

CHAPTER 1

THE DEVELOPMENT OF ATTACHMENT THEORY AS A LAKATOSIAN RESEARCH PROGRAM: PHILOSOPHICAL AND METHODOLOGICAL ASPECTS

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ABSTRACT

In this chapter, we analyze the development of attachment theory from a Lakatosian perspective. It is argued that attachment theory should be regarded as a research program, developing through the stages "formulation", "construction", and "saturation". At least two anomalies threaten to block further progress of the attachment research program: The problem of the stability of attachment, and the problem of cross-cultural variability of attachment qualities. After suggesting a solution to the latter problem, we discuss the monotropy-thesis as a "degenerative problem shift". Studying attachment in social networks should be considered a viable alternative.

INTRODUCTION

Attachment theory has seldom been described from a philosophical and methodological point of view. In reviews of the attachment theory, substantive results and problems are emphasized, such as the antecedents of different types of anxious attachments. In this chapter we will not discuss these substantive matters, but we will try to describe the attachment theory as a Lakatosian research program. In the philosophy of science, developments in the natural sciences have been interpreted as paradigmatic or in terms of progressive and degenerating problem shifts, ever since the sensational publication

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of Kuhn's "Scientific revolutions" (1962), and Lakatos' exposition of the idea of research programs (1980). These approaches threw some light on a few very important episodes from the history of the natural sciences (e.g., the "Copernican revolution"), and contributed much to the methodological debate. Although it has been recently suggested that the flaws in Kuhn's theory, and - to a lesser extent - also in Lakatos' conceptions, should be diagnosed as fatal (e.g., Laudan, 1984), we think the fruitfulness especially of the Lakatosian approach has been demonstrated quite well. We refer here to Lakatosian analyses of Piagetian developmental theory (e.g., Beilin, 1984). Furthermore, Gholson and Barker (1985) showed that the age-old controversy between the conditioning research program and the cognitive program could very well be disentangled by a (slightly amended) Lakatosian philosophy of science (see also Barker & Gholson, 1984). Van der Veer (1985) showed the same for the development of the Soviet-Russian cultural-historical theory. Through such analyses, developments in the natural and behavioral sciences become comparable. Therefore, we may learn more from the history of science. Researchers could be alerted to the question of the identity of their research program, to criteria for changing the content of the program, and to the central place of examples of successful research projects and -instruments in "educating" new members of the scientific society. Through a Lakatosian analysis, the development of a research program could possibly be described in terms of stages, and some predictions about future progress and drawbacks could be made.

In this chapter we try to describe in a nutshell the history of attachment theory. It will be shown that this theory not only arose because of the enthusiasm and brilliance of some individual scientists, such as John Bowlby and Mary Ainsworth, but has also been inspired by social changes and current "*Zeitgeist*" (next paragraph). Although attachment and loss have always drawn considerable attention from the public and the policymakers, the popularity and fast expansion of attachment theory since the sixties can especially be ascribed to the construction of a measurement procedure to study the complex phenomenon of attachment between caregiver and child. The Strange Situation procedure (Ainsworth & Wittig, 1969) can be regarded as the proximate cause for the growth of attachment theory towards a full-fledged research program. In learning to apply this procedure, many young and competent behavioral scientists were drawn to and initiated in attachment theory. The collective efforts of dozens of researchers in all parts of the world accelerated the maturation of attachment theory. Parallel to established natural scientific traditions, a standard measurement procedure for attachment provided the common basis for exchange of experiences and for carrying out cooperative research.

At least two consequences of this rapid development can be pointed out. Firstly, hypotheses derived from Bowlby's magnum opus "Attachment and Loss" (1971; 1975; 1980) were empirically specified and verified within a relatively short time. Research soon made clear that sensitive responsiveness for example, constituted one of the main factors in the development of attachment. Empirical evidence showing the effects of different types of attachment for future child development was also produced. Secondly, however, flaws and inconsistencies in the research program were relatively quickly exposed, often as an unintended by-effect of research initiated to make a significant positive contribution to the program. From the perspective of philosophy of science, it is understandable that a fastly developing research program accelerates its own downfall as it is soon tested to its limits. We will show in the last paragraph that attachment theory indeed has matured very rapidly, and so created its own anomalies. Those anomalies do not yet threaten the existence of the program, but they remain continuing sources of concern and attention. For example, the problem of the stability of attachment quality has not been solved adequately yet, although the social context of attachment has been taken somewhat more seriously into account than before. But even the validity of the Strange Situation procedure has not yet been proved definitely: the status of new attachment classifications (D and B5) and the position of marginal subgroups (B1 and B4) is not clear at all. Differential attachment research into the antecedents and consequences of different classifications is slowed down by technical problems such as small sample sizes with only few observations in relevant subgroups.

Philosophy of science may be used to identify positive and fruitful trends in a research program. In Lakatosian terminology, these trends are called "progressive problem shifts". In the last paragraph we will point to a few progressive problem shifts in attachment theory. Firstly, by applying Lakatosian criteria for amending a research program, we will show that Bowlby's thesis of monotropy has to be replaced by the idea of attachment networks, placing caregiver-child relationships in a social context. Secondly, we will refer to the threat cross-cultural research constitutes to the phylogenetical aspects of the program's hard core. The claims of attachment theory to a universal status are based on the conviction that phylogenesis has resulted in the same genetic inclination towards attachment in all members of the species. Recent results of cross-cultural research seem to falsify this claim, but we will try to show how a Vygotskian interpretation could circumvent the anomaly.

HISTORY AND CONTENT OF ATTACHMENT THEORY

Attachment

"Attachment" is the term for a relatively durable affective relationship between a child and one or more specific persons with whom it interacts regularly (Bowlby, 1971; Ainsworth, Blehar, Waters & Wall, 1978). Children attached to a caregiver will try to remain in his or her direct vicinity, in particular at moments of sadness, fatigue, tension, and fear. In more or less unfamiliar surroundings - a new play area or when visiting strangers - the attachment figure is the secure base from which the environment is explored, and only this person provides a sufficient feeling of security for the child to play freely. Especially under circumstances of stress, the child will resist the departure of and separation from this person, and upon this person's return, it will cling to him or her or express in one way or another joy at the renewed presence of this most important source of security and confidence.

When, however, this separation is protracted - as, for example, during stays in hospital - the child will then cease protesting after a time and assume a "desperate" attitude, sit sadly or apathetically in a corner, hardly accessible for other adults. Of course there does come a time when the child appears to recover, accepting the care of an adult other than its attachment figure, and regaining interest in its surroundings. In the meantime, however, it is clear that it must have felt a particularly strong tie to the caregiver and that breaking that tie has considerable consequences for its feelings of security and (self-)confidence, and for its urge to go out exploring. It is as if that unquestioned base for all its activities has suddenly disappeared. It has great difficulty adjusting to the state of separation and in initiating the development of alternative attachment relationships. It is the very instance of temporary or permanent severance of the attachment relationships that demonstrate how intense and "adult" the emotions of even young children can be: they foster a deep affection towards a specific person and bemoan his or her absence with intense sadness.

Not every child, however, reacts to the absence of its caregiver in the manner described above. There are children who make an indifferent impression when their attachment figure returns. They avoid contact or behave rather ambivalently, by both seeking and rejecting contact, all at the same time. In this way they appear to be expressing either disappointment in the behavior of their attachment figure, or anger at the protracted period of separation. The absence or presence of the caregiver hardly seems to influence their play

and exploration behavior either. The question is, which factors lead to different types of attachment relationships and what short- and long-term consequences those relationships have for a child's social-emotional and cognitive development. As suggested earlier, the attachment relationship is a child's secure base for all its activities. How then do we explain the curious phenomenon that in the second half of their first year most children have developed at least one attachment relationship, often to their mother or father? Is this a question of maturation, for example at a cognitive level, through which children are capable of distinguishing their caregiver from arbitrary visitors and can picture him or her in their minds, even in his or her absence? Or is it rather a learning process and therefore due to factors related to the interaction between caregiver and child, for example, in learning to interact successfully in play and other areas?

The same series of questions can also be raised concerning the consequences of different types of attachment. In books for parents about child-rearing, it is repeatedly pointed out that a necessary condition for activities associated with child-rearing is an affective relationship, in which trust between caregiver and child can develop. The caregiver must succeed in winning the trust and affection of the child through interaction preceding intentional child-rearing activities, and in so doing create the framework in which it is prepared to accept the "authority" of the caregiver, even if it is not always clear how this authority is to be legitimized. Does, indeed, the absence of a secure attachment relationship at an early age result in child-rearing problems and therefore in falling behind in cognitive and social-emotional development? And is every type of attachment relationship an equally solid basis for child-rearing?

A first design of attachment theory

In his attachment theory, the English psychiatrist John Bowlby (born in 1907) attempted to give answers to such questions. At first, he had few doubts concerning the right answers. Thirty-five years ago, more than a half million copies of his report on the case of "neglected" children in postwar Western Europe were distributed. In it he concluded that "maternal love" was as important for the mental development of children as were proteins and vitamins for their physical development (Bowlby, 1951, p.159). Inversely, being deprived of or separated from the mother was usually as damaging for the child's "mental" health as were contagious diseases for "physical" health. The absence of a durable attachment relationship in the first year of life would have irreversible consequences for what is

called "mental health" or "adaptability". It would result in an unfortunate form of maladjustment to its surroundings, and a lack of confidence in itself and in its fellow human beings in times of need.

Actually, these far-reaching conclusions concerning the short- and long-term effects of "maternal love" and "maternal deprivation" had already surfaced in the two research projects with which Bowlby began his career as psychiatrist-researcher. They concerned clinical studies into the background of juvenile delinquency (Bowlby, 1940; 1944). In this framework, he gave a profile of "petty thieves" on repeated offenses, concentrating upon their seeming lack of emotions. As these children were insensible to guilt feelings or sympathy for their victims, their capacity for theft and other criminal behavior was nearly boundless. In reconstructing their life histories, Bowlby noticed that many of them had had quite a bit of experience with separation in the first three years of their lives. It was in this very stage of life that these children appeared to have spent their time in poorly equipped institutions or to have been sent from one caregiver to another like parcels.

The absence of a continuous attachment relationship appeared to have led to a hardening of these youths' emotional lives, and to have facilitated the step to delinquency. Bowlby generalized this effect of "unfeeling" character development to all educational situations in which the child is unable to develop confidence in the availability and accessibility of a caregiver, that is, to develop an attachment relationship of durable nature.

Bowlby himself traces his interest in separation experiences as an important pathogenic factor to his work at a school for socially and emotionally "maladjusted" children, to which he was associated for six months at the age of 22 (1928-1929). Afterwards, Bowlby stated in a interview with Senn (see Newcombe & Lerner, 1982) that during this period he was able to closely observe the disastrous effects of early childhood separations. His impression that this kind of experiences had far-reaching consequences was strengthened by his therapeutic activities at Maudsley Hospital, where he worked as a clinical assistant from 1933-1936, and was trained as a psychiatrist by Joan Riviere and Melanie Klein. At the time, he had started on a thesis on the loss of a loved one as a cause of psychosis, but never finished it. Instead, his paper on "Personality and mental illness", published later (1942), was accepted in 1939 as "MD-thesis". This was a paper on the classification of types of mental illness, in which attention is also paid to the loss of a loved one as an aetiological factor (Newcombe & Lerner, 1982, p.10). Newcombe and Lerner assert that Bowlby's

interest in actual separation experiences as the cause of serious psychological problems can also be traced to the consequences of the First World War on the British population. The premature death of many British men and fathers had a far-reaching influence on the psychological well-being of the survivors, and this was noticeable during therapy sessions. In British psychoanalysis, it was to this kind of real problems that Klein and Suttie in particular responded, using them as a pretext for changing the accepted psychoanalytical options and theories. By stressing on the one hand an innate biologically adaptive need for relations with fellow human beings, and on the other fear of separation and the damaging consequences of actual separations, Suttie approached closely Bowlby's recent version of the attachment theory as far back as the thirties. Social factors (the First World War), intellectual climate (the development of an unorthodox British variant of psychoanalysis), and personal experiences thus form in brief the foundation of Bowlby's preoccupation with attachment relationships, separation and loss. The core of the first wording of the attachment theory, then, is that the absence of a durable attachment relationship during the first years of life leads to problems in future emotional development.

Criticism

The first and very rudimentary formulation of the attachment theory was sharply criticized in the fifties. As regards its content, the theory is based in particular on research into "maternal deprivation" or hospitalism (see for example Spitz, 1976), that is, research into the effects of institutionalization upon the development of the young child. However, residence in a "substitute family" institution does not only mean (permanent) separation from the mother but also from the father, and from other family members and acquaintances. At the same time, the child is separated from its familiar surroundings. In this complex of factors, it is impossible to automatically label the absence of "maternal love", or even of an attachment relationship in general as the most important cause of deviant development. From the research of, for example, Heinecke and Westheimer (1965, p.192f), it appears that the conditions surrounding a separation and admission to a "substitute family" institution are of great importance to these short and medium range effects.

Children, for instance, admitted together with a brother or sister react much less vehemently than children having to adjust to new living conditions without other family members. Characteristics of the institution itself must also be con-

sidered as possible intervening variables. In the institutions investigated by Spitz, overcrowded and poorly staffed due to the many "war-orphans", he discovered for example a relative lack of environmental stimulation.

In particular, Pinneau (1955) and Rutter (1971) level similarly devastating and as yet unrefuted methodological criticism at this type of hospitalism and maternal deprivation research. However, Bowlby's first effort to explain the vehement and stereotypical emotional reactions to separation and loss constitutes an important step away from the established interpretations. In traditional psychoanalysis as well as in conditioning theories, attachment relationships were considered to be based upon the child's need for food and physical care. A caregiver satisfying these primary needs would therefore become the target of a secondary (attachment) need, through repeated association of need satisfaction and the presence of the caregiver. Research on the development of children from institutions, however, had made clear that perfect physical care is not a decisive factor for the existence of an attachment relationship. The famous experiments of Harlow (1958; 1961) with separated nonhuman primates demonstrated that a baby monkey felt more attached to a soft-covered "artificial mother" that provided no feeding, than to a bare "wire mother" that did. Feeding alone appeared to be a neither sufficient nor necessary condition for the development of affective ties in monkeys. In short, psychoanalysis and conditioning theories cannot explain why attachments develop when no association with satisfaction of primary needs is present. It is Bowlby's merit to have constructed an alternative explanation by combining evolutionary, system-theoretical, and psychological approaches.

Evolutionary roots of attachment

An important thesis in attachment theory is that human attachment behavior has biological roots that can only be understood from an evolutionary perspective (Bowlby, 1971). Certain behavior is of great benefit to the survival of the species or population and in the course of evolution is stored in the genetic material and transmitted to younger generations. The attachment theory assumes that there are a number of genetically determined biological safeguards ensuring pedagogical care during the long period of childhood helplessness. This applies especially to the child's behavioral repertoire, of which attachment behavior such as seeking proximity and crying would be a part. Of course, the survival value of attachment behavior cannot automatically be determined on the basis of dangers threatening the child in contemporary Western society.

In order to do so, one must, according to Bowlby, return to the "environment of evolutionary adaptedness", the environment in which the species developed during an evolutionary period of millions of years. Bowlby states that in this environment, the attachment behavior of the immature members of the species, and its parental equivalent, had the function of protecting the offspring from danger, in particular from attacks by predatory animals. Even now, in an environment that in the past thousands of years has become far removed from the original environment, the genetic transfer of the inclination towards optimal adaptation continues to exist. This means that in its present environment, the child continues to retain the inclination to grow "attached" to its caregiver, that is to be mindful of keeping the caregiver at a "safe distance" (or better said, a safe proximity). The basis for the origin of attachment behavior should therefore not be sought in momentarily rewarding feeding or care and the contact often accompanying it, but in the biological function this behavior fulfilled during the millions of years of struggle for survival in the original living environment of the human species.

In this evolutionary explanation, the question of the origin and function of adequate parental reactions to their children's attachment behaviors remains unanswered. Why should an adult be responsive to the genetically biased proximity and contact seeking of every infant? Porter and Laney (1980) and Lamb, Thompson, Gardner and Charnov (1985) point to the importance of the concept of maximization of the "inclusive fitness" in recent advances of evolutionary biology. Inclusive fitness refers to every individual's tendency to enlarge the number of his or her genes. Influenced by recent trends in sociobiology, in fact the gene-pool and not individuals or species are considered the central theoretical entities in evolution. Without evaluating this idea, one could derive that parental maximization of inclusive fitness only to a certain degree implies a responsive reaction to the child's signals. One could imagine, for example, that a responsive reaction would have negative consequences for other children in the family and, therefore, would decrease total parental inclusive fitness. Natural selection would force parents to strive toward an optimal balance between costs and benefits regarding reproductive success. This implies the necessity to react responsively, but also the possibility of neglecting the child's attachment signals in favor of a sibling's need for security. Under these circumstances, children would be optimally adapted to their environment if they know how to handle temporary parental unresponsiveness (Lamb et al., 1985, p.47; Hinde, 1982). An anxious-avoidant or resistant attachment would sometimes constitute a good adaptation to a (temporarily) insensitive environment.

This same evolutionary perspective has been introduced into conditioning theories of attachment (Petrovich & Gewirtz, 1985). Proximate causes for attachment behavior, such as its conditioning history, are complemented with more "ultimate" considerations. In this recent variety of conditioning theory, the central thesis is that parental attachment behavior enlarges the inclusive fitness of the individuals (p.283). Not only protection against predatory animals is important: parental behavior has to be interpreted in the context of a broader strategy of maximization of reproductive success. The more genes caregiver and child have in common, the more probable responsive reaction to the child's attachment signals is. This responsiveness is called "psychobiological attunement" (Field, 1985). In this respect, attachment theory and conditioning theories converge at the same evolutionary notions. Differences of opinion arise on the level of proximate antecedents of an individual attachment relationship. Conditioning theory postulates certain kinds of conditioning mechanisms, while attachment theory emphasizes control-system operations (see next paragraph).

Evolutionary explanations for a genetic bias of attachment make a very speculative and metaphorical impression. They do not take into account the existence of a cultural heritage and capitalize exclusively on the biological heritage (Van IJzendoorn & Van der Veer, 1984). But caregivers, of course, do not only consist of genes in search for reproduction. They strive for rational, culturally bound purposes as well. Their child-rearing aims, for example, could compensate for the detrimental side effects of maximization of inclusive fitness, and lead to more sensitive responses to the child's signals. On the contrary, these culturally approved aims could also lead to less responsive parental behavior, because caregivers aim at the child's autonomy and individualization at an early stage (cf. Grossmann, Grossmann, Spangler, Suess & Unzner, 1985). The evolutionary approach does not seem to take into account affective investments of other caregivers, c.q. adoptive parents. Adoption is a strongly culture-bound phenomenon, for which no ready biological explanation is available.

However, evolutionary models correctly show the necessity to consider attachment as partly based upon a species - specific genetic infrastructure, which certainly explains the almost universal status of attachment behavior, robust against many contextual variations (see next paragraph).

Control-system theory and attachment

In this light, the development of attachment behavior can be more adequately described with the aid of control-system

concepts than with conditioning ones. Bowlby compared the organization of children's behavior to a control-system which can function, as it were, in a goal-corrected fashion through a feedback mechanism. The "programmed set-goal" of attachment behavior is maintaining contact with and proximity to the caregiver, or, from an internal psychological perspective: maximization of felt security (Sroufe & Waters, 1977; Bretherton, 1985). Behavior initiated to realize the set-goal is flexible and adaptable to specific circumstances. A child that cannot yet crawl or walk is more inclined to display passive attachment behavior of a demonstrative nature (crying), while a somewhat older child will try to make use of active attachment behavior (following). Still older children, with insight into the planning of parental behavior, will build this into their own planning of attachment behavior, and bear in mind shifts in their target-object: a goal-corrected relationship develops. In this connection it is not possible to speak of "reinforcement" or "extinction" of behavioral patterns, but of "activation" and "termination". The control-system is activated by the information that the "set-goal" has not yet been realized (the baby cries if the caregiver is not audibly or visually in proximity), unless other goals contrary to the attachment goal interfere (if the baby is involved in play or exploration it will not cry under these circumstances). The control-system is terminated when the "set-goal" has been achieved (the caregiver picks up the crying child, achieving the greatest possible proximity; but see Hubbard & Van IJzen-doorn, chapter 9, this volume).

The control-system interpretation proved to be decisive for the success of the attachment research program. Waters (1978) referred to this interpretation in describing his research on stability of attachment. Attachment behaviors did not appear to remain the same over a half year period. Only patterns of attachment - the classification into A, B, and C categories - showed rather high stability. During the seventies, quite a few researchers thought attachment to be a construct that could not be measured reliably, because attachment behaviors seemed to change too much over time and situations. But in showing that attachment as a goal-corrected system did have the same quality in different settings and over time, criticism could be answered (see Lamb et al., 1985). Below, research on the stability of attachment will be discussed more extensively, but we hope to have made clear that Bowlby's theoretical foundation of the research program did have factual consequences for the way in which data were collected and interpreted. In this sense, attachment theory indeed constitutes a Lakatosian research program.

ATTACHMENT THEORY AND PHILOSOPHY OF SCIENCE:
ATTACHMENT NETWORK AS PROGRESSIVE PROBLEM SHIFT

Research program

Without giving a complete definition of the concept of "research program", two characteristics appear decisive. Firstly, a group of researchers shares a hard core of premises, that remains accepted without discussion. Research is directed toward implications of the hard core. In the case of attachment theory, its hard core appears to consist of the phylogenetic foundations of attachment behavior. At first sight, it seems improbable that phylogenesis is relevant in explaining actual interactions between infant and caregiver. For attachment theory, however, the evolutionary point of view is indispensable in explaining some apparently anomalous facts, e.g., the instability of attachment behaviors.

Secondly, a research program can be characterized by its exemplary ways of solving problems. A research program has to contain guide-lines concerning acceptable operationalization of central concepts. These guide-lines fulfil an essential function in initiating and training young researchers, and in communication with the "invisible college" about the latest research results. The comparability of these results is, of course, guaranteed through the use of identical operationalizations. In the case of attachment theory, the widely used instrument to measure the central concept of attachment is the Strange Situation procedure. Attachment research can usually be identified by the application of this procedure to measure the main independent or criterium-variable. Hypotheses about the relationships between attachment and a host of other characteristics of caregiver-child interactions are tested with the Strange Situation.

One of the advantages of interpreting attachment theory as a research program consists of its comparability with natural science programs. Without denying differences between the natural and behavioral sciences, one could still learn from the way in which natural science programs develop progressively towards more insight into the phenomenon studied. Philosophers of science, e.g., Kuhn (1962) and Lakatos (1980), described globally the dynamics of research programs in the natural sciences, and for example, De Mey (1983) tried to work out its details using bibliometric methods. Through interpreting attachment theory as a research program its development can be better described and predicted. Actual controversies and discussions can be placed in a comparative and historical context. Therefore, more insight can be gained into the philosophical dimension of seemingly trivial but heated discussions,

for example about the stability of Strange Situation outcomes.

Stages in the development of attachment theory

Simplified, four stages in the development of research programs can be discerned: "formulation", "construction", "saturation", and "exhaustion" (De Mey, 1983). These stages can be described at different levels of the scientific enterprise. Firstly, of course, on the level of content, but also on the methodological and organizational level. We would like to add a fourth level, namely practice. In Table 1, the different stages and levels are described.

Table 1
Stages in the development of research programs

Stages				
Levels	Stage 1 Formulation	Stage 2 Construction	Stage 3 Saturation	Stage 4 Exhaustion
Content	Global description of paradigm	"Normal" science: theoretical application	Decrease of results; anomalies	Cumulation of anomalies, rise of competing programs
Methodology	Programmatical	Verification	Consistency	Apologetical
Communication	(Almost) absent	Informal (papers & symposia)	Formal (societies, conferences, journals)	Rigid (institutes, handbooks)
Practice	Heuristics (practice ↔ theory)	Source of data (practice → theory)	Application (practice + theory)	Integration (practice ≡ theory)

Note. Table 1 is derived from De Mey (1983) who gives somewhat more information about "communication", but disregards the relationship between practice and theory

The four stages have to be considered as hypothetical. They are only partly based on data from the history and sociology of science. But it appears to be fruitful to use the model as a heuristic device in describing the development of attachment theory. It is clear that the attachment research program has been stuck in stage 1 for a long time. In fact, Bowlby and Ainsworth had to do their speculative and theoretical work for some twenty years before achieving a break-through. This stage was completed with the publication of Bowlby's "Attachment" (1969; 1971²), in which he gave a synopsis of programmatic premises and presented some tentative empirical illustrations based on secondary material and clinical casus descriptions.

The practice of bringing up children in orphanages during and after the Second World War was his main source of inspiration, as we showed in the first paragraph.

During the sixties, Ainsworth and Wittig (1969) developed the Strange Situation procedure to study caregiver-child interactions under standardized stressful circumstances. They needed this kind of laboratory data to calibrate their home observations. Through the exemplary procedure for measurement of attachment much time-consuming and rather unstructured field works (Schaffer & Emerson, 1964; Ainsworth, 1967) could be replaced or complemented by a more efficient and current method of collecting data. Young scientists could rather easily learn to participate in attachment research through training in the application of the Strange Situation procedure. A period of "normal science" (Kuhn, 1962) begins, in which the network of variables around the central construct "attachment" is explored. An "invisible college" (Crane) of enthusiastic attachment researchers is being established. Intensive cooperation between Main, Bell, Waters, Stayton, Sroufe, Bretherton, Blehar, Wall and others leads to the merging of data files, which form the empirical foundation of the well-known "Patterns of attachment" (1978). The practice of preschool and family education serves in this stage only as a supplier of data to construct and amend the theory.

For that matter, we think the availability of the Strange Situation of more importance for the popularity of the attachment theory than its so-called ideological function. It has been stated that the attachment theory would fit nicely into existing family and motherhood ideology, and represent a confirmation of the supposed biologically based division of tasks and roles between men and women in family and society (Marris, 1982). The maternal deprivation theory of the young Bowlby was, in fact, already extremely popular shortly after the Second World War, in practice as well as in policy. The several editions of Bowlby's report on "Maternal care" (1951) to the World Health Organization illustrate this thesis well. But during the two decades after publication of this famous report, attachment research was only done on a very modest scale, if one compares this "latency" period to the "boom" in the seventies. In the process of "normalizing" the attachment theory, a supposed fruitful ideological climate did not appear to have enough weight. We assume that an internal scientific development - the construction of the Strange Situation - succeeded in turning the scale more effectively.

In the first half of the eighties, some symptoms of the saturation stage are notable. Superficially, attachment theory is prospering as never before. Almost every conference on early childhood education and development contains some ex-

PLICIT attention to results of attachment research. A few journals appear to be nearly domain specific (e.g., "Infant Behavior and Development"). Regularly, collections of articles on attachment are being published, and the first handbook for (future) researchers can already be purchased (Lamb et al., 1985). The methodological orientation is striving toward consistence. The theory is amended with hypotheses to adapt it to inconsistent empirical evidence. The debate on the cross-cultural validity of attachment theory (next paragraph) is an example, as well as the discussions on the temporal stability of attachment. Theoretically, attachment should be stable over time and context, because it has been defined as a relatively durable bond. But quite a few research projects did show instability in the development of attachment during the second year of life. This problem is sometimes methodologically "solved" by blaming the research procedure or the researcher; recently, a more satisfying explanation is offered by complementing the stability thesis with the condition of contextual stability. Quality of attachment can change over relatively short periods (e.g. six months) if radical changes in the caregiving arrangement occur. One expects a stable attachment relationship only in a relatively stable environment (Waters, 1983).

The battle against such inconsistencies requires quite a lot of energy; therefore, the productivity of the program falls somewhat behind the expectations. But a series of applications of the theory are becoming visible in this stage. The theory is applied in the practice of psychotherapy, parent education, in the prevention of developmental problems, and in the discussions on adequate caring of the young child outside the family, for example, in day nurseries or through child minders (see chapters 3 and 4). Attachment theory, however, is not yet fully integrated into common sense ideas about caregiving and into state policy on early childhood education.

Phylogenesis as hard core: cross-cultural research from Vygotskian perspectives

Above, the hard core of the attachment research program has been described. One of its aspects is the phylogenetic foundation of attachment behavior. The evolution of the human species is of great importance for understanding actual attachment behavior in infants. From this premise, attachment theory can claim a universal status. Culturally different groups all participated in the same phylogenesis, which is therefore decisive for the existence of attachment behavior in (almost) every member of the species, c.q. group. Cross-cultural research can provide data to test this claim, because this

research can show differences and (universal) similarities of child development in different cultures (Van IJzendoorn, 1986).

Research in Sweden, Japan, West-Germany, Israel, and The Netherlands showed, however, that attachment does not develop in a uniform way across all cultures. Cross-cultural differences in distributions of children among attachment categories have raised the question whether the A (anxious-avoidant), B (secure), and C (anxious-resistant) classification represents alternative but equivalent pathways to maturity (Lamb, Thompson, Gardner, Charnov, & Estes, 1984). The percentage securely and anxiously attached children in different American samples is about 70% and 30% respectively. The American distributions lead to the supposition that the modal B-category represented the optimal or normative pathway; the A- and C-category were considered as deviant patterns (Ainsworth et al., 1978; Sagi & Lewkowicz, chapter 11 in this volume). However, this criterion does not appear to be valid in all cultures. In Japan, where parents almost never leave their infants alone, a high percentage of anxious-resistant children has been found (Miyake, 1984). In West-Germany, especially in the north (Bielefeld), a very high percentage of anxious-avoidant children has been found. Parents from this region seem to prefer early autonomy for their infants, and treat them accordingly (Grossmann, Grossmann, Huber & Wartner, 1981). In Israeli Kibbutzim, a great number of anxious-resistant children have been registered (Sagi, Lamb, Lewkowicz, Shoham, Dvir, & Estes, 1985; see also chapter 11 in this volume). In the Netherlands, the percentage of anxious-dependent children (B4) is rather high (Van IJzendoorn, Goossens, Kroonenberg, & Tavecchio, 1984; see Goossens, chapter 4, this volume). Do these results imply a falsification of the claim of universality, and therefore constitute a fatal anomaly to the hard core of the program? To answer this question we have to present three main currents in cross-cultural research (Cole & Scribner, 1974; Van IJzendoorn, 1986).

First, there is a relativistic approach, in which it is presupposed that different cultures lead to large differences in psychological adaptation (Lévy-Bruhl, 1966). How cross-cultural differences in psychological functioning came into being is explained in several ways. Evolutionists (at present sociobiologists in particular) emphasize genetic differences between populations, which evolved in different ecological niches. Genetic factors could play an important role in culturally bound differences in neuroticism, dominance, depression and schizophrenia (Wilson, 1976). Besides this evolutionist explanation, the cause of cross-cultural differences is sometimes found in sociological and psychological factors.

Cultures demand different levels of competence of their members, and in socializing the individuals, an attempt is made to develop culturally functional characteristics and capacities. Different cultures provide their younger generations with different adaptive tools, including symbolic systems such as language. If there are great cross-cultural differences in the perception of colors, these can be traced to differences in sign systems for designating colors. Such differences in sign systems can again be traced back to the different sociological functions of color perception in different cultures. In attachment research, this approach would lead to great doubts about the universal applicability of the concept of attachment, and of the Strange Situation as its measurement procedure. Each culture has its own mode of caregiver-child interaction, and a uniform description of the relationship between caregiver and child through a uniform procedure would inevitably do injustice to specific culture-bound idiosyncrasies. Lamb et al. (1984) seem to prefer this perspective.

Secondly, there is a universalistic current (Lévi-Strauss, 1966) in which cross-cultural differences are not denied but are regarded as an unimportant veneer covering substantial similarities. Different uses of language, for example, can be traced back to the same underlying structure or competency. It is conceded that great differences in the content of abstract thinking exist, but every human being is capable of thinking abstractly in certain ways to communicate with his fellow human beings. In this current, it is supposed that all languages have the same fundamental structure, and that all children are born with a "language acquisition device" which helps them to learn their specific language in relatively short time (Chomsky). In attachment research, this universalistic approach leads to the claim that attachment develops in the same way and with the same structural characteristics (e.g., separation anxiety), despite notable differences in superficial aspects (e.g., nature and amount of physical contact). In fact, Bowlby (1971) and Ainsworth et al. (1978) take this point of view by situating the origin of a genetic "bias" for attachment in the more or less universal environment of evolutionary adaptedness and by regarding the crystallization period of different cultures as too short a time to lead to substantial differences in genetic equipment. Even now, babies are assumed to attach themselves to a protecting adult because they too fear the age-old and universal dangers of darkness, sudden attack, loud noises, etcetera. If there are any cultural differences in attachment, these would only concern some superficial characteristics.

Thirdly, there is the cultural-historical approach, in-

spired by Vygotskij (1962) and Lurija (1979). This Soviet-Russian approach, which strongly influenced such American psychologists as Bronfenbrenner (1979), Bruner (1983), Cole and Scribner (1974), and Wertsch (1985), tries to synthesize the relativistic and universalistic points of view. The distinction between the lower and higher psychological processes is fundamental to this approach. The lower psychological processes, such as eidetic memory, are considered to belong to the basic evolutionary equipment of every human being. The higher psychological processes, such as logical reasoning, however, developed quite late in phylogenesis. Mediation through language or other sign systems is characteristic of these higher processes. Because different cultures provide their members with largely differing sign systems, large cross-cultural differences in higher psychological processes may be expected. From a cultural-historical perspective, the universal characteristics of the lower psychological processes are combined with the great cultural variation of the higher processes.

The question, then, is whether attachment should be regarded as the outcome of lower or higher psychological processes. Because Vygotskij himself related the distinction between higher and lower processes largely to the development of communication through language, in his view attachment would be the product of lower psychological processes and, therefore, have a universal nature. Elsewhere, we criticized Vygotskij for his neglect of other sign systems than language, and we referred to the subtle nonverbal sign system through which caregivers and babies communicate (Van der Veer, & Van IJzendoorn, 1985). Against this background it seems unjustified to consider attachment as the expression of lower psychological processes. We feel justified in assuming that such attachment behaviors as proximity-seeking, crying, and maintaining contact are indeed the outcome of universally "programmed" lower psychological processes. Patterns of attachment, however, are the expression of nonverbally mediated higher processes that could be strongly culture-bound. The same patterns of attachment could in different cultures fulfil different functions in the transaction between the child and its environment, but the lower processes that underlie these patterns are part of the genetically determined "equipment" of every human being.

From this Vygotskian perspective, it is therefore admissible to search for universal attachment behaviors, and its development in different cultures in the first years of a child's life with a uniform measurement procedure such as the Strange Situation. "Deviant" patterns of attachment, however, have to be interpreted against the background of cultural differences. Every culture will have its own functional (and

perhaps modal) pattern which may deviate more or less from the American "standard". We hypothesize, for instance, that in the Netherlands the modal B1-category is more adaptive than its American counterpart, the B3-category. In the Netherlands, - as in Germany (see Grossmann & Escher-Graub, 1984) - much stress is laid upon the child's learning to fend for itself, and parents are afraid of spoiling the child at an early age with too much attention and explicit signs of love.

In short, from a Vygotskian perspective one has to look not only for heterotypical continuity of adaptation across age and situation (Sroufe, 1979), but across cultures as well. The same functional optimum could, then, be shown to be reached along different lines or patterns of attachment. Provided the classification is not normatively interpreted a priori, the Strange Situation procedure could play an important role in cross-cultural research, as it taps the universal dimension of attachment behavior as outcome of lower psychological processes.

In this way, universalistic and relativistic perspectives are integrated. The Vygotskian interpretation of cross-cultural differences in attachment distributions protects the hard core of the research program against the fatal influence of an inexplicable anomaly. From a cultural-historical perspective, one of the most important obstacles for the development of the attachment research program disappears; that is, the supposed cross-cultural invalidity of universalistic aspects of its hard core.

Attachment network as a progressive problem shift

Because Lakatosian research programs have to be considered as a series of successive theories with approximately the same hard core of premises, concepts and instruments, but with continually changing ad hoc hypotheses and observational theories (consisting of the "protective belt" preventing the hard core from being empirically refuted), the question arises how a research program can change and progress towards a better understanding of reality. In which way can a research program be said to make progress, i.e., which criteria have to be met to speak of so-called "progressive problem shifts"? The traditional positivistic answer to this question was rather simple: empirical evidence would tip the balance. Recent developments in the philosophy of science, however, make clear that the relation between data and theory, c.q. research programs, has become much more complicated than verificationism and falsificationism suggested in the past (Van IJzendoorn & Van der Veer, 1984). According to verificationism, a researcher has the relatively simple task to collect as much

confirming empirical evidence in favor of the hypothesis as is possible. Falsificationism prescribes deriving bold hypotheses from a theory, and to test these potentially refutable hypotheses severely. These approaches, however, can be shown to incorrectly mirror successful scientific projects. For example, it has been shown that data are always theory-laden, and therefore the so-called "hard facts" may be refuted in the same way as theories are falsified. We do not have hard facts available to detect the soft spots in our theories. Besides, in the history of science it has been discovered that successful research programs were nevertheless surrounded by a great number of "refuting" facts, or anomalies. These anomalies did not appear to block the progress of the research program, and certainly did not (immediately) lead to abandoning the program's hard core. Recently, the dynamics of the scientific enterprise are not sought in the stressful relation between theories and data, but in the structure and competition between theories (including the observational theories) for survival and dominance. Empirical evidence is only important in indicating theoretical inconsistencies leading to revision or refutation of one of the relevant theories in the series constituting the program's protecting belt. When, where and how these revisions are to be made, is a complex question. Lakatos formulated four criteria that should be used in judging problem shifts as progressive or degenerative. He derived these criteria from his historical studies of famous natural science programs (Lakatos, 1980).

1. Revisions should only be made in the "protective belt" and not in the hard core constituting the identity of the program (this is called the "negative heuristic");
2. Revisions do not lead to less internal consistency of the program, but should follow "logically" from developments in the past (this is the requirement of internal consistency, to which Laudan's requirement of conceptual clarity could easily be added, see Laudan, 1984; Gholson & Barker, 1985);
3. Revisions should not be "ad hoc", but must increase the content of the theory, that is, it should predict "new facts" (this is called the requirement of theoretical progress);
4. Theoretical progress should be confirmed by empirical evidence from time to time; that is, predictions about new facts should indeed be verified now and then (the requirement of empirical progress).

The role of the four criteria in revising a research program can be illustrated with the thesis of Bowlby that children attach primarily to one caregiver, usually the mother. This is the so-called monotropy-thesis. Applying the four

criteria to test the "progressiveness" of this problem shift, we get the following results. In adding the monotropy-thesis to the attachment theory, Bowlby appears to break the rule not to make changes in the hard core of the program without its being tested seriously. The monotropy-thesis implies a hierarchy of attachment relationships, in which the bond with the "primary" caregiver is the strongest, other relationships functioning at a lower level of intensity. Speaking in terms of "strength" of a bond implies crossing over to another research program. In attachment theory one can only speak about quality of attachment - the exemplary operationalization only measures quality, not strength of the relationship. "Strength" of a bond typically belongs to the terminology of the conditioning approach to attachment (Gewirtz, 1972), in which the difference between attachment and dependency seems to be blurred (Ainsworth, 1969; Sroufe, 1985). In a conditioning context, it is perfectly correct to argue about the strength of the dependency of an infant on its parent. But without losing sight of the fundamental difference between attachment and dependency, it is not possible to argue about a hierarchy of attachment figures with stronger or weaker bonds with the child. Furthermore, the monotropy-thesis did not lead to empirical progress. On the contrary, the thesis is not confirmed by empirical evidence pointing to the existence of equivalent attachment relationships with several different caregivers, e.g. father, mother, and professional caregivers (Lamb, 1978; Main & Weston, 1981; Sagi et al., 1985; Smith, 1980; Smith & Noble, chapter 3 in this volume). The attachment relationships do not have identical qualities and thus appear to be dyadic-specific, but they cannot be discerned in terms of strength, and be placed in a hierarchy.

The hard core of attachment theory, rather, appears to imply a revision in an opposite direction. One of the theory's main characteristics is that development of an attachment relationship was disconnected from the idea of parental satisfaction of the child's primary - physical - needs. One of the premises of attachment research program emphasized the feelings of security a child may derive from the (psychological or physical) presence of a protective adult. In that case, the child should be "able" to attach itself to more than one caregiver, inside as well as outside the group of adults who care for its physical well-being. Having an attachment relationship with several different persons - within limits set by restricted cognitive capacities - has the advantage that relationships of an anxious quality may be compensated by relationships of the secure type. Separation from one attachment figure may neither lead to anxious feelings if another attachment figure stays behind with the child. Therefore, we would

like to replace the monotropy-thesis with the "extension hypothesis". This hypothesis suggests that an optimal caregiving arrangement consists of a network of more or less stable attachment relationships between the child and several different caregivers. It should be noted that a network only consisting of secure attachments is, of course, preferable to a network with one or more anxious relationships (see Tavecchio & Van IJzendoorn, chapter 2 in this volume for further details on the hypothesis).

Revising the attachment theory through adding the "extension hypothesis" means making a progressive problem shift. The revision implies independently testable predictions about phenomena not yet studied in depth. We mentioned, for example, the prediction that a child may have attachment relationships of different quality, and that the detrimental effects of an anxious attachment may be compensated by secure attachments with other figures. Recent research has made clear that the first part of this prediction is correct. Therefore, theoretical as well as empirical progress has been shown to be the consequence of the introduction of the "extension hypothesis".

CONCLUSIONS

In this chapter, we have tried to describe the development of attachment theory as a research program. After briefly sketching the historical background of the rise of attachment theory, we outlined the main features of the program. It was argued that the hard core of the program consists of the phylogenetic premises and the instrument to operationalize the core construct, namely attachment quality. The stages of formulation, construction and saturation in the career of attachment theory were illustrated. We concluded that a few anomalies might block further development of attachment theory. Firstly, the problem of the stability of attachment does not appear to have been solved definitely. It is not clear how "resistant" to change attachment quality is, under changing caregiving arrangements. Secondly, cross-cultural research results indicate that attachment quality is not distributed in the same way in all cultures. This culture-bound characteristic of attachment is a challenge to the supposed universal occurrence of attachment. We suggested that a Vygotskian perspective on this matter could show a way out of the problem. Lastly, we showed that Bowlby's thesis of monotropy and hierarchy of attachment relationships has to be considered as a "degenerative problem shift". We proposed to replace the monotropy-thesis with the "extension hypothesis": the optimal caregiving arrangement would consist of a network of stable

and secure attachment relationships between the child and both its parents and other persons such as professional caregivers, members of the family, or friends. In research, attachment should be considered in light of a network of relationships the child builds up in the first years of life.

Note:

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- Van IJzendoorn, M.H. (1983). *Van wijsgerige naar theoretische pedagogiek* [On philosophy and theory of education]. Deventer: Van Loghum Slaterus.
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