CHAPTER 1
INTRODUCTION

How do children learn to think, and to use thinking or, more generally, cognition to learn? This is not a new question and, in its many guises, has challenged developmental psychologists in particular, who have sought to describe and explain the development of children's thinking. Two central questions drive cognitive development: first, what does develop in relation to children's thinking and learning, and second, how does it develop or, in other words, what mechanisms underpin the development of thinking?

Siegler (1998), in the foreword to volume 2 of the fifth edition of the *Handbook of Child Psychology*, a volume devoted to cognition, perception and language, draws attention to the plethora of approaches used to describe and explain children's cognitive development. 'Cognitive development' is generally regarded as the umbrella term under which perception, language, memory, reasoning, problem solving and learning are subsumed. Siegler also comments on areas of theorising that were new since the previous edition in 1983, including cognition as a collaborative process (Rogoff, 1998). This is important in relation to the theme of this book since, once problem solving is defined, one of the major areas of interest will be collaborative problem solving. The social aspects of problem solving in children will be highlighted, and the relationship between social development and children's thinking, learning and knowledge acquisition will be described and explained.

In contrast, another major area of theorising construes cognitive development as domain-specific. This is connected to a view that describes children's cognitive development as occurring through the operation of constraints and biases (see chapters by Wellman & Gelman, Gelman & Williams, and Woodward & Markman, 1998). So, in relation to problem solving, an alternative to the social view draws on children's innate biases in processing information or in perceiving the world, which constrain the

options available during development. At least two issues emerge when discussing domain-specific knowledge or learning. First, the child is regarded as an incomplete, inadequate or incompetent version of the adult, which may not be a sustainable argument in the face of evidence from other theoretical stances. And second, the theories themselves become quite specific, rather than being broadly applicable. This swing between highly specific theories and the more general ones has characterised cognitive development research since its inception.

Siegler (1998) identifies four main trends running through the *Handbook*:

- an increased emphasis on learning – i.e., the view that what is developing leads to learning, itself an indicator of cognitive development;
- the extent and importance of variability in children's thinking and learning – i.e., taking into account individual differences between children and moving away from descriptions of the 'average' child;
- the increasing role of formal models which permit the description of mechanisms for cognitive change and development; and
- the new metaphors and units of analysis that are shaping current understanding of cognitive development.

This last trend, using metaphors to characterise children and their development, leads to varying ways of conceptualising cognitive development and hence how it is studied and the evidence required to confirm or disconfirm the metaphor. In addition, the units of analysis favoured by those studying children vary enormously – some determined by the area of interest, such as perception or language, and others by the theoretical approach being discussed or tested – and can range from the child to the parent–child dyad through to the activity itself.

A continual discussion point – and one, incidentally, about which it can be argued there is conceptual as well as terminological confusion – is the measurement of cognitive change versus cognitive development. Theoretically, this book aims to describe and explain cognitive development in children – in particular, the development of knowledge and how children learn under various conditions. However, in general, experiments with children, and, in this case, with children solving problems in dyadic interaction, demonstrate only cognitive change in one child. Such change is generally limited in scope and is sometimes dubbed 'learning'. This demonstration of cognitive change, be it short term or longer term, is taken *as evidence for* cognitive development and/or learning. While this may be regarded as 'good' science (the specific results support the theoretical position being tested, and replications, putative refutations and affirmations

confirm the result), it generally does not demonstrate how learning has taken place. Not that attempts have not been made. Even the early work by Perret-Clermont and colleagues (1980) used the traditional Piagetian approach of children supporting their new-found solution with carefully reasoned and novel but consistent justifications.

Part of the debate regarding whether it is cognitive change or cognitive development that is of interest relates to the particular focus of study. Cognitive development is often studied from the individualistic perspective, looking for age-dependent trends and for ways of predicting development, with an assumption of uniformity in direction, speed of development and trajectory. Cognitive development often does not take account of different social demands and expectations placed on children, many of which vary across cultures. The mind is regarded as the font or the crucible of knowledge, and scant regard, if any, is given to the bases for the acquisition of knowledge (why does the child need to know that?) or the types of experiences that might change the nature and use of that knowledge. Cognitive development is therefore an individual progression, predictable and able to be described accurately. Cognitive change can be part of cognitive development, since age-related changes – usually improvements – in competence are measured through experimentation. But cognitive change is more amenable to a sociocultural or social influence account, since it is descriptions of individual change or learning that are being sought.

Cognitive development therefore should be regarded as the broad field within which the child as problem solver can be explored. The intention of this book is to consider the child-as-problem-solver as a microcosm through which theoretical issues in cognitive development can be examined. Some of the themes identified by Siegler (1998, 2000) will emerge, perhaps couched in slightly different ways and perhaps in a different context. This chapter identifies themes and issues that will be fleshed out in greater depth in subsequent chapters. Rather than provide a comprehensive literature review I shall discuss illustrative exemplars of research studies that consider the child as problem solver in some guise or other. The following pages provide a 'taster' of what is to come.

PROBLEM SOLVING

Problem solving can be defined as children's thinking and learning in general or as the particular tasks that children are required to solve (Garton, 1993). More specifically and more comprehensively, DeLoache, Miller and Pierroutsakos (1998) characterise problem solving as

'consist[ing] of a goal, one or more obstacles that make achieving the goal not immediately possible, one or typically more strategies that can be used to solve the problem, other resources (knowledge and other people, etc.) that can affect which strategies are used, and evaluation of the outcome of the problem-solving process' (p. 826). In this regard, DeLoache et al. can see no difference between problem solving and reasoning because each is adaptive and goal-oriented. However, the former definition (problem solving as children's thinking and learning in general) is broader and permits the inclusion of specific content areas such as language to be a problem requiring a solution in its own right. Nonetheless it would be possible, if it were considered desirable, to specify, for example, goals, obstacles, strategies and other resources that facilitate the child's acquisition of language or of number. So the broad and specific definitions proffered so far are not incompatible. Is there, therefore, any distinction between problem solving and reasoning? I would argue that – based on the comments above and the definition to be used in this book and given that problem solving can refer to both the activity *and* the task – then yes, it can be distinguished from reasoning, which normally refers solely to the cognitive activity, or the particular task a child is required to solve.

In relation to the study of children as problem solvers, problems are regarded as cognitive tasks that require solutions. They are typically characterised by a discrepancy between the present state or current situation and the desired state, solution or goal. Whether or not a problem exists depends on the expertise and knowledge of the person (adult or child) perceiving there to be such a discrepancy. In the case of children's development, adults, who may be parents or curious developmental psychology researchers, will usually identify the problem solving task, be it language *per se*, a jigsaw puzzle, or understanding the storyline in *Teletubbies*, taking into account the child's age, current level of learning and development (either via personal knowledge or through pre-testing) and the particular domain under investigation. So, parents will decide whether an activity is to be defined as a 'problem' for their child, and will use their knowledge of their child's capabilities in that domain to extend or to constrain the child's knowledge and skills. It is often claimed that this requires sensitivity on the part of parents, though accounts of how this sensitivity is 'acquired' or 'develops' are nonexistent. Experimental psychologists base their assignment of the label 'problem' to a child's activity or task on their theoretical knowledge, as well as through pre-testing children on similar tasks or testing similar abilities. A perceived discrepancy between current knowledge and skills and potential knowledge and skills can, in both cases, lead to problem solving, usually best described as learning.

Regarding problem solving as closer to learning than to reasoning enables a broader conceptualisation of what can sometimes be defined rather narrowly. That does not mean that some of the characteristics of problem solving described by DeLoache et al. (1998) are not applicable. They are, and it is useful to reiterate them here:

> Children's problem solving is marked by flexibility and opportunism from an early age, but their performances are limited by the strategies they have access to, the resources available for problem solving, their ability to manage the process of solving problems, and the social contexts in which problems are presented and vanquished. (p. 826)

With the exception of the word 'vanquished', which conveys an unfortunate sense of finality, this sentence encapsulates what I hope to 'unpack' in this book. However, this will be done by using problem solving to explore strategies, resources, activities and social contexts that support and facilitate children's learning, cognitive development and knowledge acquisition.

Collaborative problem solving is problem solving that involves more than the individual child. Instead of focusing exclusively on the individual child to describe and explain developmental changes in cognition, learning and knowledge, there is a shift to the dyad, to the group (however defined, up to and including the social–historical–cultural context) and to the activity, the problem itself. It is also important to distinguish peer collaboration from things such as peer tutoring and reciprocal teaching. Although the latter two are considered types of collaborative learning (e.g., King, 2002; Palincsar & Herrenkohl, 2002), in peer tutoring there is a more competent or knowledgeable child who is expected to teach a novice or less knowledgeable child. There is no sense of equality of roles and responsibilities, of co-operation or of mutuality, as it describes a unidirectional process. Reciprocal teaching involves co-operation among peers together with instruction, usually provided by an adult teacher: It is a classroom teaching strategy. The teacher scaffolds the peers' efforts at learning while providing some direct instruction, thus tacitly supporting the co-operative learning of the children. Collaborative problem solving, as construed in this book, refers to the joint efforts of pairs – some of which may indeed have intentionally divergent competencies, though often not given a designated role as novice or expert – to work towards a mutual understanding of or solution to a single problem.

Considering problem solving as collaboration enables a shift away from describing children's cognitive development in terms of what is 'average' or expected for children of a particular age, preferably universally, to a

consideration of the child in a social context and all that this entails. Viewing children as individuals within a social context allows us as researchers to adopt an individualistic approach to cognitive development, whereby ultimately children's learning profiles can be charted and used to make between-children comparisons and between-age comparisons. Profiles allow for developmental patterns to be identified and for children's cognitive development to be considered in both broad and specific contexts.

From time to time, I prefer to use the term 'social interaction', a more generic phrase than 'collaborative problem solving' and sometimes a more accurate descriptor for the facilitatory process when more than one person is involved. In addition, it is assumed that during social interaction or collaborative problem solving, the participant with the lesser knowledge benefits, and this is manifested in enhanced learning or greater knowledge. It is typically argued then that the interaction or the collaboration has had a beneficial or facilitatory effect on the child's cognitive development. While this assumption is derived from social–historical–cultural explanations of cognitive development, it is not necessarily incompatible with theoretical explanations that focus on innate constraints or biases, or on approaches that consider problem solving failure as well as success as a catalyst for cognitive change, learning and knowledge acquisition.

SOCIAL EXPLANATIONS FOR COGNITIVE CHANGE

Social explanations for cognitive change have taken many forms. The major social explanatory theories are summarised below, with greater detail being provided in subsequent chapters.

Piaget described children's cognitive change during interaction as a consequence of *cognitive conflict*, although he was essentially concerned with the development of mental operations, conceptualised as internalised coordinations of actions. These operations allowed greater flexibility in thinking as children got older. Children's thinking progressed from being sensory–motor, through pre-operational thought, to fully operational thought whereby abstract mental operations, such as reversibility (the ability to understand that an inverse action can cause the original physical or mental state to be regained), can be used on a range of materials. Cognitive development was characterised as qualitative changes in thinking, changes that occurred as result of adaptation of existing cognitive structures. The child was considered to be an active constructor of his or her knowledge. Change was inevitable and irreversible, determined

biologically, although the time required for change may vary from individual to individual, influenced by different levels of environmental stimulation. Piaget believed that the environment played little role in the direction of the changes, only in their duration; it could provide general direction, not specific experiences, to influence cognitive change.

When it was discussed, social interaction, specifically between peers, was postulated by Piaget (1932) as having a facilitatory effect on children's developing understanding of morality. Piaget was interested in how children came to solutions to moral dilemmas rather than the solutions *per se*. In the discussions generated by questioning them about moral dilemmas, children demonstrated a shift from an amoral stance when younger than age seven, where behaviour was regulated by others, to an awareness of moral rules. These rules are firstly external to the child but eventually are internalised as an awareness of their reciprocal nature. In order to achieve 'autonomous morality', Piaget proposed that peer interaction provides the necessary experience of different points of view, which leads to children thinking about moral rules and developing their own system of justice. In particular, co-operation and fairness in social relations are emphasised.

If conflict was regarded as the major mechanism for cognitive development according to Piagetian and post-Piagetian theory (e.g., Doise, 1978; Perret-Clermont, 1980), then *collaboration* would be a better characterisation of the mechanism for cognitive change proposed by Vygotsky. Vygotsky's theory of development (best discussed for our purposes in his 1978 translation) assumes that cognitive development does not occur in isolation. It co-occurs with language development, social development and even physical development, and these developments occur in a social and cultural context. This holistic approach focuses attention on the importance of taking into account all facets of an individual's development, including the broader social, historical, cultural, even economic factors that contribute to an individual's cognitive competence. In addition to regarding the child's development in its social and cultural context, Vygotsky's theory claims that cognitive and language development are explicable and comprehensible only by reference to these contexts. That is, the processes of cognitive growth depend on and acknowledge social contexts and influences.

The central mechanism for learning is the transfer of responsibility for the achievement of a mutually acceptable goal or solution from an expert, or more adept participant, to a novice, or naive participant, in collaborative interaction. The responsibility entails planning and monitoring the strategies for accomplishing success, operationalising the most expedient, efficient and effective strategies, and demonstrating mastery of all aspects

of the task. In so doing, success – i.e. attainment of the desired goal – is also usually achieved.

To this end, Vygotsky postulated the existence of the *zone of proximal development* (ZPD). This is defined as the distance between the child's actual developmental level and his or her potential developmental level, as seen when the child is solving problems in interaction with 'an adult or more capable peer' (Vygotsky, 1978, p. 86). The ZPD is a measure of learning potential and represents the region wherein cognitive development takes place. It implies a degree of collaboration between participants in the social interaction, where each is making a contribution towards the goal. These participants may come from different starting points and may not agree on the definition of the problem or the means to solve it.

Part of the task of the ZPD is to permit intersubjectivity and task definition. *Intersubjectivity* occurs when the two participants share the same task, or situation definition, and each knows the other shares the same definition. It can be defined as a 'meeting of minds'. Thus, not only is the child guided and supported to accomplish the solution, but he or she also learns how to achieve mutuality and intersubjectivity, both instrumental to task success.

The achievement of intersubjectivity depends partly on the contributions made by each participant in the interaction. Demarcation of roles facilitates learning, possibly for both participants. The novice, or less competent participant, determines the existing level of skill or expertise and sets the pace for instruction and learning. The more experienced participant gauges the pre-existing skills and the necessity for instruction, and divides the task or problem into manageable components. The adult or more capable peer takes responsibility for the management of the task and also for changing the definition of the task by the child or the less capable peer.

It is useful to differentiate the ZPD from the notion of *scaffolding* proposed by Bruner and colleagues (see Wood, Bruner & Ross, 1976). Scaffolding refers to the process of adult support and assistance given to a child mastering a locally determined problem. The problem may be a cognitive one or may be language *per se*, and scaffolding refers to the sensitivity of a parent to the child's potential. The ZPD is a theoretical construct that describes that potential, the distance between unaided and aided competence. Scaffolding refers to the aid component, with emphasis on the provision of appropriate support for successful learning. Gauvain (2001b) describes chronologically how scaffolding, or contingent responding, on the part of the parent (usually the mother) changes as children develop and master different tasks and solve different problems. She concludes:

Children are involved with more experienced partners for a very large portion of their daily lives, and these experiences often involve solving problems. . . . during these interactions adults assist children in the development and use of many of the skills critical for solving problems . . . research does suggest that social interaction with adults is an important source of input for children during the years in which they are developing and refining their problem solving skills. (Gauvain, 2001b, p. 155)

CHANGE IN THE CONTEXT OF INTERACTIVE/COLLABORATIVE PROBLEM SOLVING

Instead of looking at aspects of the problem solving situation to find explanations of cognitive change during interaction, an alterative approach is to look at aspects of the child. Given that improvement is noted in the less capable child during and after interactive problem solving, how can this happen at the level of the child him or herself? In looking at the individual child in the social context, the question can then be posed: What does the child bring to the task? As noted previously, Vygotsky acknowledged that children or participants in collaborative problem solving may begin from different starting points. Thus, we can look at the existing level, ability or capacity of each child – in other words, their competencies on entry to the task. Alternatively, or in addition, we can look at the propensity or potential to change in each child in the problem solving interaction.

Bonino and Cattelino (1999), for example, examined the relationship between cognitive and social abilities in children, specifically looking at the relationship between flexibility in thinking and the solution to social conflicts with peers. For the purposes of their research study, flexibility was defined as 'reactive flexibility', which requires children to shift their responses in relation to external cues. In this case, the researchers used the Wisconsin Card Sorting Task, a categorisation task requiring the inhibition of responses that have been rewarded in order to attain a new classification. This was chosen because the peer task required the children to shift their actions in responses to the demands of the task and of their partners.

Underpinning this study then was the notion that flexibility would influence interaction behaviours such as competition and co-operation, and the achievement of a solution or goal. The specific hypothesis was that children with higher flexibility in thinking as measured at pre-test would be more co-operative and less competitive in social conflicts. Lower

flexibility children, on the other hand, would demonstrate more aggression and less co-operation. Using seven-year-old children, this study supported the hypothesis, but more generally showed that a pre-existing disposition on the part of the children – in this case a level of cognitive flexibility – influenced the nature of the interaction between pairs of children.

Furthermore, interpersonal capacities that may enhance the facilitative nature of collaborative problem solving can be explored and measured. For example, Da Silva and Winnykamen (1998) examined the role of personal attributes in subsequent problem solving success. Children's sociability levels were measured, based on peer nomination and rating, and children were paired with another similar-aged child on the basis of performance on a problem solving task. Specific hypotheses about the outcomes for different dyads were constructed. For the six-year-old children in this study, sociability was found to influence individual pre- to post-test learning, although gains were recorded for lower ability children who worked with higher ability peers as well as children who worked with same ability peers. Sociable children, as predicted, demonstrated better levels of communication as well as co-operative behaviours that were adapted to their partner's needs and to the exchange of information. In general, it was concluded that sociable children were sensitive to their partner during interaction and this facilitated subsequent learning.

DOMAIN SPECIFIC KNOWLEDGE

A way of conceptualising children's increasing ability to solve problems is by viewing cognitive development within specifiable domains of knowledge, including language, number, psychology and biology. Certain cognitive processes, such as analogy, basic perceptual or cognitive processes, or category representation, which are domain-independent, can be regarded as constraining the more general sociocultural mechanisms of development. That is, the more general explanations of children's problem solving can only be interpreted within the context of domain-specific knowledge. In this way, cognitive development can be explained by describing the constraints that operate to affect the growth of understanding within specifiable domains of knowledge. This does not mean, however, that sociocultural explanations are ignored; indeed they can be accommodated within such explanations that take into account not only the domain of knowledge but also the culture or semiotics of meaning.

A consequence of taking a domain-specific view is that the nature of the 'problem' under investigation becomes important. Furthermore, such a

focus permits the specification of the nature of knowledge and any changes in that knowledge that may occur as a function of, for example, collaboration. Consequently, cognitive growth, change and development can be specified quite precisely, in contrast to the general changes described when invoking more global explanations of cognitive change. From this perspective, it has been argued that the mechanisms for change on subsequent improved problem solving have thus largely been uninterpretable because:

- entry competence is unknown;
- the developmental sequence is unknown;
- the theoretical consequences of change are not usually articulated; and
- perhaps most importantly, the nature of the qualitative or quantitative change is unknown.

CHILDREN'S POTENTIAL TO CHANGE

In order to examine children's potential to change, it is helpful to redefine cognitive change as knowledge acquisition. Furthermore, the literature on knowledge acquisition that has used a problem solving context has focused specifically on children's strategy development and deployment. In other words, the literature on children's strategy use has tended to focus on knowledge acquisition *per se*, rather than cognitive changes, although this may represent only a change of emphasis or of terminology.

The underlying assumption of research that has looked at change in children's thinking or strategy use is that children have multiple ways of thinking about any one problem. Even from the early days of Piagetian-inspired research, it has been recognised that children can demonstrate different ways of thinking or use different strategies, depending on the context. What more recent research has been examining is how these multiple ways of thinking arise and how children choose between them.

In examining the context in which cognitive change/knowledge acquisition takes place, Kuhn, Garcia-Mila, Zohar and Andersen (1995) ask the question, 'How much freedom do children have in selecting the evidence on which to base their solution to a problem?' In the experimental tasks typically used to study children's problem solving, the answer is 'Not a lot'. By constraining the options available to the children via defining or selecting the problem for them, their strategy selection and use can be studied within the parameters we, as adult experimenters, think are important. Methodologically, Kuhn et al. claim to have overcome this difficulty through the use of a multiple-task, multiple-occasion assessment of

children's strategy use. However, more generally, the question is one of how existing knowledge constrains current strategy deployment as well as the acquisition of new knowledge. As an extension of this, a further question is then how and when does new evidence, construed as success or failure on a new task, lead to changes in thinking? What constitutes 'new evidence'? Kuhn et al. argue that change arises slowly, with old strategies not simply replaced with new ones; instead they all compete for use and application, depending on the problem and the context. What does change is a distribution of use of a set of strategies, each of varying adequacy for the particular problem. Transfer is not a simple single operation, but rather requires domain-specific knowledge such as analogy or representation.

Siegler and colleagues have explored in greater depth the notion of how children choose between different strategies, and in so doing they have developed a model of strategy choice – the Adaptive Strategy Choice Model (ASCM) (Siegler, 1996). In developing the ASCM, metacognitive models, as postulated by Kuhn et al. as well as by Flavell (e.g., 1999), are dismissed as inadequate. Although metacognitive models are rationally derived and pay attention to explicit and conscious knowledge about one's own cognition and cognitive processes, Siegler believes their greatest value has been in informing more recent research on children's developing awareness and understanding of themselves and others. So while they have not contributed to greater knowledge about how children choose between alternative strategies when faced with a problem, metacognitive models have led on to studies of children's theories of mind. Siegler meanwhile demonstrated that children typically think in multiple ways about a problem and that there is great variability and multidimensionality in the ways children think in general.

Karmiloff-Smith's (1992) theory of development relies on representational change being 'success-driven', while behavioural change is more often 'failure-driven'. Three recurrent phases of strategy change are noted in all domains where problems, broadly construed, are encountered and solved. In the first, procedural, phase, every problem is regarded separately from any other and solutions are data-driven. Success is the goal, and children lack an overall integrative strategy for solving problems. Increasing automaticity is generated only by increasing success. The second, metaprocedural, phase involves the rewriting of the earlier individual procedures as representations, and problems are solved according to the appropriate representation. This paradoxically often results in children apparently not achieving successful solutions to problems as they focus on deployment of the strategy represented. The final, conceptual, phase is marked by greater flexibility in the use of problem solving strategies, spurred on by success rather than failure to achieve the correct solution.

The model proposed by Karmiloff-Smith generalises to all problem solving domains, including language, mathematics, drawing and music.

THEORIES OF MIND

A possible mechanism to draw together the research on communication and awareness of the other in interaction and the choice of strategies in problem solving is the child's developing theories of mind. Strategy choice may be a result of conscious awareness and reflection of the content of thought (Kuhn et al., 1995), although Siegler (1996) argues that it is not. (Indeed, Siegler goes as far as arguing that strategy choice is based on 'mindless' processes.) Pursuing the line of argument put forward by Kuhn and colleagues, if both participants in a collaborative problem solving situation share a common conception of the problem and how to solve it, then the degree to which they can work successfully on the task is enhanced. Such a shared task perspective can be achieved by talking to one another. Similarly, explicit or implicit conflict between children can be resolved through communication. Social regulation via communication about role division and allocation, as well as planning and executing the task, facilitates problem solving and can be beneficial to both participants (Garton, 1992, 1993; Teasley, 1995).

A theoretical explanation comes from a large body of recent research that has demonstrated the importance for children of being able to reflect on knowledge. The development of children's 'theory of mind' is concerned with developing understanding of the nature of knowledge and refers to the ability of children to understand that others too know things, have beliefs and can think, based on knowledge which might be true or false. One crucial means to such understanding is through communication as evidenced in collaborative problem solving. However, it may be that communication can only be successful if there is an existing propensity, or awareness, in children to recognise the importance of the strategic knowledge of the other partner in the interaction.

Chapman (1991) proposes the epistemic triangle to permit inclusion of social interaction in children's reasoning on concrete operational tasks. This construct integrates a Piagetian view, which focuses on the role of the developing child interacting with the environment, and a Vygotskian view, which places social interaction in the forefront. In the epistemic triangle, there is recognition of both the object in the environment and the communicative and social nature of the human interaction. The development of social understanding takes place alongside the child's construction of knowledge of the physical world. This view has been extended by

Carpendale and Lewis (in press) to account for the child's developing understanding of the mind. According to these researchers, children construct an understanding of how they and others acquire knowledge through communication in interaction.

THE WAY FORWARD

As explained earlier, my aim is to explore how the child as problem solver can be used as a microscope with which to discuss contemporary issues in theoretical approaches to cognitive development. In particular, I wish to regard the child in a social context and not as a solitary, even lonely, individual. It has always been my belief that children require social support to learn, and the problem solving situation is undoubtedly social. It is all the more interesting if we regard it as collaborative, in so far as there is a requirement that children, or children and adults, work together, create a social context and share roles and responsibilities to achieve an outcome or to solve a problem. Not all the theories to be discussed evolve from collaborative problem solving. Instead, the research presented has used a problem solving paradigm in some shape or form to discuss various aspects of the participants, the task or the context within a particular theoretical framework. Thus we have theories that look at how the nature and type of interaction influences the outcome, theories that look at characteristics of the participants such as their gender or their capacity to generate strategies or solutions, and theories that claim all learning is innate. With these in mind, my exploration begins.