): Many speakers in the environment are fluent and native.

Condition 66

Teacher Model condition (typical of formal learning, graded): Only one speaker (the teacher) is fluent; the majority in the environment (classroom) are not.

Condition 67

Open Area condition (typical of natural learning, graded): The learning takes place in the open or in unconstrained areas.

Condition 68

Classroom condition (typical of formal learning, graded): The learning takes place in a closed physical space, a single classroom.

Condition 69

Uncontrolled Language condition (typical of natural learning, graded): The language is normal and uncontrolled.

Condition 70

Simplified Language condition (typical of formal learning, graded): The language is simplified and controlled.

Condition 71

Comprehensible Input condition (typical of natural learning, graded): The learner is expected to understand; therefore the speaker makes an effort to see that language is comprehensible.

Condition 72

Drill Input condition (typical of formal learning, graded): The learner is expected to learn; therefore ample practice is given to develop automatic control.

Condition 73

Foreigner Talk condition (typical, graded): Conditions of speech addressed by native speakers to non-natives (foreigner talk) lead to modification in the structures and frequency of language that form the basis for input in natural learning situations.

Chapter 12 looks at some of these conditions in more detail and adds a general condition on formal instruction:

Condition 74

Formal Language Learning-Teaching condition (typical, graded): In formal language learning situations, multiple opportunities to observe and practise the new language can be provided. The more these match other relevant conditions (the learner, the goals, the situation), the more efficient the learning will be.

The conditions listed above have generally been stated informally. A more precise statement, looking more like a rule (Schauber and E. Spolsky 1986:22), would be in the form:

If (a specified condition) is met, then (a specified linguistic outcome) is true.

In the case of graded conditions, the form of the statement would be:

To the extent that (a specified condition) is met, then it is more likely that (a specified outcome) is true.

The conditions are also translatable (but not translated here) into hypotheses which might be tested empirically.

An overview

Because the model is interactive, it is useful at this point to sketch roughly how its parts go together.⁷ Second language learning of any kind takes place in a social context, which makes up the first cluster of conditions. The social contexts of both the family or home, and the community, city, and state are relevant. The social context includes components such as the sociolinguistic situation, the general exposure of learners to other languages, the roles of the target language and other languages in the outside

community and in the home, and the general perception of values of the target language and of bilingualism. It is expressed formally in language policies of various kinds: at the state level these may be laws or provision of language education;⁸ at the home level these include decisions to speak a certain language or to encourage or discourage language learning.

The conditions described for the social context influence language learning in two ways: first, they lead to a learner's attitudes which are divisible, following Gardner (1979) and Gardner and his colleagues (1983), into those towards the community speaking the target language (integrativeness) and into those towards the learning situation. In this latter set I would want to include the learner's expectations and perceptions of the learning task and its possible outcomes. These two kinds of attitude and specific learning goals lead to the development of motivation on the part of the learner.

The second influence of the social context is in the provision of opportunities for language learning; these may be grouped roughly into formal and informal situations. Formal situations are the various institutionalized educational opportunities provided by a society for language learning. The availability of formal or informal learning opportunities (ranging from formal instruction to exposure to the language in use) itself also depends on the social context. More precisely, when there is formal instruction in a school, the social context and various parent factors (their education, their level of religious or ethnic or national allegiance, their socio-economic status, their place of birth, their knowledge of languages) determine parents' rationales, goals, and priorities. The social context (including any political expression of it) together with parents' rationales, goals and priorities, modified (or replaced) by any independent ideology of the school offering the programme determine the school's rationales, goals, and priorities. The school's rationales, goals, and priorities account for formal learning opportunities. It is also the social context that is the source of informal opportunities for language use and learning. Informal situations are available in different kinds and amount according to social conditions which determine the potential opportunities for a learner to interact with speakers and writers of the target language. Thus, the social context determines the actual nature of possibilities for social intercourse and other communicative transactions.

The second cluster comprises conditions of the learner: the language learner brings to the language learning task, besides the motivation already referred to, a number of capabilities and a body of previous knowledge and experience. Some of these capabilities are universal, such as an innate capability for deriving a grammar, an innate or learned capability for inferring interpretation from speech acts, and presuppositions about the uses of language. While these universal capabilities are basic in that they set necessary conditions for any learning, they are

not of special interest in explaining variation in the outcomes, for they are theoretically available in all learners: they are as characteristic of human learners as are arms and legs. Others are specific to each learner's own background, whether linguistic or non-linguistic. Of particular importance among these personal learner characteristics are previous knowledge (of the first or other languages); age; language learning aptitude (especially important in formal learning situations); learning style and strategies; and personality factors, of which anxiety is the most clearly relevant. The combination of these learner factors accounts for the use the learner makes, consciously or unconsciously, of the socially provided formal or informal learning opportunities.

The interplay between language learner and learning opportunity (and in particular language addressed to the second language learner as modified by communication and performance strategies of learner and source) determines the learner's success in achieving the linguistic outcomes (linguistic and communicative competence of a variable nature) and non-linguistic outcomes (including changes of attitude) that have been determined personally (by the learner) or socially (by home, school, state, etc.). As a result of the interaction of 'strategies' used by the potential learner and by the teacher (or any other source of the target language), various outcomes occur, which may be linguistic or non-linguistic. I have already mentioned the complexity of linguistic outcomes, and will look at them in considerably more detail in the next chapters; non-linguistic outcomes include changes in attitude and satisfaction or frustration of personal learning goals.

The model so far described may be presented schematically as in Figure 1.1 (overleaf). This schematic layout is no more than a rough representation: the critical claim being made is that the preference model offers a method for formalizing what is left unspecified.

Given its fundamental importance to the theory, we will start to look in the next chapters at the nature of linguistic outcomes of second language learning, first (in Chapters 2 and 3) from the point of view of theory (What does it mean to know a language and to know how to use it?), and then (in Chapters 4 and 5) from the point of view of language testing (How do you get someone to perform their competence?). Chapter 6 will investigate capabilities and describe the general psycholinguistic basis for learning a second language, looking at biological and neurophysiological aspects and the question of age as a factor. The following chapter will deal with individual differences in cognitive capacities and personality. In Chapter 8 I will discuss previous knowledge and in particular the linguistic basis (knowledge of the first language) and the way it may be seen as setting conditions for second language learning. In Chapters 9 and 10 I will set out the social context in which second languages are learned and explore the relation between social context and individual psychology as expressed in the development

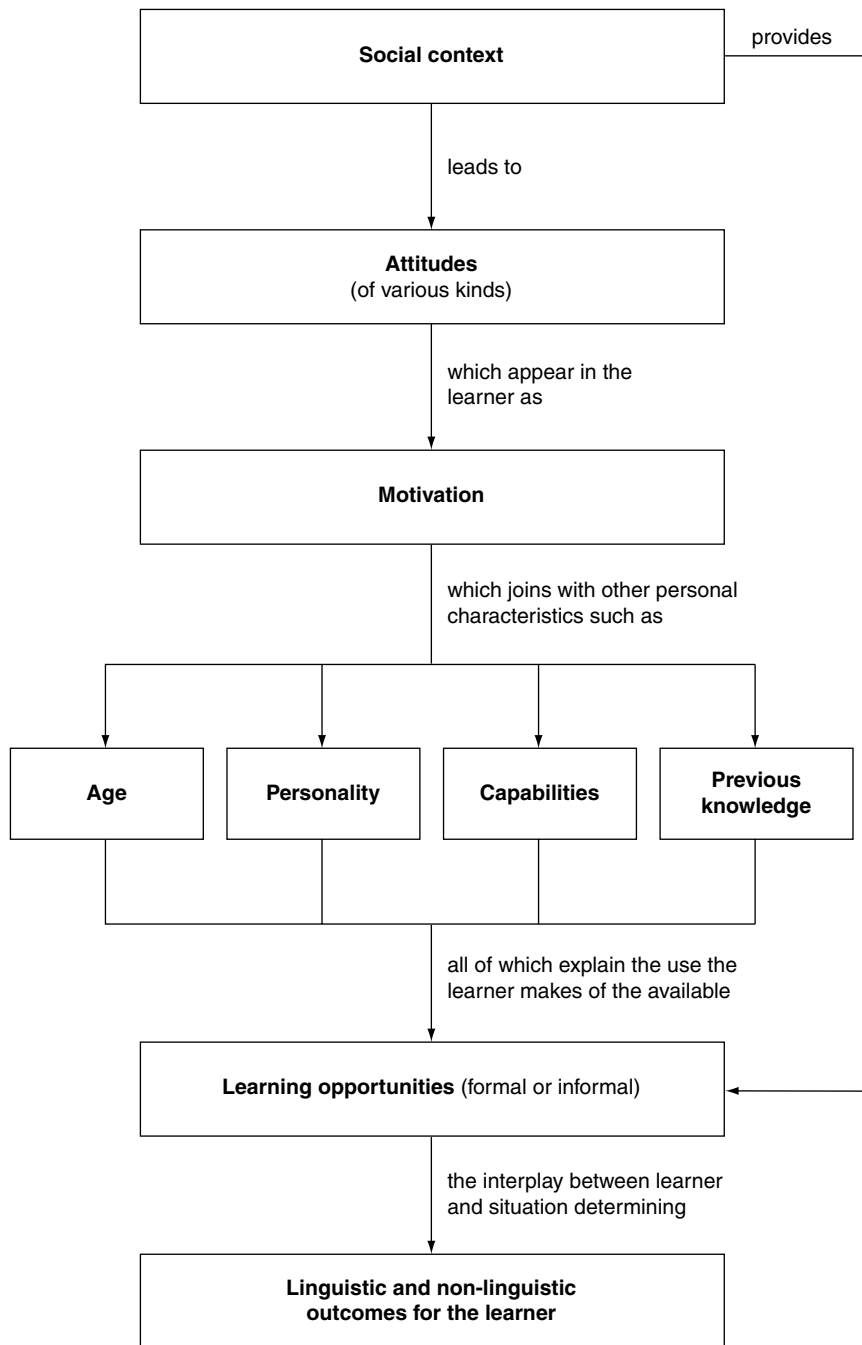


Figure 1.1 *A model of second language learning*

of attitudes and motivation. Chapters 11 and 12 will then look at conditions for language learning in, respectively, informal and formal language learning situations. Chapter 13 will discuss a single case study carried out to test the model; more data from the study are given in the Appendix. Finally, Chapter 14 will summarize the model and discuss the implications of an expert system as a method of setting it out and testing it and of other formal models including the implications of recent research on Parallel Distributed Processing.

Notes

- 1 The problem of dealing with complex causal models is discussed in Chapters 13 and 14.
- 2 Graded conditions are similar in many ways to the probability statements on linguistic variables that Labov proposes; typicality conditions are similar to the approach of prototypical semantics.
- 3 Schauber and E. Spolsky (1986:22) make a useful distinction between rules and conditions which I have not attempted to apply in this book.
- 4 Ellis (1985:297) recognizes this possibility when he says that 'It is also possible that a single phenomenon is the result of more than one cause.'
- 5 The formula proposed here is based on John Carroll's model for instruction; see Carroll (1962).
- 6 As will become clear, the use of addition is possibly misleading. A more precise formulation is suggested in Chapter 13.
- 7 The way the model works as a whole is illustrated in Chapter 13 and discussed in Chapter 14.
- 8 For a detailed consideration of the relation of the community to second language teaching, see Ashworth (1985).