

## **An Interview with Allan Schore – 'the American Bowlby'.**

Roz Carroll talks to the neuropsychologist Allan Schore, a pioneer in integrating social, biological, psychological and psychoanalytic theory. In a telephone interview which precedes Allan Schore's lecture for the UKCP on July 9<sup>th</sup>, 'Neuroscience – why should therapists be interested?', he talks about Bowlby, the development of attachment theory and the social and therapeutic implications of new research. This interview is also on the UKCP website [www.psychotherapy.org.uk](http://www.psychotherapy.org.uk), and a short excerpt is published in *The Psychotherapist*, autumn 2001 issue.

This interview was a turning point in my relationship to neuroscience and many of the principles and research findings discussed by Allan have become central to my work on integrating neuroscience and psychotherapy.

Allan Schore has made an impressive synthesis of neuroscience (neurobiology, behavioural neurology, neuropsychology) with developmental studies, including the infant research work of Daniel Stern and Colwyn Trevarthen. Using attachment theory as an important over-arching model he has drawn widely on psychoanalytic theory, including object relations and self-psychology. Schore argues that "attachment theory has spawned one of the broadest, most profound and creative lines of research in twentieth century psychology" because it is a heuristic complete theoretical model which can "shift back and forth between the psychological and biological levels". (see below)

In his landmark book *Affect Regulation and the Origin of the Self* Schore argues in meticulous multi-disciplinary detail that the early social environment, mediated by primary caregiver, influences the evolution of structures in the infant's brain. He shows how the maturation of the orbitofrontal cortex, the executor of the right cortex, is influenced by dyadic interactions of the attachment relationship. This is critical to the child's future capacity to self-regulate emotions, to appraise others' emotional state, and manage stress. He puts forward a comprehensive theory of affect which integrates neurobiology and psychology, and charts the development of emotional capacities in their increasing complexity. Schore has specifically recontextualised the study of development in terms of non-linear dynamic systems theory. This has enabled him to create an integrative model, which can embrace a wide spectrum of perspectives. (Schore 1997)

*As a way of characterizing your work and its significance, I described you as 'the American Bowlby'. I'd like to look at this comparison in some depth. But first perhaps you could say who John Bowlby was and why he has a place in history.*

Bowlby trained as a child psychiatrist and a psychoanalyst in the 30's and the 40's. From his earliest work, which was on juvenile delinquency, it became apparent that really what he was interested in was the process of development and why are the early events so critical to everything that follows in both normal and abnormal behavior. This matter of early events also brought him into contact with other theoreticians, other people who had been interested in the problem of early events - Freud, Piaget, Erickson. He was interested in the connection between the infant and the mother, and why the formation of an attachment bond is so critical to later events. In a brilliant leap he realised that the mechanism was the same not only within humans but across the animal kingdom. Darwin had written the first scientific text book about emotions – *The Expression of Emotion in Man and Animals* (1972) - and a good deal of his ideas came from his observations of his own grandchild. He argued that bodily and facial expression were communications between mother and infant.

I think you've got to look at Bowlby in three ways. On the one hand he was a medical physician and that brought him into contact with the problems of stress and coping and the body. His psychoanalytic training gave him a window into the inner world of the unconscious. Finally psychiatry raised questions about early predispositions to psychopathology. As part of his work for the World Health Organization, he started looking at some of the early studies showing that long term separations between mother and infant were having rather serious effects. He became interested in the fundamental nature of the changes brought about by separations. Then he began to examine the phenomena of much shorter separations and the emotional communications between the mother and the infant. What has happened in attachment theory now is that the movement has been now towards studying even shorter and shorter separations.. From macro time periods to micro time periods.. He's probably one of the three or four major psychological theoreticians of the 20<sup>th</sup> Century and in part that is because he has impacted so many fields in addition to the field of developmental psychology. His work also had an influence on social policy.

His training as a psychoanalyst was critical in highlighting the importance of the relationship between the mother and the infant. But there was a struggle within psychoanalysis - in particular between Anna Freud and Melanie Klein - about how much was really a creation of the infants mind., a phantasy. Bowlby began to fervently argue and bring in data from other disciplines to show that the real relationship, that the real events, not only were there but they were indelibly and permanently shaped there in a way that would affect the way that the personality would develop over the lifespan.

Bowlby brought biology into this equation via ethology, which is behavioral biology. He put together the different disciplines to create a developmental science more than developmental psychology. In this respect he picked up Freud's project to integrate neurobiology with psychology,. Freud started out as a neurologist but then had to abandon the attempt to correlate psychological functions with the physical brain and body, because the scientific models at that time were not sufficiently advanced.

*There has been some hostility to the attempt to integrate across disciplines hasn't there, I'm thinking, still today? People like Andre Green are very critical still of translating scientific observations into the domain of psychoanalysis.*

Yeah, I think that right now we're seeing some struggles within psychoanalysis, but I perceive, from my reading of the major psychoanalytic journals in the last year or two especially, a real push of attachment theory into the base of developmental psychoanalysis and may be its stronger here in the US than it is in Europe. Some years ago Mono Cooper(?)\*\*\*\* who is [was, I think] the editor of the International Journal Psychoanalysis wrote that psychoanalysis is anchored in the scientific base of developmental psychology and in the biology of attachment and affects.

*Historically there has been a territorial dispute between psychiatry and psychoanalysis - those with more of the medical and biological understandings still are holding onto their authority, whilst psychoanalysis claims knowledge from a different vantage point. Bowlby's work emerged from this conflicted context, and the work that's happening today still takes place against that political/ideological backdrop.*

\*\*\* [off or on the record?]In terms of the totality of what attachment theory is moving towards, and in terms of all of the sciences themselves, psychoanalysis and as you know I'm part of that establishment, is really not one of the major forces at this point in time. Not as strong as it used to be. The amounts of money that are going into research and training, the amount of validity that the public gives means that its not such a major voice.

Meanwhile attachment theory, because it is so over arching has been picked up by other fields. And these other fields are now talking about unconscious representations; they're talking about exactly what psychoanalysis has talked about. \*\*\*The other thing is that in the U.S psychodynamic psychotherapy is much, much larger than classical psychoanalysis out of the institutes. A much broader group of clinicians are now using these terms and concepts. But yes, I think there is a recent infusion of philosophy which has into psychoanalysis which is counter to the scientific stream of psychoanalysis.

*Attachment theory has very steadily – and perhaps uniquely - gained ground in the fields of psychology, the behavioural sciences, biology and neuroscience (and all their subsidiary disciplines). Why do you think this is?*

.\*\*\*Cassidy and Shaver(?) in Volume \*\*\*\*[which is the major statement in the field at the end of the 20<sup>th</sup> Century] say that “attachment theory has spawned one of the broadest, most profound and creative lines of research in 20<sup>th</sup> Century psychology”. Bowlby approached the study of attachment as a science and put together a psycho-biological perspective that integrated a spectrum of different disciplines. The span of attachment theory research now includes psychoanalysis, developmental psychology, psychiatry, and many biological sciences.

Bowlby perceived that the mother is shaping the infants coping systems, and this has been taken up more recently by psychiatry. Psychiatry is now very interested in how the early positive and negative interactions effect the bodily systems, the coping systems. Psychiatry is using it to generate more powerful models of psychopathogenesis, in other words the generation of predispositions to later psychiatric disorders. Neuroscience has taken up the issue too and even at the level of neuro-chemistry is looking at imprinting and attachment, at changes at the cellular level. So again attachment theory is spanning the different levels at which science operates from the higher levels from sociology down through psychology down through biology, chemistry and even physics. Attachment theory is important because it is overarching and can move back and forth between many levels. Damasio, a key pioneer in neuroscience is even getting interested in attachment theory, so it's really spreading now.

The second reason why I think the concept of attachment is so powerful and why it's spreading is because it is not grounded in an atheoretical position. Much of science, even neuroscience and developmental psychology, are just purely observations without a theoretical model. Attachment theory has a theoretical model and that's why it has been able to generate hypothesis that can be tested. It's highly heuristic because its also a clinical model. This allows psychiatry, clinical psychology and clinical social work etc and other clinicians who are very interested in development to be able to incorporate it. Incidentally the kinds of information and evidences that come from clinical observations are now being seen as just as important as those that come from the scientific observations of experimental science. So you've got this double barrel \*\*\* [double edge??]here, you've got both scientific and clinical together operating synergistically to push it forward, especially now in terms of not only the etiology of psychiatric disorders but also the therapy, in other words, the pragmatic applications of the theory to clinical practice.

Lastly I want to point out that Bowlby was interested in was the process of development over the lifespan. Although he highlighted the first few years, he always moved forward and in attachment theory there's always been the theme of moving forward. In essence it deals with how the personality grows and develops, which is the focus of psychotherapy. In the late 60's when Bowlby was writing *Attachment and Loss*, psychology was dominated by behaviourism, then later by cognitive psychology and now perhaps we're seeing the shift into affective psychology. Due to Bowlby's psychoanalytic training he became very interested in not just the overt behaviour but the inner world. He focussed both on the outer social events and how the outer events impact the inner events and how this internal world then really drives nonconscious \*\*\*[unconscious?]motivation and behaviour throughout the lifespan.

*Your work exemplifies integrative theorizing, bringing together diverse sets of data and perspectives from a wide array of disciplines to create a precise and detailed dynamic model of development. It results from and contributes to building bridges between psychiatry and psychoanalysis, neuroscience and psychotherapy, and between the social and biological sciences. It seems to spring directly from the nodal point where these disciplines are converging. ....how do you define your work?*

Essentially I see myself as a theoretician, who is integrating data and models from a wide range of different fields. Experimental studies in various sciences are now producing results data and as well clinicians are now writing observations of their contacts and essentially what I'm doing is I'm taking this data and integrating this into over arching larger, theoretical models which are testable and heuristic. My interest is in tying together structure and function, that is to not only talk about function which is psychology but also structure which would be the underlying biological structure. This is looking at the internal biology which is driving psychological functions and how the interactions between human beings also impact that biology. It's not just biology moving up into psychology but also how the psychology between human beings alters their internal (biological/neurological/chemical) structure. In particular, how the early social emotional

interactions between the primary caregiver and the infant impacts the development of the babies brain. This is partly determined by genetic factors and partly determined by early social emotional experience which means attachment therefore is the outcome of two factors, the infants genetically encoded psychological biological predispositions, its temperament *and* the nature of the caregiving experience. We have to now move on both sides of the equation. Biological reductionism is not giving us answers purely in terms of genetics. At the same time theories which are totally environmentally driven won't do it either. I think we're at the point here of describing nature and nurture and that nature and nurture first come together in the mother infant interaction.

As you've suggested my work springs from the nodal point where various disciplines come together but if there were one term to use for the area that I'm interested in it would be developmental affective neuroscience. The dominant model in neuroscience has been cognitive n but there are also now moves in what are called affective neuroscience and social neuroscience. It's those two domains that I think are a key here. I also feel that the investigation not of formed adults but of infants – ie. human beings in the process of formation - can give us a much more important data about this process of development across a lifespan. I say this because most research now is done with adults but perhaps we're seeing a change in this.

*Through out this interview I refer to 'your work' but of course one of the fundamental contributions you have made is to weave into a coherent tapestry the multiple threads of many, many scientists' and theorists and clinicians' work.... For so long there's been incredible amounts of data being produced but without sufficient integration of theories into neighboring disciplines.*

Exactly. We're moving to more complex, dynamic systems, and holistic models of the organism adapting to the environment and the changes that it makes as it adapts to stress etc. It is now time to put together not just a piece of the mind here and a piece of the body there. When you focus in on an affect as opposed to cognition you can't help but then turn it to the body because you can't talk about affect purely in terms of a cognitive state. You're also talking about changes in heart rate, respiration, muscle tension etc. Affective neuroscience is now moving us more into the body and people like myself and Damasio etc are now becoming confident that the mind-body gap – the Cartesian problem - can be bridged. By putting together these psycho-biological models of infancy and adulthood these will lead to more powerful models incidentally in the treatment of psychosomatic disorders.

*It seems to me that, like Bowlby's, the direction of your work – despite its incredible breadth of reference and scope - is very unified. Is there an organizing principle which grounds your insights?*

I've come to the conclusion that concept of regulation and self regulation, now being used in all of the sciences and in developmental psychology, is the organizing principle. Attachment is now thought of as the dyadic regulation, the interactive regulation of emotion. Also, in developmental psychology it's now thought that the capacity for attachment originates during these affect regulation experiences. In the psycho-biology of attachment, it's thought that the mother is acting as a regulator of not only the infants behaviour but of its covert physiology. What I'm suggesting is that this social experience is impacting the development of the regulatory systems in the brain that regulate all forms of cognition, affect and behaviour. In fact, it's been said recently that the attempt to regulate affect to minimize unpleasant feelings and to maximum pleasant ones is the driving force in human motivation. So, again, in psychiatry regulation is now being seen as the work of any intimate pair. In adult psychiatry the loss of the ability to regulate feelings is seen as the most far reaching effect of trauma etc.

Can I just ask you, because it's coming into my mind, what role you think a group of people has in regulating emotion?

Yeah, definitely, I've been asked this quite a bit. The group also, not only the group, but the culture acts on and via these regulatory principals. But I would suggest that *the regulatory effects of groups and cultures are much more powerful than on the rules that cultures give*. The regulatory effects are at the psycho-biological level. And the way that the group does that is through these diadics \*\*\*[dyads?] through these interactive mechanisms. These are the ways in which human beings can pick up the emotional communications of others and can send them back out and that capacity is fundamentally affected by the early attachment relationship that is not genetically encoded. Group processes, social processes all would be acting through these and acting through the limbic system that part of the brain which regulates emotion.

I have been convinced that these essential regulatory mechanisms - fast acting events occurring at levels beneath awareness - are the ones really which move us in and out of relationships. This is very compatible with Freud's concept of the unconscious.

**So, when you say fast acting are you talking about the subtle exchange of gesture, eye contact, tone of voice etc?**

Yes, I'm talking about a face can be picked up within 40 milliseconds and appraised within a 100 milliseconds. So a person is walking down the street right all of a sudden sees a particular face and for reasons that are purely intuitive and non-conscious starts moving away. These are glances that are being picked up and processed very quickly. It allows us to detect features, signals of safety and danger in the world but it also means much of this information is responded to on an unconscious level.

***In recent years neuroscience has been refining maps for the neurological substrates of basic emotions such as fear, joy, anger, etc. You have made particular contributions to the mapping of the more complex emotion of shame. What is the current focus of your research?***

My focus is now on psychobiological state which is the underlying internal state on which affect cognition and behaviour swing. In other words think when you're in a depressed mood things seem darker, time moves slower, cognition is more negative, the body is more restricted, there is more pessimism, so there is a whole host of the self systems that snap together in place with that depressive state. While in a more positive elated state the colours are livelier, time is moving at much different pace, a much quicker pace, the cognitions are much more positive about the self and the emotions of course are more joy and interest there.

One of the big changes that has occurred in the last few years and partly my work is interested in this change too is that most theoreticians who have talked about emotion theories have focused their ideas on negative emotions. For example Cannon with fight and flight, or LeDoux with fear being the central emotion etc . What I have concluded as a result of the most recent infant research is that positive emotions are much more central than we thought. Positive affects are key to early development, they're key to growth, they're also key to not only positive psychological states but physical health. So now as much of my work is now not only swinging around trauma and negative but also the positive emotions of interest, excitement and enjoyment. Joy has something to do with the quality of life and the pole or opposite of joy would go to shame. My interest is in social emotions and how they develop and how they're influenced by the attachment relationship and how social emotions, such as shame, regulate the ongoing interactions between human beings.

***Bowlby's development of attachment theory was radical in its integration of psychoanalysis, ethology and systems theory, and his focus was very specifically the mother-baby relationship, especially the phase between 6 months and 3 years. Your work has extended and deepened his. What have been the most significant additions to or developments of Bowlby's model?***

Bowlby – like Freud - believed that the reason why the attachment was there was that the mother was a regulator of distressed state. As he saw it, the child would come back from being out in the world in a state of stress and the mother would be a regulator of those negative states. Neuroscience now indicates that play experiences, which we now know start at the end of the second month, and which is also associated with an intense growth spurt in the brain, are central to development. The attachment to the mother is therefore not only minimising negative states but she's maximising positive states. That's the first thing.

Secondly, we can take Bowlby and move him along in this disciplinary perspective because in the 25 years since then we now have more science available. In the last two decades we're seeing the evolution of sciences that didn't even exist before, like molecular biology, molecular genetics, affective and social and neuroscience. Even advances in ethology

have been there in terms of radio telemetry(?) in animals. Pharmacology and infant developmental psychology has moved forward so the model's expanding because these fields are now coming in.

Number Three. I have moved Bowlby 's focus back from six to birth and actually prenatally. The brain growth spurt is from the last trimester of pregnancy through the second year. I'm now beginning to tie together how these extremely early events give us an idea about what kinds of social and emotional experiences are needed at what points. The idea of 'developmental stages' has been superseded by the more precise concept of critical periods or sensitive periods. These are times of intensified growth – ie. increased synaptic production – and differentiation. In these critical periods of brain growth the infant needs certain types of social and emotional experiences. The attachment relationship provides the ground and the modulation for various high-energy states. At these points the caregivers receptivity to the infant's cues are crucial. (Assessing infant development from the pediatric point of view now means assessing not just the infant per se but the nature of the infants relationship with the mother. The quality of their communication will be seen as being as critical to the infant's growth as other factors)

Finally, there is the matter of pathology, it was Main who in the late 80's began to look at the attachment patterns of abused and neglect infants. This brought a new category of insecure attachment- the insecure disorganized disoriented attachment. I became extremely interested in how the abuse and neglect would impact the brain. My interest in the first two years of life is not generally how social experience in an abstract way impacts the brain but *very specifically* how it impacts the emotion generating limbic system and the right hemisphere of the brain which connects into the body . The left hemisphere does not come on line into a growth spurt until a year and a half when the child has learned a few words so all of these early experiences, I'm suggesting, are specifically impacting the non-verbal right brain. In the last two years only, because of the neuroimaging, the amount of research on the right brain finally is now picking up steam, especially because of face processing etc.

I'm now focusing not just on long term separations but on moment to moment separations because these attachment and separations are going on on a micro scale and this is now moving us down again, as I said before, from a temporal dimension on the macro scale to the micro scale and then shifting back and forth. How a fleeting perception of a state then becomes an emotion which then becomes a mood which now can linger for a while etc.

The focus now recently is on coping mechanisms and drawing out Bowlby's idea that the mother shapes the babies coping mechanisms. The detailed models of psychopathogenesis are essentially immature or dysfunctional or dysregulating coping mechanisms. The most severe forms of this would be in abuse and neglect, these would lead to the more severe forms of psychopathology. The earlier the mother infant dyad goes off track, the more problematic that going to be for development down the line. There is evidence too that the attachment relationship also impacts the connections between the brain and the immune system, which will give us new insight into psychosomatic disorders.

We're at the point now whereby a new type of brain research can be done which literally observes brain to brain interaction between a mother and infant. There are newer very sophisticated, dense array EEG 256 leaves(?) which are bonnets(?) so to speak which could be used with the infant and one on the mother. We can then look at the synchronized changes or a synchronized change between them as they are in the process of let's say going into a high joy state, or as they're in the process of going through a stress state. At the same time we'll have measures on both of them to see changes at the autonomic level. This new technology will provide more data for building precise models.

***Much of your work has focused on elucidating the functions of the right brain – and the orbitofrontal cortex – with other parts of the brain.***

The right brain stores internal working models of the attachment relationship. It processes emotional social information – its functions are as diverse as enabling empathy, humour, and many of the capacities that are fundamental to human subjectivity.

***And one key aspect of this is its direct involvement with the integration and analysis of information received from the body...***

The mapping of bodily states – visceral, muscular, skin etc - is now seen as fundamental to the processing of emotion. Representations of the internal state are integrated with external stimuli or internal stimuli, such as the image of another's face, and form the basis of our experience of the world. Further, we recognize another individual's emotional state by generating somato-sensory representations that match our perception of a certain facial expression.

***In your talk on July 9th you will lay out some of these new findings in the context of their relevance to psychotherapy. Can you give us a flavor of some of the conclusions you have come to about the relevance of neuroscience to psychotherapy?***

The newer ideas about how affect works have direct translations into psychotherapy and psychiatry. All forms of psychiatric disorders are marked by emotional dysregulation. All forms of psychotherapy are forms of affect regulation. The therapist is a psychobiological regulator of the patient's state. Although the patient is listening on a verbal conscious level, he's also listening on another level and acting on another level. There is a movement now in all psychotherapies into the importance to really have any form of change of having an emotional experience in time with the therapist perhaps even directed towards the therapist. A key to that is that the patient must have a felt experience of his own body, as well as more of an intense reflective capacity about how he is emotionally relating to other people.

One other point is that much of psychotherapy is still geared towards the removal of symptoms and negative emotions and not towards the implication of positive states. Research on the mother's role as an amplifier and regulator of infant joy has yet to be digested fully in the psychotherapy world. I think we're going to have to see a change in that too.

***We haven't time to go into this more now, but your research has insights to offer on the phenomena of counter transference and projective identification too....***

You'll have to come to the talk to hear more about that..

***As a psychotherapist, I find the insights from neuroscience fascinating because they crystallize into actual dynamic neurological structures and processes what has long been sensed more generally and intuitively. But this crystallization – the accumulation of 'hard evidence' - also provokes questions about its social implications, just as Bowlby's work did. The most fundamental of these is that the success or failure of attachment relationships in early life has a profound and life-long effect. Can you very briefly comment about social implications of this and perhaps even comment on fathers or something just to close up?***

The social implications are profound. If it is true that these early events are critical for the psychological development of human beings, then this is where societies must now start putting its resources. The amounts of money that we spend to ensure security in terms of defense budget etc are huge but in a sense the future of our societies is early human life. What human beings learn in their first interactions with other human beings, in the mother infant relationship, are central to the formation of self concept, of positive and negative concept, of self regulation, of the ability to regulate internal bodily states, of the capacity for empathy, the ability to read the states of the mind of other human beings, these do not come out of later language forming situations, therefore, ...

*Are you worried about social trends and the implications?*

Yes I am, but I'll have to make my point brief. I am worried about the fact that in this country maternal leave is 6 weeks and in Britain it's not too much longer than that. In other countries in Europe - Scandinavia and Germany - maternal leave as a Governmental policy is 30-50 weeks. In the U.S. we send mothers back into the work force at 6 weeks, which is the point whereby the face-to-face joy interactions just begin. Parents now have this terrible dilemma of how to face this problem without any social support at all, or any programs at all. In addition the level of day care here is on the average is sub-optimal, the people in it are paid very poorly, they're not trained enough etc. I've got to think of a word here, the first word that comes is scandal I don't know. Let me put it this way I would use the word 'it's a shame'. I would say that we as adults in our society should definitely have some shame about how we are avoiding this problem and about how little attention we're paying to our futures. That's quick!

RC A powerful note to end on though.  
Roz Carroll