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THE 'SOCIAL' IN PIAGET'S GENETIC EPISTEMOLOGY

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A Research Report submitted to the Faculty of Education, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Education by Coursework.

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ABSTRACT

In opposition to the historically accepted view that Piaget failed to theorise the 'social' in his theory of cognitive development this research report shows that the 'social' is central to his genetic epistemology and that his conceptualisation of the 'social' has interesting implications for educational thinking. Specifically, the report shows that not only did Piaget include the social dimension in his genetic epistemology but that his understanding of the role of the 'social' in the development of cognition raises interesting possibilities for future psychological and educational research.

KEY WORDS

Genetic Epistemology; Piaget; Constructivism; Psychogenesis; Sociogenesis; Social Relations; Interaction; Co-operation; Social Exchange; Egocentrism; Peer Interaction; Cognitive conflict; Equilibration; Logic; Morality; Affectivity.

DECLARATION

I declare that this research report is my own, unaided work. It is being submitted in partial fulfilment of the requirements for the degree of Master of Education by Coursework in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other university.

Lowe

(Name of candidate)

26/2/99

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It is impossible to disassociate the biological and the social aspects when you are dealing with psychological development. A phenomenon is always biological in its roots, and social at its end point. But we must not forget, also, that between the two it is mental.

Jean Piaget (in Evans, 1973, p.6-7)

Introduction

Explanations of cognitive development have either posited nurture (external environment) or nature (internal biology) as the primary factors responsible for cognitive development. Piaget (1932) attempts to establish a *tertium quid* between these alternatives and argues, instead, for a dialectical interaction between the two. That is, Piaget's interest is in how the external world (nurture) and the biological (nature) interact with one another and contribute to development. As such, Piaget (in Perret-Clermont, 1980) consistently emphasises the interaction between the individual and the social and claims that "society is like all organisations, a system of interactions in which each individual contributes a small sector which is both biological and social. Development takes place through continual interactions, a dialectical relationship" (p.25). However, due to Piaget's extensive use of a biological metaphor to explain development, as well as his use of specifically biological concepts to explain human cognition, I maintain that his theory has been interpreted as backing the 'inner' (biological) rather than the 'outer' (environment). In the process, the dialectical nature of his reasoning has been undermined and, more importantly, the significant role of the social environment in his theory has been underplayed.

This research report will show that not only did Piaget include the social dimension in his genetic epistemology but that he also adequately theorised the role of the 'social' in cognitive development. The first section of the report will be devoted to a discussion of the different criticisms that Piaget's genetic epistemology does not include a social dimension. Following from this, I will analyse the 'social' in Piaget's genetic epistemology with special reference to his views on (a) the relation between sociology and psychology and the significance of this relationship for genetic epistemology as a whole; and (b) his social-relational view of development. Thereafter, I will look at the role of the 'social' in genetic epistemology with

regard to (a) the equilibration process; (b) the construction of logic; and (c) the development of morality and affectivity respectively. The final section of this report will focus on the implications of Piaget's conceptualisation of the 'social' for education. In demonstrating the complex and in-depth conceptualisation of the 'social' in Piaget's genetic epistemology this research report will, therefore, attempt to rectify the historical misrepresentation of his theory and demonstrate how an understanding of his conceptualisation of the 'social' could be used profitably in education.

Literature review

A recurrent criticism in the large body of literature devoted to Piaget's genetic epistemology in general and his psychological theorising in specific is his 'failure' to theorise adequately 'the role of the social' in the development of cognition. To establish the nature and scope of this basic criticism this review will look at the different foci of this criticism within (some of) the literature. Although there are underlying similarities between these foci I have divided these, somewhat arbitrarily, into eight separate areas, viz., criticisms of Piaget's (1) biological approach to development; (2) emphasis on formal operations; (3) structuralism; (4) conflation of physical and social cognition; (5) underestimation of the role of the social in the acquisition of knowledge; (6) omission of 'culture'; (7) focus on egocentrism; and (8) exclusion of the social dimension in his experiments. Given the overlapping nature of these criticisms some repetition has been unavoidable.

1. The Biological Model in the Explanation of Development

Bronckart (1996), Broughton (1981a; b; c; d), Bruner (1959), Hamlyn (1967), and Moll (1984) argue that Piaget's biological explanation of development does not emphasise the social dimension in development. Bronckart (1996) focuses on Piaget's early work on sensorimotor development and contends that Piaget rejects the hypothesis of a creative role for society in human development. Specifically, Bronckart objects to Piaget's claim that during the sensorimotor stage the first forms of meaning proceed directly from the individual-object interaction without adult action playing any role. Sensorimotor action, according to Bronckart (1996), is perceived by Piaget as "an organism producing (or "causing") objective effects on the objects" (p.102). As a result

> cognitive capacities are worked out through abstraction only of the properties of this causal chain of events to which the agent

> belongs. At the very heart of the agent's reason are the logical properties of the interaction between two physical entities, the organism and the environment, and not the properties of the social activity such as it is (re)defined and (re)negotiated in language. (Bronckart, 1996, p.102)

Thus, Bronckart maintains that Piaget denies a decisive role to social interaction and language in the evolution of mental functioning. That is, for Piaget, the very origin of logical-mathematical thought proceeds directly from an interiorisation and a reconstruction at the mental level of the causal system and there is no room for social mediation or social interaction in this developmental process. Consequently, Bronckart (1996) concludes that "Piagetian interactionism takes place within a solitary organism" (p.102).

Hamlyn (1967) endorses this view and contends that Piaget's biological approach to development only considers the individual organism in relation to its physical environment as if social factors have no part to play. Furthermore, Broughton (1981c) maintains that Piaget subsumes society under the general rubric of environment and, consequently, human individuals experience their social environment in the same way that organisms experience the natural environment. As a result, the cognitive-structural side of the interaction is stressed at the expense of the environmental side, namely, the social determinants of behaviour. Consequently, Broughton (1981c) maintains that Piaget "systematically screens out the exigencies of the social life in order to focus on the natural constitution of mental structures themselves" (p.336) and, therefore, he is forced to explain human development as "an autonomous unfolding of a program that is in some way innate" (Broughton, 1981b, p.280). As such, Broughton (1981b) contends, Piaget construes development as a progressive self-reliance and his theory of cognitive development amounts to "a bi-phasic account of how 'biological' functioning yields 'logical' structures, from biology to knowledge" (p.278). Bruner (1959) supports this claim and suggests that Piaget substitutes "the idea of logical

structures for the functional system of biology" (p.364) while Moll (1984) similarly accuses Piaget of reducing human cognitive development to biological development. Indeed, in presupposing the epistemological primacy of biological activity Piaget emphasises, for Moll (1984), a "concept of activity which is radically non-social" (p.35) and, consequently, Moll contends that knowledge, for Piaget, is in no sense socially constituted. On the basis of the foregoing Moll concludes that Piaget's genetic epistemology is inadequate because it does not take sufficient account of the role of social content in the construction of a child's cognition. For the above theorists, then, the Piagetian subject is a 'solitary knower' (Smith, 1982; 1995; 1996) in a physical, rather than a social world.

In addition, Bruner (1985), Grize (in Smith, 1982), Meacham (1975) Riegel (1973; 1975a; b), Riegel and Meacham (1978), Sameroff (1975), and Wozniak (1974; 1996) object to Piaget's theory of equilibration. According to Grize (in Smith, 1982), Piaget's equilibratory model accords greater primacy to motor and manipulative behaviour and, in so doing, ignores cultural and linguistically mediated forms of activity. Consequently, Bruner (1985) suggests that in the Piagetian model of development "a lone child struggles singlehanded to strike some equilibrium between assimilating the world to himself or himself to the world" (p.25).

Sameroff (1975) and Riegel and Meacham (1978) further argue that development and change do not consist in stages at which equilibrium is achieved but rather in continuing modifications. Both Riegel (1973; 1975b) and Meacham (1975) recognise the potential for a dialectical basis for Piaget's theory. For instance, they maintain that the assimilation-accommodation paradigm which Piaget uses for depicting basic biological interactions and early cognitive differentiation, as well as the coordination and sequencing of these early schemata, incorporate the dialectical principles of contradiction, resolution and qualitative

change. However, Riegel (1973) maintains that "all of the remaining explications of Piaget's theory characterize development as a progression toward abstract thought, away from and toward a denial of contradictions" (p.350). Thus, according to Wozniak (1974), Piaget's theory fails to provide a convincing theoretical mechanism through which the social world can alter the course of post-sensorimotor cognitive development. Consequently, Riegel (1975a) and Wozniak (1996) suggest that Piaget's theory overlooks the importance of social interaction and the essentially intersubjective nature of human development. In opposition to this inadequacy in Piaget's thinking Wozniak (1996) contends that

> [h]uman intelligence...especially as it is biologically motivated, must be organized from the outset in its function and development not only towards the construction of logic and the elaboration of the physical world but towards the acquisition of cultural meanings and the elaboration with others of shared reality in conjoint activity around objects. (p.22-23)

Similarly, Riegel and Meacham (1978) believe that, by contrast to Piaget's ahistorical view, individual development needs to be viewed within the "progressions of history" (p.35) which provides a continually changing social and cultural context.

2. The Emphasis on Formal Operations

This criticism focuses on Piaget's emphasis on formal operations as the end point of development. For instance, Broughton (1984) claims that Piaget's formal operational model eliminates any social or cultural dimension from human cognition. According to Broughton this is because Piaget's elevation of logic represents a subordination of experience to form as well as the dualistic exclusion of the subject of knowledge from the object of knowledge. As a result, Broughton (1981a) contends, the logical structure of reasoning is a purely individual matter developed through the interaction between subject and object and, therefore, for Piaget, "logic is not a social phenomenon or a cultural construction" (p.95). Bruner (1959) endorses

this view and argues that content, or meaning, is much more determinate of the structures of mature cognition than Piaget's theory of formal operations allows. In addition, Broughton (1984) contends that in Piaget's formal operational model both understanding and action are prevented from being informed by, or influencing, the historical transformation of society. Thus, "formal operational adults supposedly live in a hermetically sealed ahistorical universe where life is a matter of necessities deriving from the natural nonmanmade (sic) laws of equilibrium" (Broughton, 1984, p.408) and, consequently, experience is formalised in abstract models free from concrete experience. As such, Broughton (1981c) argues that Piaget's theory presupposes and fortifies an abstract opposition between structure – system, society, culture and history and the Piagetian subject remains forever isolated from the social environment.

Riegel (in Youniss, 1978) further argues that if the pinnacle of human cognitive development is abstract formal operations, as Piaget claims, development consists of a progressive separation of subject from object or of the form and content of cognition. As such, Riegel claims the Piagetian subject knows the world by looking into herself for increasingly abstract and general concepts or principles with the result that thought becomes so abstract that it loses touch with reality and eventually with practical action. Consequently, Riegel maintains that the Piagetian subject becomes increasingly alienated from others and from society. Knowledge is constructed within and by structures internal to the Piagetian subject and one does not need to look to social content to explain its origin or development. As such, Piaget's emphasis on cognitive structures that are independent of the contents of cognition results, for Riegel, in a theory in which the social has no role.

In a similar vein, Buck-Morss (1980) criticises Piaget's dualistic separation of cognition and society and contends that Piaget denies a structural identity between mind and society and, in so doing, fails to recognise "that the logical structure of abstract formalism, far from universal, is itself the product of history, that the form of cognition is itself social content" (Buck-Morss, 1982, p.263). That is, Piaget's theory, according to Buck-Morss (in Riegel and Meacham, 1978), ignores the fact that both the content of mind as well as cognitive processes are dependent upon the practical activities which emerge under differing social conditions. Buck-Morss (1982) and Simpson (1974) contend, therefore, that Piaget's emphasis on a universal theory of development has resulted in the failure to take into account the crucial socio-historical determinants of cognitive development. Consequently, Buss (1977) contends that Piaget disregards the historical dimension of human development and presents instead "an ahistorical scientific study of the development of epistemic operations" (p.120).

3. Piaget's Structuralism

Venn and Walkerdine (in Moll, 1984) and Wilden (1980) maintain that human consciousness can only be explained by revealing its location in the structural totality of human society. Specifically, Wilden (1980) finds fault with Piaget's notion of self-regulation which, according to Piaget, entails "self-maintenance and closure" and is defined as the structure's "innermost source of movement" (p.316-317). This suggests, for Wilden, that the transformations are inherent and never lead outside the organism or individual. Therefore, Wilden contends that Piaget provides a mechanistic model of development in that it is the internal logic of structures, and not the social or cultural context, which compels development. In addition, Wilden (1980), Rotman (1977) and Venn and Walkerdine (in Broughton, 1981c) object to Piaget's appeal to mathematics to support his theory of equilibrium. Venn and

Walkerdine (in Broughton, 1981c) believe that Piaget's use of mathematics and logic as a combined structural model of competence has resulted in the exclusion of the "significant and obvious fact of mathematical and logical discourse as social practices" (p.339). That is, mathematics may consist of operations, as Piaget suggests, but these operations are part of a system of social conventions and therefore, according to Venn and Walkerdine (in Ingleby, 1986), they can never be developed by the child directly out of her dealings with objects. In this regard, Rotman (1977) objects to Piaget's notion that logicomathematical knowledge originates solely in the individual's activity patterns and that logic is abstracted through a process of internalisation and reflective abstraction governed by the laws of equilibrium. This organism-environmental model suggests, for Rotman, that logicomathematical structures evolve independently of either language or social and cultural influence. As such, according to Wilden (1980), human nature, for Piaget, amounts merely to "autonomous structure" and Piaget conceives of the "system-environment relationship of the child...in terms of the equilibrated 'bounded structure' of homogenous elements (p.327). In so doing, Piaget ignores the "REAL context of accumulation, socioeconomic status, psychosocial 'socialization'" (ibid, p.313) [emphasis in original]. Such foundations for an epistemology results, for Wilden, in the generation of an imaginary or ideological barrier between the child and her environment. As a result

> the actual open-system relationship of 'individual' and 'environment' – in which boundaries = communication – is implicitly or explicitly conceived of as a relationship between two closed systems, each of which can do without the other until or only for as long as they bump into each other in the street. (Wilden, 1980, p.32[8])

A major inadequacy of Piaget's theory, for Wilden (1980), therefore, is its understanding of environment, namely, "its antisocial point of view" (p.310). For Wilden (1980) the Piagetian subject amounts to little more than an objective entity and Piaget's theory does not consider

that it is the child's "open relationship to the various levels of the environment which account for all 'intentional acts' and 'meaning'" (p.326). Therefore, Wilden (1980) describes Piaget's theory as individualistic and concludes that

> it is precisely a full and open understanding of the partly controlled and partly random feedback relationship to a CONTEXT [social, cultural and historical] which is missing from Piaget's structuralism. (p.350) [emphasis in original]

Venn and Walkerdine (in Moll, 1984) echo this view and criticise Piaget's "theoretical removal of the human subject from its location in the overall structures of society" (p.69). They argue that Piaget's theory emphasises the role of the individual as agent in the transaction with the environment (social or physical) and, therefore, it is the subject's actions alone that enable the construction of cognitive structures. Thus, Venn and Walkerdine (in Moll, 1984) argue that Piaget's error is an epistemological one which "ignores the source of knowledge in language and history" (p.70). Consequently, they conclude that Piaget's genetic epistemology ignores the fact that knowledge is a social production. For Venn and Walkerdine (in Moll, 1984) structure is by definition social, however, Piaget ignores this and substitutes it with an "organism bound biological structure" (p.70). Consequently, Venn and Walkerdine (in Moll, 1984, p.72) claim that Piaget's theory "misconstrues the structures of knowledge as the structures of the organism". Therefore, for these theorists, Piaget's structural theory of development must be rejected as a meaningful explanation of human cognition.

4. <u>The Conflation of Physical and Social Cognition</u>

Researchers such as Cohen (1983), Damon (1981; 1983), Glick (1978), Hoffman (1981), Keating and Clark (1980), Rotman (1977), Sigel (1981), and Turiel (in Murray, 1983) claim

that Piaget's theory fails because it treats social cognition as if it were physical cognition. As a result it takes the subject's knowledge of the social world as not being essentially different from her knowledge of the physical world. For example, Rotman (1977) argues that Piaget's theory is deficient because it takes the physical environment to be constitutive of a subject's environment and fails to consider that individuals are immersed in a non-natural, social world. That is, an environment of ideas, meanings, intentions, history and symbols "within a matrix of social influence and co-operation" (Rotman, 1977, p.181). Cohen (1983) endorses this contention and argues that Piaget's main focus is on the child's relationship with physical objects. According to Cohen (1983) development, for Piaget, is a product of interactions between the "genetic base" (p.151) and the physical environment. Therefore, Cohen (1983) maintains that Piaget's theory remains largely "a question of how we know the reality of things" (p.92) and, consequently, Piaget neglects the role of social interaction and social relationships in the development of reason.

In a similar vein, Hoffman (1981) cites Piaget's (1963) claim that the "reaction of intelligence...to the social environment is exactly parallel to its reaction to the physical environment" (p.67) as evidence that Piaget believed that the cognition of social events entails the same cognitive structures and schemes that are implicated in the cognition of nonsocial (physical) events. However, Hoffman argues that while there may be cognitive competencies in the social domain that have a more or less exact parallel in the physical domain there are also social cognitive competencies that do not share such parallels. Specifically, Hoffman focuses on the issue of affect and accuses Piaget of operating on the assumption that once cognitive processes are set in motion they can be studied without recourse to affect. Hoffman (1981) maintains that social cognition, to a far greater extent than cognition in the physical domain operates not alone but in "the context of a complex, mutually facilitative give and take

between affective and cognitive processes" (p.78). Thus, according to Hoffman, there are essential differences between social and physical cognition. Damon (1983) maintains that Piaget's theory of equilibrium ignores these differences and instead describes "a general subject-object feedback system that can rely on physical as easily as social experience" (p.164) without acknowledging the potential of social objects for social interaction. According to Damon (1981), the principles unique to social interaction, namely, "the ability of persons intentionally to coordinate their actions, thoughts, and perspectives with one another" (p.158) makes possible forms of communication and reciprocal exchanges that are not possible in the inanimate, physical world and, therefore, requires a special sort of understanding. Therefore, Sigel (1981) suggests that, in Piaget's theory, social exchange needs the same "specification of form and function" (p.205) that is given to his conceptualization of physical experience.

On the basis of the foregoing Turiel (in Murray, 1983) argues for a non-structural explanation in the social domain. That is, social cognitive development should not be explained by the same global structures that organismic theories have applied to the development of cognition in general. Turiel (in Glick, 1978) suggests, for example, that in the social domain developmental sequences may be very different from the logical sequences found in cognitive developmental theories such as Piaget's. Glick (in Hoffman, 1981) supports this and argues that social cognition is based "less on logic and more on probability" (p.67). According to Glick (1978) physical events are specifiable and stable and, therefore, they permit the development of logical systems that allow for knowledge that transcends physical particulars. Social events, by contrast, display less stability and should involve knowledge structures of a more probabilistic kind. Consequently, according to Glick, the nature of social events is such that their cognition should be considered as qualitatively distinct from the cognition of

physical events. In denying this distinction between the two domains Piaget's theory, for Glick, ignores the fact that social cognition relies on a shared cultural belief system or social and cultural scripts. Finally, Keating and Clark (1980) argue that although Piaget's account of formal operational thinking may be applicable to social contexts "the basic approach to cognitive activity in the social domain has borrowed so heavily from existing cognitive approaches that there is little that is truly 'social' about it" (p.29).

5. The Underestimation of the Role of the Social in the Acquisition of Knowledge

This criticism focuses specifically on the conditions under which an individual acquires knowledge. The claim here is that Piaget's genetic epistemology fails because it treats cognition, in any form whether physical or social, as an individual and not a co-operative enterprise. That is, Piaget concentrates on intra-individual factors in the acquisition of knowledge at the expense of inter-individual factors. For example, Marti (1996) argues that Piaget's theory of development is effectively shut off from interpersonal dynamics and, as a result, symbolic mediation or interpsychological regulation is subordinated to the constraints of operatory, and hence, intrapsychological activity. For this reason Dunbar (1995) accuses Piaget of underestimating the degree to which the development of scientific knowledge is a social phenomenon.

Atkinson (1983) supports this and maintains that Piaget's primary concern is with the emergence in the individual of "valid forms of thought" (p.67). Atkinson (1983) contends that, for Piaget, the validity of a form of thought is something "intrinsic to that form and that it is connected with its degree of structure and organization" (p.67). In this way Atkinson argues that Piaget fails to take proper account of the social nature of objective knowledge. For

Atkinson, objective knowledge does not depend on any intrinsic features of the thought itself but refers to the openness of that thought to inspection and criticism from others. In other words, the possibility of objective knowledge rests on the possibility of interpersonal communication and shared social concepts. However, Atkinson argues that according to Piaget's theory the social nature of others does not constitute a feature of the environment until fairly late in development. Even then, the nature of others, according to Atkinson, can become an object of knowledge only by being viewed through schemata developed by the individual. Consequently, according to Atkinson, Piaget's theory assumes that the individual is affected by social or physical stimulation only to the extent that she first actively assimilates the stimulation to her own schemes or subjective mental structures. In this sense, Atkinson maintains that Piaget represents the gaining of knowledge as the result of an interaction between something which is objective (external environment) and something which is subjective (mental structure or schemata). That is, mental structures are subjective and have their origin in the subject's own consciousness. Thus, the basis of the structure of thought is the interiorisation of non-verbal, individual action in which the social has no role. Therefore, Piaget is accused of underestimating the role of social communication in cognitive development.

Haroutunian (1983) endorses the foregoing contention and argues that if the nature of experience depends on the features of the individual's schemata that are used to assimilate reality, as Piaget suggests, then there can be no common or socially shared experience. According to Haroutunian, Piaget's use of the phenocopy principle describes a feedback procedure that is internal to the system. That is, change or development occurs by "selecting options from a repertoire, trying them out, and judging whether they meet specified criteria" (Haroutunian, 1983, p.110). However, Haroutunian argues, unless some independent criteria

can be appealed to objectivity is impossible and a process of agreement cannot take place. In other words, unless a system can evaluate its conclusions against not only its own criteria but also criteria independent of itself, it cannot reach agreement proper. Haroutunian maintains that in Piaget's model every evaluation the system makes is based solely on its own criteria and, as Atkinson (1983) argues, one cannot simply develop ones own criteria for validity, truth and correctness. Therefore, Haroutunian (1983) contends that Piaget's model cannot account for how agreement between persons can be reached or how an individual can attain objective understanding. For Haroutunian, then, a major weakness of Piaget's genetic epistemology is its neglect of the inter-subjective nature of thought which makes objectivity and shared understanding possible.

Similarly, Hamlyn (1978) argues that Piaget's genetic epistemology does not explain how agreement between individuals comes about because "other people exist for the individual simply as part of the individual's environment, as objects, and not...co-subjects" (p.10) and, as a result, experience remains initially, as something "private and personal" (p.95). Therefore, Hamlyn argues that objectivity is construed by Piaget as a function of the human mind and not independent of it. For Hamlyn (1978), however, the notion of objectivity implies the possibility of agreement with others:

> The acquisition of knowledge is in effect the initiation into a body of knowledge that others share or might in principle share. This is because the standards of what counts as knowledge...are interpersonal. The concepts of knowledge, truth and objectivity are social in the sense that they imply a framework of agreement on what counts as known, true and objective. (p.58-59)

Thus, Hamlyn poses a Wittgensteinian challenge to Piaget, namely, that knowledge presupposes criteria of truth and that knowledge or meaning must in principle be social since there can be no such thing as knowledge or truth without objective agreement between people.

That is, knowledge is at all times constituted by, and within, social processes. However, Hamlyn maintains, Piaget's genetic epistemology neglects this essentially inter-subjective context. Consequently, for Hamlyn (in Smith, 1982), Piaget's genetic epistemology is inadequate and provides at most necessary but not sufficient conditions of a subject's acquisition of knowledge. An adequate theory of development, according to Hamlyn (in Smith, 1982), should satisfy the following conditions of a subject's acquisition of knowledge:

> (1) a subject who knows something knows it as true, which (2) presupposes his/her knowing what it is for something to be true, yet (3) possession of a concept of truth involves appreciation of the force of a norm, and (4) such appreciation implies correction by others which correction is seen as correction, so that (5) a subject's knowing something implies his/her seeing the source of the correction as a corrector. (p.174)

More importantly, this involves seeing the corrector as a person with certain intentions, desires and interests which implies, for Hamlyn (1974), a context of personal relations. Furthermore, Hamlyn (1982) contends that the very concept of a norm is social in origin. Indeed, an individual who had no form of contact with others could have no concept of a norm and *a fortiori* no conception of truth. Thus knowledge, for Hamlyn, may be acquired only by a subject who not only enjoys a social existence but who also knows that her world includes other subjects as well. Therefore, Hamlyn (1978) argues that a "purely biological model" (p.59), such as Piaget's, and the related epistemological claim that knowledge has its primary source in the individual is inadequate for an explanation of cognitive development.

6. Omission of 'Culture'

Cole (1992), arguing from a Vygotskian perspective, accuses Piaget of underestimating the role of culture in development. Cole (1992) contends that although Piaget argued for the equal weight of endogenous (biological) and exogenous (environmental) factors in

development the interaction between the two takes place "between two juxtaposed forces" (p.8). Furthermore, Cole criticises Piaget's partitioning of the environment into social factors on the one hand and physical factors on the other. Cole maintains that human development is constituted within culture. That is, the interaction that Piaget posits between the individual and the environment (social and physical) is both mediated through and conditioned by an historically changing culture. Similarly, Toulmin (1981) objects to Piaget's focus on universal stages of development which ignores the fact that development is in part "a matter of socialization and enculturation – any particular child naturally ends up by reaching the 'stage' of collective development typical of its own culture and epoch" (p.257). In other words, Toulmin (1972) argues that Piaget's genetic epistemology cannot account for cultural diversity or historical change.

Harré (1986) and Ingleby (1986) extend this view and argue that Piaget's genetic epistemology neglects the social and cultural dimension of language. Following Wittgenstein, Harré (1986) suggests that all "human psychological functioning is the product of the language that a person has acquired" and, for this reason, development must be thought of "as much a collective as an individual phenomenon" (p.288). Ingleby (1986) endorses this and argues that human thought, perception and action must be approached in terms of meanings and the "vehicles of 'meanings' are codes (especially) language whose nature is inherently intersubjective" (p.305). Indeed, Sigel, (1981) argues that this interaction with others is a crucial component of cognitive development which Piaget's theory underplays. Ingleby (1986) contends that this is because, according to Piaget's theory, cognition develops out of action-schemes built up by the individual alone excluded from the context of joint or collective social action. Therefore, according to Ingleby, social relations, for Piaget, are factors which merely speed up or slow down the autonomous process of development.

Ingleby (1986) argues, however, that "mind is an intrinsically social phenomenon" (p.305) and cannot be understood outside its social, cultural and historical context. For this reason, Harré (1974) contends that we need to seek cultural, rather than biological, explanations for human development. The foregoing criticism applies particularly to social and moral development where Piaget is accused of presenting a subject who constructs social or moral thought on her own without being located in time, place or a social system (Buck-Morss and Riegel in Youniss, 1978). Specifically, Meacham (1975) argues that the moral development of the individual must be conceptualised within a cultural and historical context.

7. The Focus on Egocentrism

Vygotsky (1962) maintains that Piaget gives insufficient attention to the social aspect of children's experience. Vygotsky's criticism focuses on the issue of egocentric speech.[1] For Vygotsky (1962),

> [t]he primary function of speech, in both children and adults is communication, social contact. The earliest speech of the child is therefore essentially social...Egocentric speech emerges when the child transfers social, collaborative forms of behaviour to the sphere of inner-personal psychic functions...(p.19).

Therefore, Vygotsky maintains that the direction of development of thinking is from the social to the individual. For Piaget, however, children's thought is initially and naturally autistic or egocentric and only gradually becomes socialised. According to Vygotsky (1962), the "cornerstone" of Piaget's whole theory is the idea that "autism is the original, earliest form of thought: logic appears relatively late; and egocentric thought is the genetic link between them"

[1] Piaget's ideas on egocentrism have been further criticised by Borke (1971; 1975; 1978), Butterworth (1987), Cohen (1983), Ford (1979), Hoffman (1976; 1981), Stuart (1967), and Waters and Tinsley (1985). These authors argue that very young children are not totally egocentric but have some capacity for responding empathetically to another person's perspective and point of view. This suggests, for these authors, that social interaction may play a more significant role in early childhood development than Piaget's genetic epistemology allows.

(p.13). That is, development progresses in the direction from individual to social. By contrast, Vygotsky argues that the basis of knowledge is to be found in the social world. Therefore, the child is never a solitary centre of consciousness, as Piaget's theory seems to imply. Rather, consciousness, for Vygotsky, is a function of the social order. For this reason Vygotsky proposes a developmental continuity between egocentric speech and verbal thought in the planning and regulation of action. In this way egocentric speech serves initially as a communication function on the interpsychological plane and only later is internalised as verbal thought on the intrapsychological plane. Furthermore, Vygotsky (1978) accuses Piaget of treating the child's adaptive behaviour and sign-using activity as parallel phenomena and consequently overlooking the dialectical unity of these systems in human behaviour. As a result, Vygotsky contends that Piaget's genetic epistemology neglects the social and historical determinants of development. In addition, Vygotsky (1962) maintains that Piaget underestimates the important role of social mediation and education in the construction of knowledge.

8. The Exclusion of the Social in Research Experiments

A final group of critics argue that although Piaget paid some attention to social factors in his theoretical writings such attention is too general and insufficiently specific. For example, Butterworth (1982) criticises Piaget's structuralist approach to development and maintains that the role of specific types of experience in the elaboration of cognitive structures is left largely unexplored. According to Light (1986), Piaget's focus was on the individual's structuring of her own experience. Therefore, Light (1986) argues that the "local, historical, particular aspects of a child's situation and behaviour were treated by Piaget as merely obscuring competence, defined in terms of logicomathematical structures" (p.172). In other

words, social factors are bypassed in Piaget's empirical studies where children are individually interviewed about their understanding of logicomathematical concepts. Consequently, Brown and Reeve (1986) argue that Piaget's theory is a theory of performance on a finite set of tasks and not a theory of human minds at all. Damon (1983) suggests that this is because the primary empirical base for Piaget's theory of cognitive development is "the child's solitary attempt to master physical, logical, or scientific tasks in a laboratory setting" (p.103). Therefore, according to Damon, Piaget's focus remains almost exclusively on the child's active manipulation of the physical world. Consequently, Damon (1983) argues that Piaget's model of cognitive development draws "upon restricted data" (p.103) and he questions whether it is appropriate for describing the development of human cognition in all its forms. According to Damon, logicomathematical structures have limited applicability to other areas of understanding particularly the social domain. Furthermore, Donaldson (in Bornstein and Bruner, 1989) argues that the very nature of Piagetian conservation tasks are of a kind that makes them impermeable to adult assistance. Therefore, according to Donaldson (in Mercer, 1993), Piaget ignores the fact that empirical results are influenced by social and contextual cues carried implicitly within an experimental design or setting. Thus, Butterworth (1993) argues that Piaget's experiments ignore contextual factors and their influence on cognitive development, while Light (1986) maintains that Piaget's research focuses on context free, formal structures and ignores the "real child's experience in specific social contexts" (p.185).

Damon (1979), Light (1987), Glachan and Light (1982), and Doise and Mugny (1984) further argue that Piaget regarded the cognitive and social domains as being regulated by identical operations. Consequently the development of these operations had simultaneous repercussions in both domains. As a result, Piaget's genetic epistemology remains restricted

to the empirical study of correspondences or parallels between these developments and explicitly rejects the possibility of a causal intervention by the social in cognitive development. By contrast, Doise and Mugny (1984) argue that "social interactions are sources of cognitive progress" (p.168) and, therefore, cognition should be studied experimentally as a social construct. This is because, according to Doise and Mugny (in Damon, 1983), "conflicts of cognitive centrations embedded in a social situation are a more powerful factor in cognitive development than a conflict of individual centrations alone" (p.131). Light (1987) reinforces this and emphasises "the social interactional antecedents of cognitive development" (p.57). Glachan and Light (1982) acknowledge that in his early work Piaget did give a causal role to social experience in individual cognitive development but argue that he later abandoned this line of enquiry. Therefore, Doise and Mugny (1984) contend that although Piaget recognised the importance of social interaction, intelligence was never "explicitly studied as social" (p.21) in his experiments. Consequently, Doise and Mugny maintain that in Piaget's genetic epistemology a gap exists between the general ideas put forward regarding the social nature of intelligence and the empirical research carried out to clarify them. Thus, Doise and Mugny conclude that it is the experimental study of the effect of social interaction (introduced as an independent variable) and cognitive development (considered as a dependent variable) that is missing from Piaget's genetic epistemology.

The above critics maintain, then, that Piaget did not adequately incorporate social factors into his experiments and, as a result, studied intelligence almost exclusively as a characteristic of an asocial individual. Therefore they maintain that a fundamental discrepancy exists in Piaget's genetic epistemology between the claims made and the empirical evidence generated to support these claims.

Notwithstanding the different foci of the criticisms of Piaget's genetic epistemology presented above it will be obvious that there is a general consensus within the research literature that Piaget either (a) failed to include the 'social', or (b) provided an inadequate account of the 'social' in his theorising and research. While it is not possible to address each of the specific criticisms in detail I believe that there is sufficient evidence in Piaget's numerous writings to countenance the claims that he failed to include the 'social' in his theorising. Furthermore, I contend, Piaget's conception of the 'social' is not only comparable to but may even complement the 'generally accepted' view of the 'social' provided by Vygotsky (1962; 1978). To establish the accuracy of the foregoing assertions the next part of this research report will be devoted to an exposition of Piaget's genetic epistemology with special reference to his conception of the 'social' in the development of cognition.

The 'Social' in Piaget's Genetic Epistemology

This section will be divided into two major parts. The first will be devoted to a brief exposition of Piaget's genetic epistemology. More specifically, I will analyse Piaget's views on the relation between sociology and psychology and the significance of this relation for genetic epistemology as a whole; his conceptualisation of society as a system of relations; and knowledge as a relation. In this way, I will show that Piaget's genetic epistemology provides a social-relational view of development and his interactive, constructivist perspective necessarily includes the 'social'. The initial section of the discussion will provide an organising framework for a more detailed discussion of Piaget's conceptualisation of the role of the 'social' in the equilibration process; the construction of logic; and moral and affective development respectively.

1. Piaget's Genetic Epistemology

According to Piaget (1971) genetic epistemology is the study of *both* the transitions "from a lower level of knowledge to a level that is judged to be higher" (p.13) and "the mechanisms of the increase of knowledge" (in Kitchener, 1981a, p.402). In order to 'discover' the mechanisms of the increase of knowledge and thereby explain the growth of knowledge Piaget based his method of investigation on a biological model of comparative anatomy and, therefore, genetic epistemology can be conceptualised as a "mental comparative anatomy" (Kitchener, 1986, p.150). Piaget saw an essential similarity between "biological structure/function and epistemological structure/function" (Kitchener, 1981a, p.404) and contends that in biology comparative anatomy uses two methods. In order to discover the commonalities between individuals (or what is general to a species) one can either look for

similarities in adults of that species, or one can look at individual development within that species for evidence of characteristics that are general. Similarly, and by analogy, Piaget suggests that there are two comparable methods available to a mental comparative anatomy (genetic epistemology) (Kitchener, 1981a). It can study "the evolutionary structural relations between certain concepts (eg., number, space, time, physical quantity) in such a way as to map their structural relations over time" (Kitchener, 1981a, p.404). That is, the historical origins and development (historiogenesis/sociogenesis) of the structural relationships between those concepts that Kant considered to be necessary for scientific thought (Bagus, 1992). This is the historico-critical method.

However, Kitchener (1981a) points out that this method is not sufficient by itself and must be supplemented by a "mental embryology or psychogenesis" (p.407) which would investigate the development of the above mentioned Kantian concepts in the individual. Such an investigation requires genetic psychological research and, therefore, Piaget (1971) emphasises that it is imperative for genetic epistemology "to take psychology seriously" (p.9). Although much of Piaget's work focuses on psychogenesis, genetic epistemology "is not reducible to, or identifiable with, the development of intelligence in the individual" (Kaplan, 1971, p.66). As Piaget (1971) suggests "I do not want to give the impression that genetic epistemology is based exclusively on psychology [but that] psychological experimentation is indispensable to shed light on certain epistemological problems" (p.10). Thus, genetic psychological research is not "an end in itself but is intended to provide answers to questions about genetic epistemology" (Kitchener, 1986, p.27). In the process of this research Piaget constructed a psychological theory of cognitive development (Kitchener, 1986).

Although this research was conducted with 'real' individuals Piaget's goal was not to study the acquisition of particular, individual knowledge but rather to study "the development of the necessary conditions of thought and knowledge [in order to determine a] form or structure of knowledge which is universal" (in Kitchener, 1981a, p.408). For this reason Piaget makes a distinction between the epistemic subject and the individual subject (Kitchener, 1981a). Piaget conceives of the epistemic subject as "an abstract, ideal knower assumed to be exemplified by every normal individual" (Kitchener, 1986, p.26) and genetic epistemology is essentially concerned with the "psychogenesis of the fundamental categories of thought in the epistemic subject from infancy to adulthood" (Kitchener, 1981a, p.409).

Genetic epistemology consists, then, of both the historico-critical method and psychogenesis. As Piaget (1971) puts it "[g]enetic epistemology attempts to explain knowledge, and in particular scientific knowledge, on the basis of its history, its sociogenesis, and especially the psychological origins of the notions and operations upon which it is based" (p.1). The historico-critical method provides both the history of specific concepts as well as an analysis of the relationships between concepts which, in turn, provides the groundwork for the study of the development of these concepts psychologically. As such, Piaget contends that the explanatory mechanisms involved in the domains of historiogenesis and psychogenesis are the same (Bagus, 1992). That is, the explanatory mechanisms obtained by genetic psychological research on the origins and development of the Kantian concepts in the individual apply equally to the historical origins and development of the structural relationships between these concepts. Having established the nature and scope of genetic epistemology it is necessary to discuss the 'mechanisms' for the increase of knowledge.

Following from the biological presuppositions mentioned above Piaget suggests that all development has a direction or orthogenesis which is an intrinsic tendency towards greater equilibrium (Kitchener, 1981a). This applies not only to biological evolution but also to individual psychological development and socio-historical development. That is, the process of equilibrium operates on the biological and psychological level simultaneously and, therefore, Piaget claims that psychological equilibrium is "rooted in (and somehow isomorphic to) biological equilibrium" (Kitchener, 1981a, p.412). For Piaget (1976) organic and cognitive equilibrium are the same forms of equilibrium in the sense that cognitive organisation is an extension of the living organism. Therefore, Piaget believes that similar organisational principles apply to both levels of development (Chapman, 1988). As Piaget (1972a) puts it "self-regulation seems to constitute one of the most universal characteristics of life as well as the most general mechanisms common to organic and cognitive reactions" (p.61). In other words, Piaget saw an essential similarity or parallel between biological and epistemological adaptation since the common mechanism at work in both processes is the mechanism of equilibration (Bagus, 1992). Consequently, the processes of assimilation, accommodation, equilibrium, and equilibration used to explain the biological adaptation of organisms to a changing environment are seen, by Piaget, as operating on the epistemological level (Bagus, 1992). That is, "the **epistemic mechanisms** of assimilation, accommodation, equilibrium and equilibration are responsible for the increase of knowledge and the transition from a lower to a higher level of knowledge in the epistemic subject" (Bagus, 1992, p.26) [emphasis my addition]. Using these internal, psychological (epistemic) mechanisms "the knowing subject actively constructs its own knowledge" (Bagus, 1992, p.26) and cognitive development proceeds, for Piaget, in terms of a series of epistemic stages which appear in an invariant and sequential order due to the basic principle of equilibration (Kitchener, 1986). Thus, Piaget's theory of equilibration or self-regulation provides the 'mechanism' for

explaining epistemic transformations and "is to be understood as the reason for the development of knowledge" (Moessinger, 1978, p.260).

With respect to developmental transitions from one form of knowledge to another Piaget (1960; 1964; 1968; 1969; 1970a; 1985) identifies four explanatory factors, namely, maturation, the physical environment, the social environment and equilibration. Piaget (1964) argues that the first three are necessary but not sufficient for the generation of new knowledge and, consequently, Piaget (1960) emphasises the importance of the equilibration process in addition to environmental influences. Indeed, Smith (1982) suggests that equilibration is a factor whose presence is a sufficient condition for the presence of the other three factors. Therefore, Smith (1987) maintains that although Piaget's genetic epistemology includes a social element this must be taken as "one necessary condition of the growth of knowledge" (p.213) because the social dimension alone is not sufficient to account for human development. Piaget (1964) echoes this and suggests that the social dimension is inadequate on its own as an explanation of development because a child needs to have the necessary structures to start with, which will enable her to assimilate social information.

a). Psychology, Sociology and Genetic Epistemology

Although Piaget's genetic epistemology is based on a biological model of comparative anatomy Kitchener (1978) emphasises that, for Piaget, "cognition is as social as it is biological" (p.157). As Piaget (1933/1995)[2] suggests "everything in the individual is always at once biological, psychological, and social [and] intellectual development, from birth, is

[2] Piaget's (1995) Sociological Studies is a collection of nine papers written during the period 1928-1960. The original dates of the respective papers have a significant bearing on my argument regarding the role of the 'social' in the development of logic. Therefore, for purposes of interest and consistency, I have included the original publication details whenever I reference this work.

simultaneously the work of society and of the individual" (p.216). Therefore, Piaget (1928) maintains that the "psychology of thought is always faced...with two fundamental factors...the biological factor, and the social factor" (p.201). Indeed, Elkind (1968) argues that genetic epistemology is essentially a multidisciplinary science. However, Piaget does not conceive of the sciences as related to one another in a reductionist linear way but rather in a circular way (Kitchener, 1981a). Thus, psychology and sociology, including the history of social development, are inseparable and each studies the individual from a different but complementary perspective. For Piaget (1950/1995), then, "the very object of sociological knowledge is of vital interest to [genetic] epistemology, since human knowledge is essentially collective, and social life constitutes an essential factor in the creation and growth of knowledge, both pre-scientific and scientific" (p.30). Therefore, Piaget (in Chapman, 1988) recognises a close parallel between the epistemological problems of sociology and those of psychology and contends that

> genetic epistemology, which studies the growth of knowledge from the dual viewpoint of both its psychological formation and of its historical evolution, depends as much on sociology as on psychology – the sociogenesis of the different forms of knowledge being neither more nor less important than its psychogenesis, since these are two inseparable aspects of any existing formation. (Piaget, 1950/1995, p.35)

Piaget and Inhelder (1969) maintain that this interdependence of sociogenesis and psychogenesis is particularly marked in the field of child psychology and, therefore, "[c]hild psychology, in its search for factors of development cannot be limited to a study of biological maturation. Other, equally important factors are to be considered – exercise or acquired experience as well as social life in general" (p.viii). Consequently, the psychological study of the child cannot be separated from sociology. Indeed, Piaget (1950/1995) suggests that since "the sociogenesis of notions is occurring at the core of psychogenesis from the earliest stages

of development, it is obvious that the influence of sociogenesis will increase progressively...in the later stages" (p.38).

Furthermore, Piaget (1957; 1981b) emphasises that children's understanding of social relations itself undergoes development and change. This is made explicit by Piaget (1962) when he asserts that "the social factor is for us a fact to be explained, not to be invoked as an extra-psychological factor" (p.4). For Piaget (1962), then, the question that arises is "why and how the child is influenced at certain definite moments by this or that social action" (p.4). In this way Piaget (1962) maintains that "the functional unity of the development which leads from sensory-motor to operational intelligence [can] be seen through successive individual or social structures" (p.4). Thus, although Piaget (1962) states that his study of the beginnings of representation in the child emphasises "those fields where the individual processes of mental life dominate the collective factors" (p.2), I contend that Piaget never loses sight of the social dimension. As Piaget (1933/1995) suggests it is necessary to isolate the individual pole from its complementary social pole in order to show that the logic of the child, because it is less socialised, is less rational than that of adults. Piaget and Garcia (1989) argue that this dissociation of the individual and the social pole is necessary in order to expose the "internal laws which regulate the dialectical interaction between objects that get incorporated into knowledge and the cognitive instruments which make this incorporation possible" (p.246). Furthermore, Piaget and Garcia (1989) go on to suggest that "in order to arrive at a total synthesis that can serve as an explanatory schema for the interpretation of the evolution of knowledge both at the level of the individual and that of social evolution" (p.246) the 'social' must be invoked as an explanatory factor in development. Therefore, Piaget (1933/1995) admits that this is an "artificial dissociation" since the "individual never presents himself in a pure state, and a child is dual...oscillating endlessly between the social and egocentrism"

(p.226). Clearly, then, for Piaget, an individual psychology is inadequate to account for the sociological dimension (sociology is not reducible to psychology) but a social psychology or inter-individual psychology can accomplish such a task (Kitchener, 1981b).

b). The Social-Relational View of Development

Apostel (1986), Chapman (1988), Cole and Wertsch (1996), Furth (1980; 1983; 1986), Kitchener (1981b; 1985; 1996), Mays (1982), and Youniss (1978; 1981; 1983) interpret Piaget's genetic epistemology as providing a relational approach to the development of knowledge, and more particularly, social knowledge. Kitchener (1996) contrasts Piaget's psychological relationalism with psychological holism and psychological individualism and suggests that it is the crucial role of relations between individuals that distinguishes Piaget's position from the latter two. According to Piaget (1941/1995) all social facts are reducible to social relations and these, in turn, are reducible to rules, values and signs which correspond respectively to the cognitive, affective and symbolic aspects of individual behaviour. Therefore, Kitchener (1985) maintains that according to Piaget's genetic epistemology "it is the set of relations that are primary and the relata–the individuals–that are secondary" (p.245). As Piaget (1928/1995) puts it "there are neither individuals as such nor society as such. There are just inter-individual relations"(p.210) and both parts (individuals) and wholes (society) are constructed from these relations. Consequently, society, for Piaget (1981b), is to be explained in terms of the relations between individuals and not merely in terms of the nonrelational properties of individuals. The key to this interpretation is to be found in Piaget's (1986) autobiography where he states that "at all levels (*viz.*, that of the living cell, organism, species, society, etc., but also with reference to states of conscience, to concepts, to logical principles,

etc.) one finds the same problem of **relationship** between the parts and the whole" (p.242) [emphasis my addition].

Piaget not only espouses the concept of a social system as "a nexus of relationships" (Mays, 1982, p.31) but he defines knowledge itself as a relation. For Piaget (in Bringuier, 1980), "[i]ntelligence is an adaptation to the external environment" (p.114) and, therefore, Furth (1980) argues that his model of equilibrium emphasises the implicit relations inherent in all knowing since "the primary given in all forms of knowledge (including action) is the coordinations of relation between subject and object and between observation and inferred knowledge" (p.60). More specifically, Piaget views knowledge as a "constructive relation that is productive of both the subject and object" (Furth, 1980, p.57). As Piaget (1970a) puts it "[k]nowledge...at its origin, neither arises from objects nor from the subject, but from interactions...between the subject and those objects [and] *construction*...is the natural consequence of the interactions" (p.704) [emphasis in original]. Thus, it is in a combination of interaction with the environment (physical or social) and progressive internal organisation arising from self-regulations that development occurs.

I contend that Piaget's (1970a) definition of knowledge as a constructive relation is crucial for understanding his conceptualisation of the role of the social in development. For example, Piaget and Garcia (1989) suggest that the child does not assimilate 'pure' objects defined by their physical parameters only. As Furth (1980) points out the object is primarily the reality as defined by society and concretely lived by the people who make up the society. In other words one cannot consider "the development of the subject facing objects that are already 'given', independent of any social context. Rather, in the dialectical interaction between subject and object, the latter appears immersed within a network of [social] relations" (Piaget

and Garcia, 1989, p.266). Therefore, Piaget and Garcia argue that genetic epistemology necessarily includes the social in that it needs to explain in what ways assimilation remains conditioned (or generated) by a particular social system of meanings and to what extent the interpretation of each particular experience depends on such meanings. Consequently, I maintain that, for Piaget, the 'social' is a constituting factor of the physical environment within which development takes place and the child's knowledge of physical reality necessarily incorporates a social dimension.

Furthermore, if, as Piaget (1950/1995) suggests, the relation between the subject and object modifies both subject and object at the same time through assimilation of the object to the subject and accommodation of the subject to the object respectively, then, "it is obvious a *fortiori* that each interaction between individual subjects will modify each subject in relation to the other" (p.42). In other words, the interaction with the environment (social or physical) is not a one-way process. Rather, as Bovet, Parrat-Dayan and Voneche (1989) point out, the relation is transactional and modifies the individual in a permanent way. This is particularly true of social exchange and social interaction between individuals. For instance, Piaget (1981b) states that "society, even more, in a sense, than the physical environment changes the very structure of the individual" (p.156).

Moreover, since the 'object' of psychosocial knowledge is, in fact, another subject it follows that actions inevitably generate contact with other people as well as with physical objects and, therefore, construction must "pertain to *interpersonal interaction*" (Youniss, 1981, p.192) as well as interactions between subject and object [emphasis in original]. As Piaget (1951/1995) puts it "development is at every level a socialization of the individual as it is a matter of the individual's adaptation to the physical world" (p.276). Thus, Youniss (1981) maintains that in

Piaget's genetic epistemology "[s]ocialization is inherent in the definition of child as agent through the process of construction" (p.194). Indeed, since development, for Piaget, is of relations per se, individuality "is checked early in development through one's relational membership" (Youniss, 1983, p.223) and what is conserved is a "certain scheme of interaction with other people" (Piaget, 1981a, p.50). In this way Piaget's perspective permits individuality on the grounds that social relational existence is its constituting factor (Youniss, 1983). Therefore, Chapman (1988) maintains that Piaget's view of social development can be described as an "interpersonal relationism" (p.370). This is because "the characteristic process of the 'progress of thought' [is that of] forming systems of reciprocal relations" (Piaget, 1977a, p.276) and, without social life, the child "would be ignorant of relations in general" (Piaget, 1930, p.252).

However, Piaget and Inhelder (1969) emphasise that the term 'social' must not be thought of in the narrow sense of "educational, cultural, or moral transmission alone; rather, it covers an interpersonal process of socialization which is at once cognitive, affective, and moral" (p.95). That is, socialisation, for Piaget, refers to the process by which children come to consider social norms and the viewpoints of others "*in their own thinking*" (Chapman, 1988, p.232) [emphasis in original]. Consequently, Piaget and Inhelder (1969) contend that socialisation "is a structuration to which the individual contributes as much as he receives from it" (p.154). For this reason Piaget (1981b) does not speak of the "effect of social life" but rather of the "individual modified by social relations" (p.157). Neither does Piaget (1933/1995) look to social factors as a cause of rationality but rather to the social circumstances that will permit the "rational equilibrium immanent in the individual to further realize itself" (p.266).

Thus, knowledge, for Piaget, is not simply social because it is about social objects and persons (Youniss, 1981). It is social in its very formation and objective, namely, "to gain order in the meeting of self with other" (Youniss, 1981, p.194). In other words, the construction of social reality is, for Piaget, by necessity a process of co-construction (Furth, 1986). Indeed, Piaget (1932; 1970a; 1981b) repeatedly states that an individual may acquire knowledge (physical or social) only if people enter into social relations with that individual. However, Kitchener (1981b) points out that, for Piaget, any social influence, just like any environmental influence in general, must be mediated via structures that are constructed by the individual. As Piaget (1950/1995) puts it

> between organic maturation which furnishes mental potentialities, but without ready-made psychological structuring, and social transmission which furnishes the elements and the model for a possible construction, though without imposing this in a completed state, there occurs an operatory construction which transforms the potentialities furnished by the nervous system into mental structures. But this translation only takes place as a function of the interaction between individuals, and therefore under the accelerating or delaying influence of differing actual modes of social interaction. (p.37)

Thus, Piaget's genetic epistemology allows at all times for "self-construction and social influence" (Youniss, 1978, p.234) and, as Furth (1980) suggests, the common link between society and knowledge (physical and social) is to be found in the concept of relation since knowledge, like society, is an equilibration of relations. Therefore I maintain that Piaget's relational-constructivist approach to the development of knowledge emphasises the social quality inherent in all individual knowledge (whether physical or social).

2. The Role of the 'Social' in Genetic Epistemology

a). The 'Social' in the Equilibration Process

Piaget's theory of adaptation as a spiral of assimilation and accommodation implies an openness to the influence of both the physical and social environment since "cognitive equilibration involves not only equilibration between subject and object, but also equilibration between subjects" (Chapman, 1992, p.50). Piaget (1950/1995) confirms this by suggesting that

> [a]part from organic factors, which influence the mechanisms of action interiorly, all behaviour in fact presupposes two sorts of interaction which modify it exteriorly and are inseparable from each other: the interaction between subject and object, and the interaction between subject and other subjects. (p.41)

This equilibration or interaction between subjects occurs very early in development because "interpersonal relations germinate as of the second half of the first year, thanks to imitation, since imitation is closely linked to sensorimotor development" (Piaget, 1968, p.18). Indeed, Piaget (1977b) describes imitation as the child's earliest form of intentional communication with other people and suggests that "assimilation and imitation are not only reactions to the physical environment, but also to the social environment" (Piaget, 1930, p.290) and, therefore, imitation essentially becomes "adaptation to others" (ibid, p.290). Furthermore, since imitation, according to Piaget (1962), "fits into the general framework of the sensory-motor adaptations which characterize the construction of intelligence" (p.84) and the very concept of accommodation is inherently linked to imitation from the first year of life, I contend that imitation can be conceived of as an element of the equilibratory process. Piaget (1957) maintains that the co-ordination of sensorimotor assimilation and accommodation is essential for development since it "leads the subject to go outside himself to solidify and objectify his

universe to the point where he is able to include himself in it while continuing to assimilate it to himself" (p.357). Piaget (1960/1995) emphasises that this equilibratory process occurs in the context of interpersonal imitation since "knowledge or consciousness of the self...is not innate but results specifically from social or imitative exchange through simultaneous construction of the *alter* and *ego*" (p.300) [emphasis in original]. That is, "consciousness of the self results from a dissociation of reali., [and this] dissociation is due to social factors" (Piaget, 1951, p.130) or, more specifically, to a distinction the child makes between her own point of view and those of others. Thus, "consciousness of self implies a perpetual comparison of the self with others" (Piaget, 1932, p.400). Clearly, then, the "formation of the self is connected to early interpersonal relationships and especially to imitation" (Piaget, 1985, p.76) since we become conscious of ourselves only "to the extent that we are adapted to other people" (Piaget, 1928, p.210).

Moreover, Piaget (1968) maintains that there is a close correlation between the construction of the permanent object and awareness of self. Piaget suggests that the construction of the object is, in itself, a new logical achievement of separating the object of knowledge from the object of action which requires a cognitive decentering on the part of the child (Furth, 1986). In addition, Piaget and Inhelder (1969) point out that "the decentering which is a prerequisite for the formation of operations applies not only to the physical unive se...but also necessarily to an interpersonal or social universe" (p.95) and they are, in fact, parallel processes. Consequently, Piaget (1985) contends that "object permanence goes hand in hand with the permanence of people. In fact, people are the first permanent objects" (p.76). Thus, the very act of imitating others and "thereby objectifying his own self...is...an important factor for the child in the objectification of his universe" (Piaget, 1933/1995, p.221).

From the foregoing it is obvious that the achievement of object permanence, through the process of equilibration, is a product of interpersonal interaction or, more specifically, of imitation. Thus, two of the major equilibratory achievements of sensorimotor development, namely, the construction of the permanent object and the formation of the self occur within the context of social interaction. Consequently, I maintain that the decentering of cognitive constructions necessary "for operations to continue the actions from which they derive" (Piaget, 1950/1995, p.71) is essentially a socially driven equilibratory process.

Piaget (1970a) maintains that as imitation gradually becomes differentiated and interiorized into images, it becomes the source of symbols and the instrument of communicative exchange. In other words, imitation, for Piaget (1962), is the means by which the child becomes capable of cognitive representation. Thus, "imitation becomes the instrument for the acquisition of an indefinite number of collective signifiers which in turn give rise to a whole series of socialized representations" (Piaget, 1962, p.280). The ability for symbolic and representational thought represents a further major achievement in cognitive development. For example, Piaget (1945/1995) contends that

> complete reversibility presupposes symbolism, because it is only by reference to the possible evocation of absent objects that the assimilation of things to action schemes and the accommodation of action schemes to things reach a permanent equilibrium and thus constitute a reversible mechanism. (p.154)

Moreover, Piaget (1928/1995) emphasises that "without socialization, individual thought can hardly do those things analogous to symbolic thought" (p.195) which suggests that the cognitive equilibrium that results from symbolic and representational thought has its roots in social interaction. Therefore, Piaget makes a stronger case for social interaction as a fundamental constructive influence than he does for representation in that representation and the detachment of one's own action are essentially underpinned by adaptation to others and

social co-operation (Sinclair, 1982). For instance, Piaget (1957) contends that "the plane of representative thought...is at the same time that of social relationships or coordination among individual minds" (p.380). Indeed, Piaget appears to attribute explanatory power to social interaction with regard to the constitution of the representational function and, consequently, social interaction becomes the reason for the transition from action to representation (Sinclair, 1982).

Piaget's purpose in tracing the continuity between sensorimotor development and cognitive representation was to describe this essentially interpersonal developmental preparation for collective symbolism (Chapman, 1988). As Piaget and Inhelder (1969) suggest language "is necessarily acquired in the context of imitation" (p.55). In other words, language is preceded by and finds its source in collaboration and interpersonal exchange in action. With the appearance of language Piaget (1981a) argues that intellectual behaviour is profoundly modified since language makes possible "indefinite extensions of intelligent adaptation" (p.44). The most obvious result of the appearance of language, for Piaget (1968), is to permit verbal exchanges and continuous communication among individuals and "thought becomes conscious to the degree to which the child is able to communicate it" (p.19). Therefore, Piaget (1968) contends that language is indispensable for the further development of thought[3] because without it

> the operations would remain at the stage of successive actions without ever being integrated into simultaneous systems or simultaneously encompassing a set of independent transformation [and] the operations would remain personal and would consequently not be regulated by interpersonal exchange and cooperation. (p.98)

[3] Piaget (1968) emphasises that thought does not depend on language. Rather thought derives from the abstraction of one's own actions upon things. That is, action is the basis of thought for Piaget.

Thus, language is "necessary for the completion of logical structures, particularly in their formal aspect" (Piaget, 1960/1995, p.307). Clearly, then, the constructive power of language lies in its communicative aspect. Furthermore, Piaget (1950/1995) argues that the progressive construction of intellectual operations, through the use of language, "presupposes a growing interdependence between mental factors and inter-individual interactions" (p.38). In other words, with the acquisition of language, the role of the social in cognitive development is augmented. I maintain that, since language is a social convention and both language and representational thought "have sensorimotor precursors in the form of interpersonal imitation and not merely in interaction with physical objects" (Chapman, 1988, p.372), development can be conceived of as an essentially socially generated equilibratory process. In other words, the 'social' is a necessary condition for the process of equilibration.

However, Piaget (1945/1995) emphasises that the achievement of equilibrium is dependent on a particular type of social relationship. Piaget (1932) distinguishes between two types of social relationships, namely, relations of constraint and relations of co-operation. Relations of constraint are asymmetrical and lead to heteronomous knowledge and, since they typically occur in adult-child interactions, engender a unilateral respect for authority. This is because in relations of constraint shared understanding is restricted since it does not involve co-operative construction. Indeed, Piaget (1933/1995) argues that the "constraint exercised over the individual reinforces his egocentrism" (p.220). Therefore, Piaget (1945/1995) maintains that the equilibrium obtained in relations of constraint constitutes a "false equilibrium" (p.150) and, consequently, this type of relationship can only result, for Piaget, in unstable internal regulations rather than in stable operations and co-operations (DeVries, 1997).

According to Piaget (1933/1995) this "latent disequilibrium" (p.240) is ended by co-operation. This is possible because co-operation "furnishes a *method*" for interacting whereas constraint merely "imposes *beliefs*" (Piaget, 1928/1995, p.208) and, consequently, "cooperation is not a system in static equilibrium as one finds in constraint; it is a mobile equilibrium" (ibid, p.209) [emphasis in original]. Therefore, Piaget (1932) argues that co-operation is a higher form of equilibrium and "is the form of equilibrium to which constraint is tending" (p.96). As such, Piaget (1986) contends that ideal or true equilibrium pertains to co-operation between individuals who become autonomous by this very co-operation. Piaget (1951/1995) describes autonomy not as independent thought but as thought which has social validation, "the conquest of personal autonomy is a function of reciprocity which implies simultaneously both differentiation and coordination of points of view" (p.283). With respect to development Piaget proposes that the process of equilibration is productive of social understanding to a greater extent in peer than in adult-child relations (Furth, 1980). Therefore, Piaget (1926) argues that peer relations are both qualitatively different and superior to adult-child interaction in facilitating cognitive growth and, consequently, they acquire a growing genetic importance in childhood development. This is because peer relations allow views to be submitted to procedures that follow the norms of reciprocity and discussion. That is, they are based on mutual respect or mutuality. Clearly, then, social life, in the form of co-operation, is necessary if the individual is "to transform into norms properly so called the simple functional equilibria immanent to all mental and even all vital activity" (Piaget, 1932, p.400).

Furthermore, the 'social' in the form of co-operation is necessary for the achievement of an equilibrated intellectual exchange. Piaget's equilibration model of social exchange offers three conditions whose satisfaction is both necessary (Piaget, 1945/1995) and sufficient (Piaget, 1950/1995) for successful exchange, namely,

> (a) a common currency or unit of exchange between two partners (which can be persons, groups, or societies) and typically manifest as shared signs and meanings; (b) conservation, in that each element in the system is used in a self-identical way through the exchange; (c) reciprocity, in that each partner uses the same elements of the same system in the same way. (Smith, 1996, p.119)

Thus, conservation (implying reversibility) and reciprocity, two necessary conditions for equilibration, have a fundamental role to play in Piaget's (1950/1995) account of social exchange and, as I have shown, co-operation is an important factor in their development. As Piaget (1950/1995) suggests "the isolated individual would never be capable of complete conservation and reversibility [and] reciprocity is only possible between subjects capable of equilibrated thought, i.e., of the conservation and reversibility imposed by exchange" (p.94). For this reason Piaget (1960) emphasises that "the progressive organization of interindividual reciprocities and that of operational reciprocities in the field of thought certainly constitutes two correlated phenomena" (p.20). Indeed, Piaget (1941/1995) contends that it is precisely in the reciprocity of values exchanged that the system (whether individuals, groups or societies) achieves equilibrium. In other words, the state of equilibrium, as defined by Piaget's conditions above, are dependent on and presuppose the existence of a social situation of autonomous co-operation based on equality and reciprocity between partners.

Moreover, Piaget (1981b) maintains that the above conditions are as much social obligations as they are conditions of operatory thought which implies, in turn, that social co-operation is a necessary antecedent for the achievement of "operational equilibrium"(Piaget, 1951/1995, p.280). Piaget and Inhelder (1969) confirm this by suggesting that

> the operations always involve a possibility of exchange, of interpersonal as well as personal coordination, and this cooperative aspect constitutes an indispensable condition for the objectivity, internal coherence (that is, their "equilibrium"), and universality of these operatory structures. (p.95).

More importantly, Piaget claims that if the above conditions are met interlocutors may arrive at a new, equilibrated level of understanding that is related to what both individuals brought to the discussion (Tudge and Winterhoff, 1993). Consequently, I maintain that an equilibrated intellectual social exchange, achieved through interpersonal co-operation, is necessary for the generation of new knowledge. That is, relations of co-operation, incorporating symmetrical reciprocity and mutual respect amongst equals, are the basic means for achieving equilibrated knowledge. As Piaget (1928/1995) suggests "only cooperation provides for the mind the psychological condition necessary for the attainment of truth" (p.208). Thus, I contend that Piaget's model of social exchange emphasises the inter-dependence of social and individual contributions in the search for true knowledge and the formation of rationality. Similarly, I support Kitchener's (1981b) contention that "*the social dimension is essential for the development of equilibrium* and (in particular) that *certain kinds of social relations (namely, cooperation) is a necessary condition for the development of the equilibrated structures found in social exchange and formal thinking*" (p.264) [emphasis in original].

b). The 'Social' in the Construction of Logic

Beilin (1992), Chapman (1986; 1992), DeVries (1997), Furth (1986), Lourenco and Machado (1996) and Murray (1983) point out that Piaget's conceptualisation of the role of the 'social' in the construction of logic changed as his theory developed. For example, Piaget (1986) states that in his early research he satisfied his "need for an explanation in terms of structures-of-the-whole by studying the social aspect of thought (which is a necessary aspect, I still believe, of the formation of logical operations as such)" (p.247). Consequently, Piaget (1926; 1928; 1928/1995; 1930; 1932) considers social factors as having a causal relation to the development of logic and insists that "social life is a necessary condition for the development of logic" (Piaget 1928/1995, p.210). More specifically, Piaget (1932) argues that co-operation

is the determining factor in the formation of the rational elements in logic because it is only social life and discussion, in the form of co-operation, that leads to "the logical point of view" (Piaget, 1926, p.238) and away from egocentrism. In other words, "the norm of reason, and...the important norm of reciprocity, the source of the logic of relations, can only develop in and through cooperation" (Piaget, 1932, p.107). In particular, Piaget maintains that co-operation and reciprocity amongst peers provides the psychological foundation for perspective taking and cognitive decentering, two necessary conditions for the construction of operatory logic (DeVries, 1997). Piaget (1928) argues further that logic originates precisely because the "social need to share the thought of others and to communicate our own with success is at the root of our need for verification (p.204). That is, logical proof and deduction are the direct result of discussion in the social domain which implies, for Piaget (1930), that the source of the idea of necessity is in social interaction.

However, after Piaget developed his theory of operations this early focus on communicative interaction as the main factor responsible for the formation of logic changed to one where the operative component of interactions played that role (Lourenco and Machado, 1996). As such, Piaget no longer attributed a causal role to social factors in the construction of logic (DeVries, 1997). Consequently, Piaget (1945/1995) asks the question "if logic consists of an organization of operations which, in the final analysis, are internalized and reversible actions, does the individual arrive at this organization by himself, or is the intervention of interpersonal factors necessary to explain [logical] development"? (p.143) In order to answer this question Piaget (1950/1995) identifies four stages in the construction of logic and concludes that "each progress in logic is equivalent, in a non-dissociable way, to progress in the socialization of thought" (p.85). More specifically, Piaget (1968) contends that "when the mind goes beyond its immediate point of view in order to 'group' relations, it attains a state of

coherence and noncontradiction paralleled by cooperation on the social plane" (p.54). In other words, for every stage in the development of logic there is a corresponding advance in the child's capacity for understanding and co-operating with others. Moreover, Piaget (1945/1995) maintains that this correlation is a necessary one, because "the social relationships equilibrated into cooperation constitute *groupements* of operations exactly like the logical actions exercised on the external world by the individual" (p.146). That is, the cognitive structures characteristic of concrete and formal operations do not consist merely of a grouping of physical actions, but also of possible viewpoints. As Piaget (1945/1995) suggests "a '*groupement*' is a system of concepts (classes or relations) implying a coordination of points of view and a pooling of thought" (p.145). Thus, every "grouping within individuals is a system of operations, and co-operation consists of the system of operations executed in common" (Piaget, 1981b, p.166). However, Piaget emphasises that "the operations of co-operation are created by the exchange and not just by individual thought" (DeVries, 1997, p.11). In this sense

> the *groupement* is only a system of possible substitutions either within a single individual's thought (operations of intelligence) or within thought exchanges from one individual to another (cooperation). These two sorts of substitutions constitute, therefore, a general logic, at once collective and individual, that characterizes the forms of equilibrium common to cooperative as well as to individual actions. (Piaget, 1945/1995, p.154-155)

Consequently, the interiorised action of logical thinking is, for Piaget, as much an individual adaptation as it is social co-operation (Furth, 1986). Piaget (1981b) confirms this by suggesting that internal logical activity and external co-operation are merely "two complementary aspects of one and the same whole since the equilibrium of the one depends on that of the other" (p.166).

Furthermore, since equilibrated logical thought presupposes co-operative social exchange it follows that "in order to make the individual capable of constructing *groupements*, it is first necessary to attribute to him all the qualities of a socialized person" (Piaget, 1945/1995, p.154). This is even more evident at the level of formal operations where Piaget (1950/1995) argues that

> even the exchange of proposition constitutes a logic, since it entails the grouping of the propositions exchanged: a grouping relative to each partner, as a function of exchanges with the other, and a general grouping due to correspondences, reciprocities or complementarities in their joint groupings. Exchange as such therefore constitutes a logic, which converges with the logic of individual propositions. (p.93)

Clearly, then, formal logical operations are constructed as a function of social interaction, in the form of an equilibratory coordination of perspectives. For this reason Piaget (1972b) contends that the construction and completion of logical structures "requires a favorable environment for 'co-operation'"(p.8). In the final analysis "individual functions and collective functions require each other in the explanation of the conditions necessary for logical equilibrium" (Piaget, 1950/1995, p.94).

c). <u>The 'Social' in the Development of Morality and Affectivity</u>

Piaget's social-relational approach is particularly obvious in his theory of moral development where he explicitly rejects those theorists "who want to explain the moral consciousness by means of purely individual processes" (Piaget, 1932, p.105). As such, Piaget (1932) argues that moral principles are not imposed on the child from the outside but develop as a consequence of social interaction. Specifically, Piaget (1932) maintains that the genesis of the feeling of moral obligation occurs in early parent-child social relationships since "this element of obligation...intervenes as soon as there is a society, i.e., a relation between at least two

individuals" (p.33). This suggests, for Piaget (1930), that "[m]oral obligation forms part of the very structure of the child's mind...for these early contacts condition the whole of the child's mental life" (p.281). However, Piaget (1960/1995) points out that the obligations arising from parent-child interactions are based on unilateral respect and, consequently, these early relationships induce in the child a heteronomous morality or a morality of constraint. Piaget considers this moral relationship as one of inequality or imbalance of moral attitudes (Mays, 1982). The child adopts the respected parent's values, but the inverse is not true and, as a result, the child is obligated to conform to examples set by the parent. For this reason Piaget (1932) contrasts relations of constraint or unilateral respect with relations of co-operation or mutual respect and he argues further that any subsequent development of the child's morality will depend on the type of relationship she experiences and how she construes the obligations that they generate for her (Wright, 1982).

Piaget (1932) maintains that peer relationships are more likely to result in co-operation and mutual respect than adult-child relationships because mutual respect grows out of exchanges among individuals who consider themselves as equals. Consequently, peer interactions presuppose the acceptance of common values which, in turn, leads to normative reciprocity and moral obligation and, for Piaget (1968), the principle character of moral obligation of this sort "is that it imputes relative autonomy to the moral consciousness of individuals" (p.57). Piaget (1960/1995) suggests that the development of autonomous morality or a morality of co-operation is particularly clear in the case of the evolution of the rules of a social game. Therefore, Piaget's main interest is in how children come to feel obligated to follow rules and the extent to which both moral rules and obligations are characterised by co-operative relationships (DeVries, 1977). In particular, Piaget (1932; 1960/1995) studies the game of marbles since it involves no control on the part of adults or of children past the ages of 12 or

13 years and, therefore, provides an ideal context for rule-based play and perspective taking amongst equals. According to Piaget it is precisely through engaging in rule-based games that children learn that rules and other social standards may be negotiated and modified through agreed-upon procedures of fairness (Youniss and Damon, 1992). As a result Piaget (1960/ 1995) contends that the individual is able to participate directly in the elaboration of the rules or norms that oblige her instead of receiving them ready-made as happens in the case of the norms of unilateral respect that lie behind heteronomous morality. As such, "cooperation among children constitutes a relatively rich source of moral realties" (Piaget, 1960/1995, p.316) since it allows for the kind of reflection necessary for a commitment to internal, autonomous principles of moral judgment. Thus, Piaget (1932) argues that from the moral point of view co-operation or mutual respect "replaces the norm of authority by...the norm of reciprocity and sympathy" (p.107) and "[h]eteronomy steps aside to make way for a consciousness of good" (ibid, p.404).

Although Piaget's (1932) focus is on the moral developmental process associated with peer interaction he believes that moral judgments are equally dependent on interactions with adults. That is, Piaget (1932) does not claim that it is only in relations with peers that morality develops. Indeed, Piaget (1981a) emphasises that moral judgments emerge from the general process of social cognitive development. Consequently, Piaget (1932) is careful not to equate unilateral respect solely with adult-child interaction and mutual respect solely with interaction amongst peers. Rather Piaget argues that unilateral respect and mutual respect are modes of relating and both can be present at different times within the same ongoing relationship (Wright, 1982). The "earliest social relations contain the germ of co-operation" (Piaget, 1932, p.86) and "cooperation is only one of two poles in any social process, certainly the pole opposed to constraint, but perhaps indissociable from it" (Piaget, 1933/1995, p.232).

Therefore, Piaget (1928/1995) suggests that "a difference in nature between social processes does not exclude a factual continuity between them" (p.208). The point is that all social relationships are developmental in nature and, according to Piaget, all children make the transition from a morality of constraint to a morality of co-operation providing they have the opportunity for reciprocal, co-operative interaction (Lickona, 1976).

On the basis of the foregoing Wright (1982) suggests that moral relationships themselves can be regarded as systems developing towards greater equilibrium and, consequently, the sense of moral obligation generated within co-operative relationships can be regarded as the analogue of logical deduction within intellectual systems. Piaget (1941/1995) endorses this by suggesting that

> normative coordination of the moral type constitutes a system of operations ensuring the conservation of values [which implies] the integration of values in a set of 'groupings' of reversible substitutions, some asymmetrical (morality of duty) and the others symmetrical (reciprocity), but all formally analogous to the logical 'groupings' themselves. (p.121)

In this regard morality and logic are, for Piaget (Kitchener, 1981b), isomorphic to each other and are two aspects of one and the same thing, namely, a system of equilibrated operations characterised as a grouping. Thus, Piaget (1950/1995) argues that in "the moral domain, as in the domain of logical norms, equilibrium is therefore linked to cooperation resulting from the direct reciprocity of actions, as opposed to constraint" (p.61-62). From this perspective "cooperation on the moral plane brings about transformations exactly parallel to those...in the intellectual plane" (Piaget, 1932, p.404). Indeed, for Piaget (in Weinreich-Haste, 1982), co-operation is the very manifestation of morality since without social co-operation "there can be no moral necessity" (Piaget, 1932, p.196). Therefore I contend that just as co-operative interaction is necessary for the achievement of an equilibrated social exchange and, hence, of

operatory and logical equilibrium, so too is social co-operation necessary for the achievement of moral equilibrium.

According to Piaget (1968) development in the affective domain requires the gradual disengagement of affectivity "from the self in order to submit, thanks to the reciprocity and coordination of values, to the laws of cooperation" (p.69). Therefore, Piaget (1981a) emphasises that co-operative relationships are equally necessary for the development of affectivity. Indeed, Piaget argues that the progressive differentiation of interests, feelings and values and the increasing stability of affectivity are inseparable from cognitive development and both depend on social relations of reciprocity (DeVries, 1997). Thus, I believe that the attainment of equilibrium in all its forms (intellectual, social, moral and affective) requires the social interaction involved in co-operation.

The arguments presented in part 1 and part 2 of this section provide a clear challenge to charges that Piaget's genetic epistemology is inherently individualistic, asocial or ahistorical. To conclude this section I will briefly look at how Piaget's conceptualisation of the 'social' in genetic epistemology contradicts the specific criticisms leveled at his theory discussed in the literature review.

Clearly, for Piaget (1951/1995), "human intelligence is subject to the action of social life at all levels of development from the first to the last day of life"(p.278). Therefore, it follows that "the stages of development are far from being just a manifestation of internal organic maturation. Equally, they depend in large measure on the child's social environment" (Piaget, 1960, p.296). Thus, social adaptation is as important, for Piaget, as any other form of adaptation, including physical adaptation (Smith, 1995). Moreover, Piaget points out that an

equilibrated system is never static and closed but always mobile and open so that each new level of mental equilibrium prepares for a new disequilibrium (Elkind, 1968). More importantly, this suggests, for Piaget (1978), that each new level of conceptualisation establishes a new equilibrium and, according to Elkind (1968), also opens the individual to new forms of **social** information. Therefore, I maintain that criticisms of Piaget's biological approach to development and the concomitant claim that the Piagetian subject is a 'solitary knower' in a physical rather than a social world cannot be sustained.

Furthermore, I contend that Piaget's insistence (in Tryphon and Voneche, 1996) that the "very structure of individual thought depends on the social surroundings" (p.3) provides a challenge to the criticisms of his structuralism and his emphasis on formal operations. As I have shown Piaget's social-relational view of development "admits of actions conditioned by [interpersonal] situations" (Youniss, 1978, p.241). At the interpersonal level relations of constraint and relations of co-operation provide regularity and a known relational context for interacting and, consequently, individuals are able to understand the implication of their actions for their relations. At the level of history and society Piaget and Garcia (1989) point out that thought, and particularly scientific thought, is conditioned by social systems of meaning.

In addition, Piaget (1972b) emphasises that "in principle all normal individuals are capable of reaching the level of formal structures on the condition that the social environment and acquired experience provide the subject with the cognitive nourishment and intellectual stimulation necessary for such a construction" (p.8). In other words, Piaget accepts that different social and cultural practices can prevent adolescents from reaching formal operational thinking as well as the rate at which children pass through earlier stages of

development (Tudge and Winterhoff, 1993). Indeed, Piaget and Garcia (1989) acknowledge that formal thinking can follow psychogenetic paths different from the ones they identify. This suggests that Piaget recognises that his epistemic subject is not entirely universal or context free (Lourenco and Machado, 1996). Thus, contrary to the criticisms leveled at Piaget, I maintain that Piaget's theory of formal operations explicitly includes a social and cultural dimension.

Furthermore, Piaget (1976) maintains that the most general forms of thought, since they are capable of being dissociated from their content, become the medium of cognitive exchange or interindividual regulation and, as I have shown, Piaget considers co-operative social interaction and the coordination of viewpoints as the origin of objective knowledge. As Piaget (1950/1995) puts it "there is only one criterion of truth...and that is the agreement among minds" (p.80) and, more importantly, this

> agreement between minds which provides the foundation for truth is not a static agreement of common opinion, it is a dynamic convergence resulting from the use of common instruments of thought; it is, in other words, agreement established through the use of similar operations in many individuals. (ibid, p.81)

Clearly, then, Piaget does attribute a necessary role to social or intersubjective factors in the acquisition of objective knowledge. Indeed, I contend that the significance of social life for development rests on Piaget's conceptualisation of social co-operative interaction as a necessary condition for the transition from one developmental level to another. Thus, the issue, for Piaget (1945/1995), is not whether children have psycho-social experience. Rather, Piaget's (1945/1995) account addresses the question as to when social experience is successful, and particularly, how this contributes to the formation of rationality. Therefore, I maintain that the criticism that Piaget's theory ignores the role of the social in the acquisition of knowledge is fundamentally incorrect.

Moreover, I maintain that Piaget's emphasis on the importance of co-operative social interaction for all areas of development suggests that intellectual, social, moral and affective development cannot occur in a social or cultural vacuum. Indeed, Piaget explicitly states that moral judgments are equally influenced by the historically formed nature of social institutions and that historical changes within a culture are likely to affect the nature of adult-child or peer relations (Tudge and Winterhoff, 1993). Consequently, I contend that the child's values remain functionally tied to the social, cultural and historical context in which she is embedded.

In addition, Piaget's (1932) insistence that egocentrism is not less social than co-operation but rather "presocial, in view of the eventual cooperation, and parasocial, or simply social, in relation to the constraint of which it constitutes the most direct effect" (p.92) undermines the criticism that Piaget's focus on egocentrism ignores the importance of social interaction in early childhood development. In fact, under the impetus of Vygotsky's (1962) criticism, Piaget (in Beilin, 1980) reinterpreted the nature of egocentric language. For instance, with regard to the child's "centering on the self", Piaget and Inhelder (1969) suggest "[w]e no longer call it 'egocentric', as one of us once did, in deference to the criticisms from many psychologists" (p.61). Rather, Piaget's "reinterpretation was based on the progressive decentration of the child's language, thus deemphasizing egocentricity" (Beilin, 1980, p.258).

Furthermore, I believe that since the social dimension is essential in the formation of knowledge, whether physical or social, Piaget cannot be accused of ignoring social factors in his experiments. For Piaget, the mastery of logical and scientific concepts has a social dimension and, since science is an integral part of history and culture, it can be argued that all of the phenomena investigated in Piaget's empirical studies are in fact social phenomena

(Smith, 1996). In addition, Piaget's (1928; 1962) works provide further evidence that he does not neglect social factors in his experiments. This is particularly obvious in Piaget's (1951/1995) empirical study of the development in the child of the idea of homeland and foreign relationships where he demonstrates quite clearly that children's understanding of social relationships parallels their development in logical thinking. Finally, I contend that Piaget's (1981a) work dispels the notion that he equates social cognition with physical cognition. For instance, rather than creating an artificial dichotomy between intelligence and affectivity Piaget (1981a) distinguishes between transactions with physical objects and with people and argues that each domain has both cognitive and affective components. Therefore, Tryphon and Voneche (1996) argue that although intraindividual and interindividual operations result from the same general explanatory mechanism of equilibration this is not to suggest that Piaget treats social cognition as if it were physical cognition. As Smith (1982) points out the content of a subject's knowledge will be different in different contexts (physical or social) even though a subject's understanding of the logical properties of those contents will be the same.

The foregoing exposition of Piaget's conceptualisation of the social, I contend, clearly shows that most of the criticisms in the literature reviewed are not only questionable but also often incorrect. These misunderstandings of Piaget's conceptualisation of the social in genetic epistemology stem, in large part, from the incompleteness of translations of his work into English as well as the volume of Piaget's work and his continual revision of the theory itself. The final section of this report will focus on the implications of Piaget's conceptualisation of the 'social' in genetic epistemology for education. The arguments presented in this section will provide evidence against Vygotsky's (1962) claim that Piaget neglects the important role of social mediation and education in the construction of knowledge.

The Implications of Piaget's Conceptualisation of the 'Social' for Education

Sigel (1969) points out that Piaget's work was not developed "in the service of education, but rather in the service of genetic epistemology" (p.465). Therefore, the emphasis in this section is not on the merits (or lack thereof) of Piaget's theory for education. Neither is it intended as a prescription for teaching. Indeed, Piaget (in Ginsburg, 1981) himself expresses a cautious attitude towards educational applications of his theory and argues instead that it is "the pedagogue's job to see how he can use what we offer" (in Bringuier, 1980, p.131). Thus, the focus of this section is on the **implications** of Piaget's conceptualisation of the 'social' for education and, more specifically, the significance that Piaget attributes to co-operative social interaction in promoting all areas of development. Brown, Metz and Campione (1996) point out that the importance of social interaction as a major force in cognitive development has become associated largely with Vygotskian theory whereas Piaget's genetic epistemology has been seen as influential in mapping individual cognitive growth. As a result 'applications' of Piaget's theory to education are based on fundamental misunderstandings particularly an underestimation of the role of social interaction in the development of knowledge.

Piaget (1960/1995) maintains that "education is one of the fundamental factors in social cohesion and...it arises precisely from social relationships between children and adults" (p.287). However, Piaget (1970b) makes it clear that schooling is a potentially coercive process because adult-child interactions are, more often than not, based on relations of constraint and unilateral respect. This "educative constraint" (Piaget, 1928, p.203) results in a situation in which "the student's intellectual and moral activity remains heteronomous" (Piaget, 1970b, p.151). The teacher is endowed with both intellectual and moral authority and the resulting "prestige that the adult possesses in the child's eyes means that the latter accepts

all affirmations issuing from the teacher as unquestionable, that authority, in other words, dispenses with the need for reflection" (Piaget, 1970b, p.179). As a result, the child is forced to make "assertions without proof...and does not see the need to verify" (Piaget, 1928/1995, p.204). Consequently, exchanges involving relations of unilateral respect lead only to systems of regulations and not operations. As such, Piaget (1945/1995) maintains that social constraint in the classroom inhibits the development of operatory and logical thought. Indeed, Piaget (1981b) insists that under conditions where a child is unable to coordinate or group viewpoints no amount of coercion from other people would engender rationality in the child. Piaget (1970b) does not, however, suggest that the social action of the teacher be eliminated completely. Rather, Piaget (1928/1995) emphasises that teacher-child interaction is useful only to the extent that "the intelligent teacher knows when to step down as a superior and to become an equal, when to engage in discussion and to require proof rather that merely to make assertions and to compel morally" (p.204). Consequently, Piaget (1960/1995) argues that the teacher's focus should be on the type of relationship that is established in the classroom.

More precisely, Piaget (1981b) argues that "in order to teach others to reason logically it is indispensable that there should be established between them and oneself those simultaneous relationships of differentiation and reciprocity which characterize the co-ordination of viewpoints" (p162). In other words, reflection and critical discussion necessary for the constitution of reason "can only be developed by cooperation and genuine intellectual exchange" (Piaget, 1970b, p.179). In this regard, Piaget (1932) emphasises the importance of peer rather than adult-child interaction. As Piaget (1970b) suggests, relations of co-operation and mutuality found in peer interaction provide the ideal forum for helping children to decentre their thinking from one particular egocentric view in order to consider multiple

perspectives. From the intellectual point of view "it is such cooperation that is most apt to encourage real exchange of thought and discussion, which is to say, all the forms of behavior capable of developing the critical attitude of mind, objectivity, and discursive reflection" (Piaget, 1970b, p.180).

Consequently, Piaget (1970b) argues that the purpose of education is not simply to transmit information to children but rather to get them to construct the means whereby they can begin to develop coordinated knowledge. Piaget (1932) believes that this can be achieved by encouraging group work, common study and self-government amongst peers. In this way social life becomes an essential complement to individual activity and "cooperation is promoted to the rank of a factor essential to intellectual progress" (Piaget, 1932, p.405). The implication here is that knowledge construction is fostered in co-operative and reciprocal social interaction before individual mastery is achieved. Indeed, Piaget claims that group judgments often produce superior performances (Garton, 1992). This is because knowledge, for Piaget, "is constructive, and consequently, is best demonstrated in situations where something new is generated, something that was not already available to the operator" (Von Glaserfeld, 1987, p.11). More importantly, Piaget (1933/1995) advocates the creation of interpersonal discussion, conflict and debate amongst peers in the classroom and argues that this gives rise to cognitive growth. Piaget views learning as an aspect of the process of adaptation and, therefore, change in the child's behaviour occurs as an adaptation to the disequilibria created when external or internal demands are in conflict with the child's (internal) cognitive schemes (Beilin, 1980). Consequently, Piaget (1985) argues that one of the sources of progress in the development of knowledge must be "sought in disequilibria" (p.10). For Piaget, it is precisely conflict, debate or discussion amongst peers that results in cognitive disequilibrium in the individual and subsequent attempts by the individual to reach

logical resolution of this internal cognitive conflict, which leads to cognitive advances (Tudge and Rogoff, 1989). In other words, Piaget considers the conflict generated in peer interaction as instrumental in promoting the equilibration process (Ginsburg, 1981).

However, Piaget stresses that conflict should be regarded as part of the content of the interaction and not just a characteristic of the interaction itself (Garton, 1992). That is, conflict describes the process of social interaction that engenders cognitive growth. Thus, the emphasis moves to the processes of interaction, of which co-operative communication between partners is crucial. Consequently, I contend that the focus should be on the way conflict becomes resolved through co-operative communication and interaction amongst peers and not on the behaviours that manifest conflict as such. Indeed, the very process of resolving conflicts or disagreements is dependent, for Piaget, on the active exchange of ideas in the classroom using a common language and system of ideas (Tudge and Rogoff, 1989). In this way children are able to work out their differences of opinion through coming to understand the different perspectives and logically comparing their value. Therefore, I maintain that it is not merely peer interaction that is important for development but a specific type of intellectual exchange (as defined by Piaget's success conditions mentioned earlier) based on reciprocity, co-operation and mutual respect amongst equals. As Piaget (1932) puts it "criticism is born of discussion, and discussion is only possible among equals" (p.409). Furthermore, Piaget (1933/1995) contends that social discussion in the classroom and reciprocity of ideas is necessary for conscious realization. This is because "reflection, being a 'conscious realization', presupposes the formulation, or the concourse of points of view" (Piaget, 1933/1995, p.222). Therefore, Beilin (1981) maintains that, for Piaget, language should not be relegated to a position secondary to activity but rather linguistic activity should be recognised as a necessary and dynamic force in intellectual and social development.

To some extent Piaget's "conception of co-operative activity as equilibration corresponds with Vygotsky's conception of the role of social activity in individual internalization" (DeVries, 1997, p.16). Piaget (1933/1995) maintains that "human society presupposes an increasing number of relations external to the individual" (p.217). However, Piaget (1960/1995) emphasises that "educational transmission from one generation to the next or from the adult to the child in no way consists of a simple transmission but are instead, creative of new social realities" (p.300). As such, Piaget (1933/1995), suggests that social constraint "is only the external appearance of society" (p.239) whereas "cooperation marks the internalization of the social in the individual" (ibid, p.220). In other words

> cooperation in a certain sense is the product of internalization of 'external' society, just as knowledge is an internalization of experience: indeed, it suppresses the self (as self-centred) to the benefit of reciprocity, just as reason suppresses subjectivity to the benefit of forming an objective reality...The 'social' exterior is thus reduced to pure reciprocity: it meets the inner social and the individual in a new synthesis that surpasses both egocentrism and coercion. (Piaget, 1933, p.241)

In conclusion I contend that co-operation, for Piaget, is the ideal form of social interaction promoting optimal intellectual, social, moral and affective development. Consequently, I maintain that Piaget's conceptualisation of the 'social' in genetic epistemology suggests that co-operative social interaction must be an intrinsic feature of education and not just an additional or external factor. That is, education should be founded upon social relations of co-operation with an emphasis on peer interaction. Indeed, Piaget (1928/1995) argues that if the child attains the intellectual autonomy of the adult "it is to the extent that he was able to become a personality in discussion with peers and to the extent that adults will have learned to cooperate without constraining" (p.205). Clearly, then, mature rational thinking is achieved, for Piaget, through development requiring construction via co-operative social interaction (Youniss, 1995). Therefore, I agree with Brown, Metz and Campione's (1996) contention that

Piaget's genetic epistemology does more than Vygotsky's theory in explaining how group participation, dialogical interaction and argumentation and refutation among peers enables the development of rational thinking. Furthermore, I contend that Piaget's social-relational view of development and his focus on the detrimental effect of authority relationships for learning raises an interesting challenge to Vygotsky's (1962) notion of the zone of proximal development (ZPD).

Conclusion

This research report has shown that the 'social' constitutes an integral part of Piaget's explanation of human cognitive development and that the 'social' has been present in his theorising from the early years of his research. In particular, I have shown that although Piaget's genetic epistemology is based on a biological model of comparative anatomy, social life, for Piaget, constitutes an essential factor in the genesis and development of human knowledge. Furthermore, Piaget's social-relational view of development and his interactive constructivist approach to cognitive development emphasises the social quality inherent in all individual knowledge whether physical or social.

In addition I have shown that Piaget's theory of equilibration is essentially a socially driven process. More specifically, the social in the form of co-operative exchange is necessary for the achievement of equilibrated intellectual knowledge and, hence, of operatory equilibrium. Moreover, the 'social' is central to Piaget's explanation of the construction of logic and without social co-operation the development of morality and affectivity would be incomplete. In other words, for Piaget, the 'social' in the form of co-operation is necessary for the achievement of intellectual, operatory, logical, moral and affective equilibrium. Consequently, I maintain that the criticisms that Piaget's genetic epistemology neglects the social dimension are unjustified.

Finally, I contend that Piaget's extensive and complex notion of the role of the 'social' in cognitive development presents interesting possibilities for further research. For instance, the degree to which Piaget's assertions that power relations or relations of authority (constraint) have an adverse effect on learning could be studied empirically. Piaget's (1970b) focus on the

impact of different social relationships, namely, relations of constraint and relations of co-operation, for all development, and specifically learning, contrasts with Vygotsky's (1962) notion of the ZPD in which a novice works with an authority or a knowing other. For Vygotsky (1962), this relationship results in the internalisation of external social knowledge whereas in the Piagetian sense the novice simply assimilates the information given to her. That is, for Piaget (1970b), in relationships of authority the child does not necessarily construct something new. Rather, for Piaget (1970b), it is only social relationships of co-operation, incorporating symmetrical reciprocity and mutual respect amongst **equals**, that result in the successful internalisation of external social knowledge. This suggests that, for Piaget, learning should not be limited solely to conditions where the authority (adult, teacher or more knowledgeable peer) alone creates the ZPD for the novice (student).[4] Consequently, I believe that possibilities exist for an empirical verification of Piaget's contention that co-operative learning amongst peers or equals is essential for cognitive growth and it is this idea that I hope to pursue in the future.

[4] Although Vygotsky (1962) acknowledges that the ZPD can be created amongst peers his emphasis on a more knowledgeable other implies an authority figure/power relationship.

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