

Biophilia as Emotion

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Abstract.

Biophilia is defined as the innate human tendency to experience a bond or deep connection with other forms of life. It is innate, but not instinctive, and it is based on a set of learning rules that appear to be genetically determined. The ways through which biophilia is manifested strongly suggest that would be best described as an emotion, intended as an immediate and consequent reaction to a natural stimulus, which may be positive (biophilia, *sensu strictu*) or negative (biophobia). In this article, we will attempt to contextualise biophilia and biophobia within the two principle theories of emotional development in the child: the Socioemotional Development Model by L.A. Sroufe and the Differential Emotion Theory by C.E. Izard. Whatever the origin and ontological development of biophilia may be, it seems clear that the biophilic emotion constitutes a fundamental resource available to all human beings who are aware of their dependence upon the natural processes of this world, from which each of us draws physical, psychological and spiritual nourishment.

Key words. Biophilia, emotional development, affiliation

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Biophilia and biophobia as emotions

Emotions are complex subjective states in which biological, cognitive and social components are interrelated and influence behaviour. Evolutionary or ethological theories of attachment (Bowlby, 1988; Van der Horst, 2011) suggest that children come into the world biologically pre-programmed to form attachments with others, in particular in terms of infants' emotional ties to caregivers as an evolved response that promotes survival. Infants produce innate 'social releaser' behaviours such as crying and smiling that stimulate corresponding innate caregiving responses from adults. What creates the attachment is the nourishment provided, not so much in terms of food as of care and responsiveness. In our present study, we wish to consider the connection between relationship and emotion in terms of the nourishment that can be provided by the kind of evolutionary affiliation posited within the theory of biophilia, as an emotion that arises from the phylogenetic history of *Homo sapiens*.

Biophilia is defined as "the innate tendency to focus upon life and lifelike forms, and in certain circumstances to affiliate with them emotionally" (Wilson, 2002, p. 134). It manifests as attentional capacities and asymmetrical empathy towards that that appears alive and animated (Barbiero, 2011). According to E.O. Wilson, biophilia "is the innately *emotional* affiliation of human beings to other living organisms. Innate means hereditary and hence part of ultimate human nature" (Wilson, 1991, p. 31, italics ours). In this article, we will explore biophilia as an emotion that arises in the interplay between genetically determined learning rules and stimuli from the natural world; an emotion that in some cases may be positive, reflecting an enjoyment of the various manifestations of Nature (biophilia), or in others negative, coupled with the sensation of fear or disgust towards certain manifestations of Nature (biophobia). As such, we will consider biophilia and biophobia as an emotional

response that is immediate and pertinent to Nature's stimuli.

We contextualise biophilia and biophobia within the two main theories of emotional development in children: the Socioemotional Development Model by L. Alan Sroufe and the Differential Emotion Theory (DET) by Carroll E. Izard.

The Socioemotional Development Model

L. Alan Sroufe, Professor in Psychopedagogy at the University of Minnesota, retains that at birth children are endowed with a single undifferentiated emotional state that evolves over the following months into emotions that become ever the more differentiated. In newborns, a state of generalised activation can be recorded in the brain, although the intensity of this activation may vary. If the level of activation is too intense or continues for too long, negative emotions develop. Positive emotions, on the other hand, develop as a result of moderate fluctuations in the level of activation. Sroufe proposes that this *activation* forms the physiological basis upon which an emotion is able to develop on the psychological level. Within this progressive process of differentiation, Sroufe specifically identified three principal routes that are already distinct from each other from as early as the baby's first months of life: the pleasure-joy system, the circumspection-fear system and the frustration-anger system.

Within the first few days of life, the baby produces a type of smile known as the "endogenous smile", forming part of the 'pleasure-joy' system, caused by a slight fluctuation in the level of physiological activation. This type of smile manifests during moments of pleasure (it is not by chance that it occurs most often during deep sleep), but it is not yet an expression of joy. Smiles generated during the awake state are also produced in function of low levels of stimulation; whilst being tickled, for example, which induces physiological activation. Such expressions cannot, therefore, be attributed

to a context or to the capacity to assign meaning.

Within the first 2-3 months of a baby's life, the first emotions appear, although they are not yet differentiated. At this age, a baby is able to produce a "social smile", signalling an emotion of joy. The baby's reaction is now determined by the contents of the event that triggered the smile, and not by a simple stimulation leading to activation. Thus, the response is no longer physiological, but instead psychological and, in part, even cognitive. Indeed, it coincides with the period in which the baby starts to recognise the human face. From the 3rd month of life, the smile and the perception of pleasure evolve into the emotion joy that is clearly differentiated and that will principally manifest as "active laughter" (Sroufe, 2005). Around 8-9 months, babies will smile in immediate response to the appearance of their mother or whilst playing peekaboo (Sroufe, 1995, p. 141). Thus, it has become the significance of the event, and not the event itself, that acts as the stimulus.

A very similar developmental course can be observed in relation to the 'circumspection-fear' system (Sroufe, 2009). Crying in the newborn is essentially produced by stimuli that capture the baby's attention for a prolonged period of time, provoking "forced attention" (Sroufe, 2009), or by stimuli that are too intense and thereby "startle" the child, or by sensations of physical pain. In these cases, it is the state of physiological activation that varies, whereas the content and the significance of the triggering event are irrelevant. This reaction of discomfort represents the core of the emotion fear, in response to which circumspect behaviour is activated (Sroufe, 2009). Around 4 months of age, the unknown – for example, the appearance of a person unknown to the baby and not belonging to their affective circle – can startle the baby or provoke forced attention. The baby manifests a state of unease and cries. Although this does not regard a true emotion of fear, the emotional reaction is no longer only

physiological and generalised, but involves the psychic sphere as it is determined by the contents of the event. Fear, as an emotion, is an immediate reaction to a specific negative event occurring to the baby (Sroufe, 2005). This type of reaction appears around 8 months and initially corresponds to fear of the unknown (Sroufe, 2005); successively, around the age of 12 months, it extends to the comprehension of a determined action within a mental scheme with negative connotation (Sroufe, 2009). Summarizing the above: three phases can be attributed to the circumspection-fear system: forced attention in the neonate; circumspection at around 4 months of age; and fear, starting at around 8-10 months of age.

The third route of differentiation constitutes the 'frustration-anger' system (Sroufe, et al. 2010). Anger is another emotion with a corresponding precursor. In the first 5 post-natal months, the baby is able to experience frustration and discomfort. If, for example, the baby is physically restrained, then it is probable that he/she will manifest a reaction that is very similar to that of forced attention, a form of constraint that overstimulates the child (Sroufe et al. 2010). The experience of being constrained progressively evolves into one of frustration. The emotion anger appears from 6 months of age, as an immediate reaction in response to the interruption or the impediment of an intentional act that the child intended to do.

In the theory of emotional differentiation, each emotion appears via ontogenetic developmental stages that arise in parallel with the development of sensory motor intelligence. All emotions originate from a precursor state of prolonged physiological activation, of varying duration, that arises in the child at around 5 months of age and that constitutes the basis of true emotion. According to Sroufe, without cognitive processes, emotions in the strict sense would not exist, since it is cognitive activity that guides the interpretation and the effects of the excitation. The principal cognitive acquisitions necessary for the

development of emotions are: the capacity to distinguish between an individual's inner world and the outside; the concept of object permanence; the development of the self as a separate individual; and thought as symbolic representation. These acquisitions could provide a potential correlation between biophilia and biophobia with naturalistic intelligence (Gardner, 1999).

Differential Emotion Theory

Carroll E. Izard, Psychologist at the University of Delaware, developed an alternative theory of emotional development called the Differential Emotion Theory (Boyle, 2015). Izard's model proposes a phylogenetic vision of child development, according to which the emotions are predetermined from birth and programmed to appear at the appropriate moment of development in the absence of any processes of differentiation or evolution. Izard sustains the existence of innate and universal neural programmes that are distinct for each primary emotion (Izard, 1993). He observed that the primary emotions exhibit unique and permanent characteristics that are present from their first manifestation. Thus, the emotions follow a programme of innate maturation and functional adaption and combine into complex configurations. Cognitive development and socialisation he says do not determine the development of the emotions, since the time of their appearance are unrelated. Cognitive development and socialisation provide a 'frame' within which situations can arise that trigger emotions and their cognitive integration, as well as the opportunity to exercise emotional control.

According to Izard, the primary emotions are already well defined since the time of their initial appearance. What vary – according to age, experience and situation – are the cognitive expressions of these emotions. Emotion is necessary because it activates a process of becoming aware of experience. Izard states there to be three levels of experience of which one can become

conscious. The first level is that of the “sensory-affective” experience and it manifests within the first two months of life in the neonate. In this period, the expression of emotions is fundamental in order to manifest needs and to initiate the establishment of the mother-baby bond. Interest in the external world is the most prevalent positive emotion; while discomfort and disgust are the most prevalent negative emotions.

The second level regards the “perceptive-affective” processes, which start to manifest from the 4th month of life. The baby passes from a simple discrimination (interesting-disgusting) to being able to manifest selective attention for specific, distinct perceptions of things or people. At this level, the social smile appears as a manifestation of an experience that goes beyond simple interest, thus entering into the sphere of interexchange. The baby starts to understand the difference between interaction with an object and interaction with a person. This permits the expression of the emotions joy, surprise, fear and fury. The baby starts to be aware of the causality and of the importance of reciprocity.

The third level is characterised by “cognitive-affective” processes and it manifests from around the 9th month of life. It is the phase in which awareness becomes independent of the need for perceptive data. The baby can operate on the basis of memory of past experiences and in anticipation of what he believes may occur in the future. In conclusion, we can say that the fundamental point of Izard's theory is the idea that emotions arise already differentiated and that they have a determining role in the cognitive development of the child.

Biophilia and emotional development in children

How does biophilia fit within these two theoretical frameworks of emotional development in the child as proposed by Sroufe and Izard, respectively? The model put

forward by Sroufe and the theory by Izard both describe emotional development as being strongly intertwined with the cognitive and social development of the child. Both recognise the importance of biological factors, such as the physiological maturation of the child, in determining the emotional response, inserted within a process of cognitive and social experience. Sroufe's and Izard's views differ, however, in relation to the appearance of emotions. Sroufe sustains that undifferentiated precursors of emotions exist before the emergence of differentiated emotions. Whereas Izard retains that emotions are already differentiated at birth and that they simply attend the right moment to be fully expressed. The perspective of Izard falls into the evolutionist/functionalist line of thought that presumes mammals, thus not only human beings, to be endowed with a repertoire of basic, pre-programmed emotions. These emotions are already developed because they have a high adaptive value, are required for survival, increase 'fitness', and are relatively independent of cognitive activity. Izard addresses the issue of emotions being innate, but does not contemplate the possibility of biophilia, or biophobia, as being innate emotions. Izard focuses on the concepts of attachment or interest (*philia*) and fear (*phobia*), emotions that usually refer to contact with other people, but not with Nature. Therefore, the problem regarding the definition of biophilia as an emotion remains to be answered, and it will assume different characteristics – and interesting psycho-pedagogical consequences – depending on whether biophilia is considered within the perspective of Sroufe or that of Izard.

If, as proposed by Wilson, biophilia is established by “genetically determined learning rules” (Wilson, 1993), then, according to the Sroufe's theory, we can reasonably propose that biophilia manifests thanks to a series of stimuli that occur externally. This agrees with the empirical observation that biophilia is only expressed if the surrounding conditions are permitting

(Barbiero, 2014). Biophilia can therefore be inserted into the ‘pleasure-joy’ system of Sroufe. Repeated contact with Nature (involving appropriate contexts) – gently oscillating between contact with Nature and contact with the caregiver – could, little by little, generate a sentiment of affiliation with the natural world. This type of experience would probably lead, as in the case of the appearance of joy, to the prolongation of the single, indistinct state of activation that Sroufe identifies as the original source of all emotions. At the same time, biophobia could derive from the ‘circumspection-fear’ system. Contact with the natural world, so rich in stimuli and fascinating, could over-stimulate a child by holding his attention for too long and too intensely; this could result in a state of excessive activation and in the manifestation of forced attention: i.e. crying. The attractive force that Nature exerts upon Man could therefore be manifested in two distinct ways: biophilia, as a specific manifestation of the ‘pleasure-joy’ system, and biophobia, as a derivation of the ‘circumspection-fear’ system. According to Sroufe, the emotional systems have a physiological basis; biophilia could therefore form part of the general state of activation present in the neonate from birth, yet only manifesting itself later on, as is also the case for all other emotions.

According to Izard's Differential Emotional Theory, however, biophilia could also be innate, a kind of treasure held within each one of us, inscribed somewhere within our genetic heritage, and that is destined to be expressed; with cognitive and social development providing a framework only. If biophilia were to be recognised as an emotion, we could study it in terms of its timing and modality of appearance, in the same way that we do for anger, joy and disgust. Following the scheme set out by Izard, we could imagine that the appearance of biophilia occurs, if not already in the first period (i.e. the “sensory affective” period), in the following one: the “perceptive-affective” period. Biophilia also regards asymmetrical

empathy and therefore aspects attributable to the sensory and perceptual development of the baby.

Sroufe and Izard both view emotion as an immediate reaction, consequent to a stimulus. Biophilia and biophobia could be specific emotions that manifest in reaction to precise stimuli. In a child, a meadow might stimulate a positive emotion (biophilia) that entices the child to explore and play within this natural environment. But the same meadow could be perceived by another child as a hostile place, a source of hidden dangers, and the resulting emotion would be negative (biophobia). Thus, it is not Nature itself (the meadow) that generates the emotion, but the perception of Nature that triggers an affective process, be it positive or negative. Biophilia and biophobia could be emotions that become progressively more complex on the cognitive level. For example, it is important that the biophilic child learns to recognise the meadow, the wood and the meandering river as places of potential sources of danger. Similarly, the biophobic child should be helped to perceive the meadow, the wood and the meandering river as a place of interest where they can feel at home, protected.

The passage of the biophilic emotion from the sensorial and perceptive level to the cognitive level transforms it into a source of learning that stimulates the development of naturalistic intelligence (Gardner, 1999). According to Howard Gardner, an Educational Psychologist at Harvard University, the different forms of intelligence can be developed to more or less homogenous levels or in such a way that some become more pronounced than others, provided, that is, that the individual is exposed to the best affective and educational conditions. Considered as emotions, biophilia and biophobia constitute the initial emotional stimulus that reacts to the perception of the 'other-than-self' represented by Nature. In a certain sense, naturalistic intelligence represents the expression of biophilia in its most conscious form, as an expression of the 'cognitive-affective' processes (according to

Izard) or as the 'representative-symbolic' organisation of the experience of Nature (according to Sroufe). In both cases, naturalistic intelligence enables a strong bond to be established between the natural environment and the child, and it permits the child to appreciate the effects that his actions have upon Nature. A good relationship with Nature requires an innate sensitivity for all that is living and a marked ability to perceive Nature (biophilia), as well as the capacity of reasoned logic (naturalistic intelligence) that permits the child to identify, categorise and remember each biophilic experience. Considering biophilia as an emotion helps us understand what contact with Nature and in what way this contact should be proposed to the child. If biophilia manifests on the basis of the context, starting from a single undifferentiated emotional base, we must be careful that contact with Nature occurs at repeated intervals (i.e. oscillating), such that it is not too oppressive or prolonged. The child must have a "safe place" available, to which he can return at any moment. Little by little, Nature will start to become part of this "safe place" for the child, a place in which they feel at home. If biophilia is instead an innate emotion ready to manifest itself at the right moment independent of the context, then it is pertinent to educate the child about the environment until, as biophilia progressively manifests, it is able to nourish naturalistic intelligence.

In either case, biophilia as an emotion constitutes a fundamental resource that each one of us has at our disposition; however, in order to make use of this resource, the individual must be aware of their dependence upon – and desire to interact with – the natural processes that physically, psychologically and spiritually nourish us.

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References

Barbiero, G. (2011) "Biophilia and Gaia. Two hypothesis for an affective ecology". *Journal of Bio-Urbanism* 1, 11-27.

Barbiero G. (2014) "Affective Ecology for Sustainability". *Visions for Sustainability* 1, 20-30.

Bowlby J (1988). *A Secure Base: Parent-Child Attachment and Healthy Human Development*. Tavistock Professional Book. London: Routledge.

Boyle, G. J., Helmes, E., Matthews, G., & Izard, C. E. (2015). Multidimensional measures of affects: Emotions and mood states. In G.J. Boyle et al. (Eds.), *Measures of Personality and Social Psychological Constructs*. Elsevier/Academic Press

Gardner, H. (1999) *Intelligence Reframed*. New York, NY: Basic Books.

Izard, C. E.; Libero, D. Z.; Putnam, P.; Haynes, O. M. (1993). Stability of emotion experiences and their relations to traits of personality. *Journal of Personality and Social Psychology* 64, 847-860.

Sroufe, L.A. (2005). Attachment and development: A prospective, longitudinal study from birth to adulthood, *Attachment and Human Development* 7, 349-367.

Sroufe, L.A. (2009). The concept of development in developmental psychopathology, *Child Development Perspectives* 3, 1787-183.

Sroufe, L.A., Coffino, B. & Carlson, E. (2010). Conceptualizing the role of early experience. Lessons from the Minnesota Longitudinal Study. *Developmental Review* 30(1), 36-51.

Van der Horst, F. C. P. (2011). *John Bowlby. From Psychoanalysis to Ethology. Unraveling the Roots of Attachment Theory*. United Kingdom: John Wiley & Sons Ltd.