In this chapter I describe three major scientific research traditions that greatly influenced theories and methods of SLA. For detailed discussions of these different traditions of scientific knowledge, the reader is encouraged to refer to the work of Rom Harré and Grant Gillett (1994), Ragnar Rommetveit (1968, 1974, 1987, 1992), Jerome Bruner (1996), Numa Markee (1994), Robert Ochsner (1979), Diane Larsen-Freeman and Michael Long (1993), and Kurt Danziger (1990).

From a historical point of view, these three scientific traditions can be ordered as follows:

1. Behaviorist
2. Cognitive-Computational
3. Dialogical

The last tradition has also been associated with the following names: discursive (Harré and Gillett 1994), hermeneutic (Young 1999; Markee 1994; Ochsner 1979), hermeneutic-dialectical (Rommetveit 1987), dialogically based social-cognitive (Rommetveit 1992), and cultural (Bruner 1996).

Although the three schools of thought are well established in other scientific fields, especially in psychology, the field of SLA, as we will see, strongly adheres to the second tradition—the cognitive. The third tradition, the
Behaviorism

The first tradition, behaviorism, dominated the field of SLA until the end of the 1960s and found its most visible application in contrastive analysis and the audiolingual method (see Chapter 3 for details). In this tradition, the focus was on the learner’s external environment. It was believed then that this external environment served as a stimulus for the processes of learning. Learning was regarded as a habit formation, the process of making a link between stimuli and responses. This link, viewed as being instrumental for learning, had to be reinforced, observed, corrected, and practiced. In the behavioristic tradition, the learner’s mental processes were disregarded because they were not accessible to external observation. That is, they were viewed as too subjective, too “hidden,” for observation, measurement, and verification. Under this old and by now disregarded paradigm, the mental processes that could not be externally evaluated were exempt from scientific investigations. The possibility of their existence was minimalized.

In the era of behaviorism, the subject’s behavior was manipulated in order to elicit responses that were later interpreted by researchers according to their research questions and methods. Statistical relations were established between stimuli and responses. Stimuli were treated as independent variables, selected, manipulated, and controlled by the researcher, and responses were treated as dependent variables.

Subjects were treated like objects in a laboratory experiment in which the researcher elicited and interpreted subjects’ behaviors according to his or her own ideas and hypotheses. This was to be done within well-established scientific guidelines based on statistical logic and probability. Subjects’ thoughts and feelings, their own interpretation of the behavior elicited during the experiment, were totally ignored because, as indicated above, they would be regarded as subjective and thus unscientific and unreliable. These types of data were mistrusted by researchers and considered irrelevant.

Although behaviorism has fallen into oblivion, its experimental methods have survived. Both the behaviorist and the cognitive schools of thought are strongly embedded in the positivist (that is, empiricist) philosophy of sci-
ence, which favors quantitative methods. In order to fulfill the requirements of quantitative research methods, subjects in research studies, like objects in the hard sciences, are considered to represent “objects” under the control of researchers. Their behavior can be manipulated, controlled, and measured in such a way that it satisfies the requirements of the research question determined in advance by the researcher. In other words, subjects’ behavior can be manipulated by the researcher’s intention, by the nature of the tasks that subjects are asked to perform in an experiment. The individuality of subjects’ intentions is disregarded. Subjects whose performance falls outside the established norms, whose behavior does not fit the group’s behavior, are eliminated from the study. Their contribution to our understanding of how human cognition develops is marginalized.

The Cognitive-Computational Tradition

The second tradition, the cognitive, may be divided into two categories or versions: the older—hypothetico-deductive (Harré and Gillett 1994; Markee 1994)—and the new—information processing–computational (Harré and Gillett 1994; Bruner 1996). This tradition is strongly embedded in Cartesian philosophy, whose fundamental principle is summarized in its famous motto: “Cogito, ergo sum” (I think; therefore, I exist). According to René Descartes, the seventeenth-century scientist and philosopher, there is a separation between mind and body—a duality (Harré and Gillett 1994). That is, there exist two realities, two worlds: the material world (that is, the human body), accessible to human observation, and the mental world (that is, the human mind), which includes thoughts, emotions, and mental processes. This mental world is not accessible to external examination. The human body is responsible for outward behavior, and the human mind is responsible for inward behavior.

In Cartesian philosophy, the human mind is considered to be superior to the human body; as such it becomes the main focus of scientific investigations. Recall that behaviorism disregarded mental processes because they were not accessible to external examination. In the cognitive tradition this apparent inaccessibility was overcome by the application of the hypothetico-deductive method. As Harré and Gillett (1994) point out, the hypothetico-deductive method allowed researchers to overcome the inaccessibility of mental processes by assuming that a theory consists of “a group of hypotheses, from which, with the addition of some definitions and descriptions of the conditions under which an experimental test or observation was conducted, one drew a sentence expressing possible laws as logical consequences.
Then one tried to see whether the statements one had deduced were correct or incorrect. If one's deduction referred to a future event, it was a prediction; if to an event already known, the hypotheses and so on from which it had been deduced counted as an explanation of the event in question” (Harré and Gillett 1994, 10). An example of this method (also known as the logico-deductive method; Markee 1994) is Michael Long’s (1983a) conversational adjustment hypothesis. Long’s conclusion that linguistic and conversational adjustments promote second language acquisition is derived by the application of the hypothetico-deductive method and is illustrated in the following three steps:

Put simply, if it could be shown that the linguistic/conversational adjustments promote comprehension of input, and also that comprehensible input promotes acquisition, then it could safely be deduced that the adjustments promote acquisition. If A signifies adjustments, B comprehension, and C acquisition, then the argument would simply be:

A—B
B—C
A—C

where “—” indicates a causal relationship. (Long 1983a, 189)

Another illustration of the application of the hypothetico-deductive method to SLA is Noam Chomsky’s theory of universal grammar (see Chapter 3 for more details), in which the existence and operation of universal principles and language-specific parameters are derived on the basis of this particular method.

Also, in the cognitive tradition, in contrast to the behavioristic, the subject’s own interpretations of the elicited behavior and understanding of the investigated mental phenomena are taken into consideration. This is evident in the use of the so-called grammaticality judgment tasks frequently employed by the proponents of Chomsky’s linguistic theory, for example. Subjects are asked to use their own intuition regarding the grammaticality or ungrammaticality of the sentences selected by the researcher. Such tasks are also used by SLA researchers working within Chomsky’s theory of universal grammar to determine nonnative speakers’ access to the language acquisition device (LAD) and to investigate natives’ and nonnatives’ intuitions about the grammaticality of target language sentences.

The newer version of the cognitive tradition—information processing—focuses on the mechanism responsible for the processing of information or knowledge. In this version, the metaphors of input, output, short-term memory, long-term memory, storage of information, intake, container, and
computer are frequently evoked. The main assumption behind this computational branch of the cognitive tradition is the belief that mental processes are rule-governed. This assumption is evident in different versions of the theory of universal grammar such as Chomsky’s transformational-generative grammar (Chomsky 1965; Radford 1988), the government and binding theory (Chomsky 1981a; Haegeman 1991), and the minimalist program (Chomsky 1995).

If human mental processes are rule-governed, the rules somehow need to be implemented. In order to run these rules, one needs a mechanism, a machine similar to a computer. Thus, the rule-governed mental processes require a hardware system—the human brain—and a software program—the human mind—where these rules are assimilated, processed, and stored. An example of the application of the computational (information-processing) version of the cognitive tradition to SLA is Bill VanPatten’s input processing model (see Chapter 4 for more details).

Some researchers tend to combine the cognitive approach and experimental types of methodologies into one category, which they call the nomothetic scientific tradition (Ochsner 1979; Markee 1994), and contrast it with the hermeneutic scientific tradition. According to Ochsner (1979), “Nomothetic science (the prefix ‘nomo’ means lawful): This tradition goes back to Plato. As a research attitude it assumes that there is one ordered, discoverable reality which causally obeys the Laws of Nature. Social scientists in this tradition further assume that Laws of Human Nature exist” (53). Hermeneutics literally means “the art of interpretation”; nomothetic science is concerned with explaining and predicting, whereas hermeneutic science is concerned with understanding and interpreting natural phenomena. Quantitative experimental methods based on statistical logic and probability are primarily associated with the nomothetic scientific tradition, whereas qualitative methods are associated with the hermeneutic tradition, which assumes that multiple realities exist and that “human events must be interpreted teleologically; that is, according to their final ends” (Ochsner 1979, 54).

As Markee (1994) points out, SLA research subscribes primarily to the nomothetic tradition: the overwhelming majority of SLA studies are of the logico-deductive variety. They adhere to the following nomothetic principles:

One world: There is one “lawful” reality.
One order: To explain this reality we deduce causes from the Laws of Nature, including Laws of Human Nature.
One method: There is one best research method, the controlled experiment. (Ochsner 1979, 65)
Like the nomothetic scientific tradition, the cognitive tradition advocates the search for generalizability, the power of statistical procedures, the uniformity of human mental processes, the universality of rule-governed mental behaviors, the existence of one reality for all human beings, the collective mind, an idealized human being placed in a homogeneous external reality speaking with one voice, and a giant and complex information processor that runs the program in solitude.

This cognitive tradition, adopted by the mainstream SLA community and dominated by Chomsky’s theory of universal grammar, relies heavily on a linguistic notion of meaning that is similar to Frege’s sense (Frege 1960; Rommetveit 1974; Chierchia and McConnell-Ginet 1992). Gottlob Frege (1960) argues that in addition to reference (Bedeutung), sense (Sinn) is needed to provide a semantic analysis of language, to reveal the meaning of a given sentence. The reference of a sentence is its true value understood in a classic Aristotelian term:

Every sentence has meaning, not as being the natural means by which a physical faculty is realized, but, as we have said, by convention. Yet every sentence is not a proposition; only such are propositions as have in them either truth or falsity. Thus a prayer is a sentence, but is neither true nor false.

Let us therefore dismiss all other types of sentence but the proposition, for this last concerns our present inquiry, whereas the investigation of the others belongs rather to the study of rhetoric or of poetry.

(in Edghill 1928, 16b–17a)

From the perspective of reference, to know the meaning of a sentence is to be able to distinguish the circumstances in which it is true and in which it is not true. Frege (1960), however, argues that the Sinn (sense) meaning of a sentence is also needed to arrive at its meaning. Sense can be considered as a thought, an abstract object, or an idea that is independent of the circumstances. Frege arrived at the need for including sense in a semantic analysis of language that is based on logical arguments, which are illustrated in the following example, discussed in Chierchia and McConnell-Ginet (1992, 57–59):

1. The morning star is the evening star.

From the astronomical perspective the morning star and the evening star are the same planet, Venus. Therefore, they both have the same referent. If reference were all there is to meaning, it would be possible to replace the evening star by its co-referential expression, to equate it with the morning star. This would result in the following sentence:
2. The morning star is the morning star.

We know, however, that sentences 1 and 2 do not carry the same message, although their reference is identical. Using the notion of sense, we can account for the fact that sentence 2 is uninformative because it has the same reference and the same sense. Sentence 1, however, is informative because, although it has the same reference, it does not have the same sense. Note that Frege’s notion of sense is derived and accounted for linguistically and logically; it does not reflect social, historical, cultural, and institutional aspects of meaning-making; it is devoid of social contexts.

To summarize, the cognitive tradition, the most widely accepted scientific tradition in SLA, stresses the importance of mental processes. By the application of the logico-deductive method, which utilizes logical and mathematical reasoning, mental processes were made accessible to human investigation. The cognitive scientific tradition stresses the importance of human internal processes rather than external processes, thus reversing the well-established pattern of behaviorism, which, as you recall, focused on the external reality and disregarded the internal processes. In the cognitive tradition, the external environment is viewed as less important because human beings are born with the innate predisposition to evolve cognitively; we are born with the computer that is responsible for cognitive development. The external world serves as a trigger mechanism (see chapter 3 for more details), as a switch for the computer program to be activated. The individual is solely responsible for his or her cognitive development.

Both behaviorism and cognitivism embrace the Cartesian dualism of the human mind and body; however, whereas the former focuses on the body (the environment of the individual) as the source of cognitive development, the latter focuses on the mind (the individual’s internal processes). Also, behaviorists and cognitivists rely on quantitative methods of scientific investigation, but only cognitivists use more subjectively oriented methods such as grammaticality judgment tasks to investigate the operation of mental processes.

The computational (information-processing) version of the cognitive tradition assumes the existence of rule-governed human mental processes, the so-called software program. It tends to look for the universality and homogeneity of human mental behaviors. The information-processing version of the cognitive tradition projects an image of a human being as a giant computer, self-sufficient and alone in the material world. It creates “an image of Man as an essentially asocial, but highly complex information-processing device” (Rommetveit 1992, 19). Such a perspective on human cognitive development, with its total disregard for “communicative social interaction and
Following the Cognitive Tradition

goal-oriented collective activity” (Rommetveit 1987, 79), has been criticized strongly and rejected by proponents of the third tradition.

The Dialogical Tradition

The dialogical tradition, which I endorse in this book, is based on the works of scholars such as Ludwig Wittgenstein, Jürgen Habermas, Jerome Bruner, Pierre Bourdieu, Ragnar Rommetveit, Rom Harré, Grant Gillett, Leo van Lier, and above all Lev Vygotsky and Mikhail Bakhtin. The works of these scholars have led to the development of a new approach that heals the Cartesian dualism and restores the proper balance between external and internal human realities (that is, between the body and the mind). This approach takes into consideration the dynamic role of social contexts, individuality, intentionality, and the sociocultural, historical, and institutional backgrounds of the individual involved in cognitive growth. This is the framework in which external and internal realities are united by the mediating power of the most elaborated system of signs—language. As Vygotsky points out in his theory of mind, the property of human mental functioning can be discovered by the investigation of the individual’s environment and by the observation of mental and linguistic activities to which the individual has been exposed throughout his or her life.

This framework, unlike the cognitive tradition, assumes the existence of multiple realities that are interpreted differently by different individuals. These multiple realities exist because human beings are exposed in the course of their lives to different sociocultural and institutional settings, where they acquire different voices (or speech genres, to use Bakhtin’s term). Because of this, intersubjectivity (Rommetveit 1974), coconstruction of the shared realities (Jacoby and Ochs 1995), and dialogized heteroglossia (Bakhtin 1981, 1986) are considered important characteristics of the dialogized approach.

Within this tradition, qualitative research methods are given higher status than statistically driven quantitative methods. Longitudinal case studies, diaries, journals, and personal narratives are considered to provide important insights into the individual’s cognitive development. The dialogical approach focuses on particularities rather than on our ability to generalize findings to a population at large. The investigation of the individual’s behavior rather than the normalized and homogenized group’s behavior is considered to represent the locus of scientific inquiry. Within this approach, the individual’s “skewed” behavior is not marginalized and eliminated but is given special attention. The subjects’ diverse voices, intentions, motives, and personal histories are not lost but are acknowledged and brought to the forefront of scientific inquiry.
This tradition stresses the importance of social, cultural, political, historical, and institutional contexts for the development of human cognition; it highlights the importance for human cognitive development of social interaction in a variety of sociocultural and institutional settings.

As indicated above, the many versions of this tradition have their origin in Vygotsky’s sociocultural theory and Bakhtin’s dialogized heteroglossia (see Chapter 7 for more details). They are especially indebted to Vygotsky’s sociocultural theory—the powerful theory of the social origin of the human mind. Its power lies in the fact that it is not only about “the mind nor just about the externally specifiable stimulus-response relations. It is about the dialectic between the inter- and the intrapsychological and the transformations of one into another” (Newman et al. 1989, 60, emphasis added).

Vygotsky’s sociocultural theory lays a solid foundation for the third tradition, which gives a new power and voice to the realities and understanding that the previous two traditions either suppressed or ignored. The dialogical tradition also provides a unified framework for SLA theory, research, teaching, and testing, and for that reason it should be given serious consideration.

In this chapter I reviewed some major characteristics of the three scientific traditions in order to set the stage for the discussion of major models and theories of SLA that, as shown in the next several chapters, closely adhere to the cognitive tradition. I also laid the groundwork for the development of a new framework for SLA theory and practice that adheres to the dialogical tradition—a framework that is based on Vygotsky’s and Bakhtin’s theories. I advocate the building of a new model in which dialectic relations between external and internal processes constitute the focal point of SLA theory and research. This new model does not turn everything upside down, but by acknowledging the social origin of the human mind, it focuses on the dialectic interaction that converts social processes into unique and creative internal processes that, in turn, transform social realities.