



Affordance Theory in Outdoor Play

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INTRODUCTION

The aim of this chapter is to provide an insight into the concept of 'affordance' and how it has been adopted within the field of outdoor play and learning internationally. The chapter should not be taken as a literature review of affordance, rather a review of the origins and development of the concept and consideration of its usefulness within the field, including how the notion of 'affordance' within outdoor play and learning may be developed in the future.

The notion of affordance has its roots in the ecological branch of psychological theory and allows us to consider, at a theoretical level initially, the 'space between' the environment and a human agent. The notion has been adopted and adapted internationally by, for example, those considering children's use of space to describe, primarily, the possibilities inherent within spaces that are offered to children for play and learning, especially in the early years, but also within the field of

outdoor 'adventure' learning. Further developments of the concept have come with recent studies into the social and cultural aspects of behaviour within a space, as well as observable action. Where this work is empirically based, observations of children's action within spaces, and an analysis of the context of the action, has informed the description of the affordance of a space. However, there is a risk that the complexity inherent in the concept of the 'space between' can be lost within simplistic interpretations of the concept. When this occurs an important element of our understanding of children's use of space is also lost, that is: the notion of human agency. The association between affordance and children's agency requires us to think carefully about adopting the term and its theoretical basis for academic work. Such considerations are highly relevant in the international context of development of both early years provision, including the use of outdoor space, as well as educational provision more generally, and can be aligned with enactment of aspects of

the United Nations Convention on the Rights of the Child (UNCRC), particularly those related to agency, voice, education and play.

By drawing together the origins of the theoretical development of the concept of affordance and the ways in which the notion has been applied to outdoor play and learning, most particularly in the early years, the chapter offers a particular view of the concept alongside the opportunities and issues inherent in its application to the broader field of outdoor play and learning.

The main body of the chapter is considered in five parts: firstly the origins of affordance theory are considered in relation to the physical environment; this is followed by consideration of affordance in relation to children's activity outside. Next the chapter considers briefly the notion of constraint and affordance. The concept of affordance is then considered in relation to sociocultural theory and some challenges in modelling affordance are addressed. Finally the philosophical 'material turn' (Dahlberg & Moss, 2010, p. xv) is considered alongside its application to affordance theory.

THE ORIGINS OF AFFORDANCE THEORY

You could say that there are two very discrete and almost oppositional places where a sculpture belongs. One is physical: in a landscape or a room, and the other is in the imagination of the viewer, in his/her experience and memory. They are equally important and in many senses the work is there waiting – almost like a trap – for the viewer to come and fill it, or inhabit it. And then once 'captured' the art – or its arising – inhabits him or her. (Anthony Gormley, 2001 in Haywood, 2007)

Just as the sculptor Gormley describes the complex, philosophical space between sculpture and viewer, so it is possible to consider the space between the 'environment' and a 'human agent'. Gibson's (1977, 1979) theory of affordance provides a possible mechanism for such consideration.

The terms 'environment' and 'agent' have been used by psychologists to describe and consider discrete entities and are not easily adopted by those preferring a sociocultural stance; however, this chapter outlines how aspects of affordance theory, from the ecological branch of psychological theory, have been adopted by those considering children's use of space.

There is an inherent tension in this theoretical adoption, which is considered in some detail in this section: affordance theory relates to physical activity and pays minimal attention to the sociocultural mediation of action in any context. However, the appeal of affordance theory for those considering children's use of space is persistent and a lack of theoretical attention to this tension has meant that academic literature may refer to affordance theory in a confusing and poorly articulated manner.

Gibson's Theory of Affordance and the Physical Environment

James Jerome Gibson (1904–1979) was an American psychologist who worked in the field of visual perception. Gibson's (1977, 1979) theory of affordance was developed as an ecological approach to the consideration and understanding of visual perception. This theory was a significant move away from previous psychological conceptualizations of perception, based on information processing models, in which objects were considered to be perceived by a process of discrimination of their properties or qualities (colour, texture, size, shape, elasticity ...); Gibson's theory suggested that 'what we perceive when we look at objects are their affordances, not their qualities ... what the object affords us is what we normally pay attention to' (p. 134).

The fact that a stone is a missile does not imply that it cannot be other things as well. It can be a paperweight, a bookend, a hammer, or a pendulum bob. It can be piled on other rocks to make a cairn or a stone wall. These affordances are all consistent with one another. The differences between them are not clear cut, and the arbitrary

names by which they are called do not count for perception. If you know what can be done with a graspable detached object, what it can be used for, you can call it whatever you please.

The theory of affordances rescues us from the philosophical muddle of assuming fixed classes of objects, each defined by its common features then given a name ... you do not have to classify and label things in order to perceive what they afford. (Gibson, 1979, p. 134)

Gibson introduced the word 'affordance': 'I have made it up. I mean by it something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment' (Gibson, 1979, p. 127). It is this complementarity between animal and environment that Gibson was at pains to point out. The location of the affordance lies neither with the animal nor with the environment but between them, within the perception by the animal of its environment. The fact that affordances are perceived by the animal might suggest that they exist 'external to the perceiver' (p. 127), and yet it is only when perceived by the animal that they come into being for the animal. 'The affordances of the environment are what it *offers* the animal, what it *provides* or *furnishes*, either for good or ill' (p. 127). The same environment may offer different animals different affordances. Gibson gives the example of the affordance for support of an animal by different types of ground surface with different physical properties. This affordance needs to be considered in relation to the animal – and is unique to the animal. For example: a mosquito may land on the surface of a garden pond and be afforded support but a cat would sink. It is therefore not possible to measure affordance 'as we measure [physical properties] in physics' (Gibson, 1979, p. 128).

The complementarity between environment and animal is again emphasized in terms of objectivity and subjectivity:

An important fact about the affordances of the environment is that they are in a sense

objective, real, and physical, unlike values and meanings, which are often supposed to be subjective, phenomenal, and mental. But, actually, an affordance is neither an objective property nor a subjective property; or it is both if you like. An affordance cuts across the dichotomy of subjective – objective and helps us to understand its inadequacy. It is equally a fact of the environment and a fact of behavior. It is both physical and psychical, yet neither. An affordance points both ways, to the environment and to the observer. (Gibson, 1979, p. 129)

The affordance is an invariant, however:

the observer may or may not perceive or attend to the affordance, according to his needs, but the affordance, being invariant, is always there to be perceived. An affordance is not bestowed upon an object by a need of an observer and his act of perceiving it. The object offers what it does because it is what it is. (Gibson, 1979, p. 139)

Eleanor Gibson extended her husband's work to consider the role of affordance in the exploratory drive of babies, arguing that babies 'spend nearly all of their first year finding out a lot about the affordances of the world around them' and that 'learning about affordances entails exploratory activities' (Gibson, 1988, p. 5). She also undertook empirical work related to locomotion of infants and young children and considered the role that affordance has to play in how children interact with, move within and come to master their surroundings (see Gibson, 1988; Gibson & Pick, 2000). However, it is largely J. J. Gibson's work that has been adopted by those working in the field of outdoor play.

The theory of affordances was initially conceptualized within a positivist understanding of the world; application of the theory within socioconstructivist understandings of the world can therefore raise tensions. Some of these tensions have been drawn out in discussions about the usefulness of the concept of affordance theory in design, human – computer interaction and learning and technology (Oliver, 2005). Tensions inherent in the concept, Oliver argues, have led to a divergence in understanding of the term and subsequent confusion in its application. For example,

Oliver critiques the concept's usefulness to the design process, arguing that Gibson takes an 'essentialist, positivist epistemology' (p. 403), an 'explicitly unsocial, non-constructivist position' (p. 409). Oliver suggests that either affordances are 'most coherently interpreted as works of imagination or as positivistic properties of objects, albeit ones activated or perceived by people and animals' (p. 403). If affordances are works of imagination – that is lists of imagined uses – then this renders the term inappropriate for analytical purposes in the design process. If the positivist approach is adopted then this flies in the face of current understandings of the social and cultural nature of knowledge and the socioconstructivist nature of learning. As an individual concerned with design, Oliver needs to consider the *future* interaction of agent and object (or animal and environment). It is possible that the knotted questions raised by Oliver are therefore time-related. Designers need to know, in advance of design and subsequent use by unknown users, what the affordances of an object may be, and herein lies the tension. This exemplification of the tensions within application of affordance theory are useful when we go on to consider outdoor play. However, when the term has been adopted by those working with children in their outdoor environments it has been used in relation to the *present* or *past* time frames – we can see what the environment *is affording* this group of children and, if we record their actions, we can recall (at some later date) what the environment *afforded* the children. It is important to emphasize that we cannot assume that we can know what an environment may afford a group of children in advance of their interaction with it (Kytä, 2002); to do so would be to fall into the tensions outlined above.

AFFORDANCE AND CHILDREN'S ACTIVITY

The term 'affordance' has been adopted by researchers working in the field of children's

action in the outdoor environment. The use of the term in this body of work appears to be largely consistent with Gibson's original thesis though the problems of epistemology, such as those identified by Oliver described above, are largely overlooked. What follows is a review of the work of Heft (1988), Fjørtoft (2001) and Kytä (2002, 2004); this has particular significance because affordance theory is used to explain how children experience their environments and enables us to view environments through this lens of consideration, appreciating that children's experience may be substantially different from the experiences of adults in the same space.

Heft (1988) presents a 'functional taxonomy' of the environment – stating that this 'offers a way of thinking about children's environments that may be more psychologically meaningful than the standard form-based classification of environmental features' (p. 29). This is particularly valuable as it offers a representation of how children, in particular, may perceive their environment:

our *immediate experience* of the environment may entail an awareness of its functional possibilities and limitations ... the presumed primacy of affordances in environmental experience may be especially apparent in children for whom intellectualisation of environmental experiences is likely to be less pervasive as compared to adults. (p. 31)

What Heft suggests then is that while an adult may enter a woodland space and mentally note what is there: for example, *oak tree, shrub, puddle and mud patch*, a child may enter the same space and mentally note what might be done: *climbable, hiding space, splashable and squelchable*. The central concept adopted by Heft is that of affordance. Heft describes affordances of the environment as the '*functionally significant properties considered in relation to an individual*' (1988, p. 29). This statement does not allow for the location of affordances to be either within the environment or the individual but suggests that it lies relationally between the two, a position that is consistent with

Gibson's theory. However the statement could also be interpreted as suggesting that an objective observer may be able to identify affordances in an environment for a particular individual. Similarly, the statement 'when we wish to assess the functional possibilities of a particular place, we must have some individual, or type of individual, in mind' (p. 30), suggests that affordances can be listed by an objective outsider who perceives the environment with regard for the characteristics of a type of user of that environment. Heft acknowledges that this is a limited view, however, and needs corroboration by empirical evidence: 'while we can anticipate the likely affordances of a place ... based on our knowledge of the setting and the person, the behaviour of the individual will corroborate empirically this functional description of the environment' (p. 32).

Fjørtoft (2001) asserts that 'the central concept guiding children's examination of their environment is that of *affordance*' (p. 111). The term is used to describe 'an awareness of the environments and their functional significance, or their functional meaning' (p. 111). Fjørtoft (2001) describes the environment in which her studies took place in terms of the activities the various spaces afforded children. She describes a strong relationship between the structures of the landscape and the functions of play. The versatile, outdoor, natural play space therefore has *multiple affordances* for different types of play for young children (Fjørtoft & Sageie, 2000; Fjørtoft, 2001).

There is, therefore, a need to ensure we do not, as adults, decide that certain features afford certain activities in certain circumstances as this omits the perceptual nature of affordance – the space affords an activity if the activity is perceived as do-able in the space by the do-er. Fjørtoft and Sageie (2000) clearly state: 'as adults we perceive the landscape as *forms*, whereas children will interpret the landscape and terrain as *functions*' (p. 85). The description of an environment in terms of its function (in this case for play) using the concept of affordance then

must be based on children's activity within the environment, rather than on an adult's ideas about what children might do in a space. One cannot judge the affordances of an environment before or without such activity taking place without getting into epistemological knots. Taking, as Fjørtoft does, the view that we can list affordances in the present or past tense suggests that Heft's (1988) assertion that the objective observer can list (in advance) possible affordances of the environment with a particular person (child) in mind may not be a valid theoretical position, particularly if one is trying to avoid positivist assumptions such as those outlined by Oliver above. However, the work of Kyttä can help resolve this issue.

Kytä (2002, 2004) takes the concept of affordances and extends it, providing a solution to the problem of the 'objective observer'. Kyttä defines *potential* affordances – those that are specified relative to an individual and are available to be perceived, and *actualised* affordances – those that are revealed through the actions of the individual, or through self-report. It may be, then, that it is possible to consider *potential* affordances as an objective observer (i.e., those affordances that may be objectively perceived to be lying between the interface of a known environment and a known individual); defined in the future or perfect tenses and to consider *actualised* affordances as those that reside at the interface – that can only be defined by the individual as she/he interacts with the environment; defined in the present or past tenses. This approach avoids the problem of duality between the phenomenal and physical (imagined and positivistic) as outlined by Oliver (2005), since the imagined is clearly stated as such in the term *potential* and the actual activities of the child in the environment are used to define the *actualised*. There is difference rather than duality. What is consistent with Gibson's theory here is the requirement to consider the affordance as existing at the interface between animal (here, child) and environment.

Kyttä (2002) makes use of a taxonomy of environmental features adapted from Heft in her research; in this she includes a section for the *social* affordances of the environment, and this aspect is particularly pertinent for understanding children's activity within a space. Kyttä (2002) suggests that the home yard was particularly important as a source of affordance for children – she suggests that 'it is possible that the home yard acts as the first arena for finding affordances outdoors that can later extend to other environments' (p. 121). This suggests that perception of affordances might be thought of as a learnt activity, based on or at least influenced by, previous experience. This is not as Gibson intended in his theory, since this does not imply *direct* perception but *mediated* perception (Greeno, 1994). In terms of a socio-cultural, socioconstructivist approach to the theory of affordances this suggestion may translate into a view that children's personal histories will mediate their perception (or 'reading') of the affordances of an environment. Kyttä (2002) also suggests that rural children's perception of the affordances of their environment may be influenced by, for example, parental manipulation of the land.

Kyttä (2004) uses her empirical work to suggest an ideal 'child friendly' environment; defining two central criteria of such an environment as: diversity of environmental resources, and access to play and exploration. She considered variation in these two criteria, operationalized by the number of 'actualized, positive affordances' (p. 179) for the former and by the degree of independent mobility for the latter, and constructed a model of four types of environment. Mobility was considered in terms of geographical range, mobility license (parental rules about where children can go and under what conditions) and actual mobility (based on records of actual movements over a given time period). These environment-types were categorized as Bullerby – high independent mobility, high number of actualized affordances; Wasteland – high independent mobility, low

number of actualized affordances; Cell – low independent mobility, low number of actualized affordances; and Glasshouse – low independent mobility, high number of actualized affordances. Kyttä concluded that 'the more mobility licenses the children have the more likely they actualize the affordances in the neighbourhood. Actualised affordances in turn motivate children to be mobile' (p. 194). She argues that the Bullerby type of environment can be thought of as an 'ideal' (p. 194) context for children's development:

In the Bullerby context, children are able to interact effectively with their environment and utilize opportunities within the environment to perform independently at a level appropriate to their physical and cognitive abilities. (Kyttä, 2004, p. 194)

By attending to the concept of actualised affordances, Kyttä took the lived experience of the child in a space to enable her to describe an 'ideal' environment type; the ideal being based upon the number of affordances that the child could actualise within a specific space. Kyttä's work here focused on physical affordances of a space and includes, to an extent, the mediating social, cultural influences on actualisation of these affordances.

'CONSTRAINTS' AND AFFORDANCES

Gibson's theory considered positive and negative affordances:

we can observe that some offerings of the environment are beneficial and some are injurious ... All these benefits and injuries, these safeties and dangers, these positive and negative affordances are properties of things taken with reference to an observer. (Gibson, 1979, p. 137)

Greeno also discusses the term 'constraint' within his review of Gibson's work and in relation to situation theory. It is argued here that the notion of a *physical* constraint within the theory of affordances is superfluous.

This may be demonstrated by Kennewell's (2001) consideration of affordance theory. Kennewell suggests: 'a doorway affords entrance to a room; a closed door constrains entry' (p. 106). However, it may be argued that a doorway only affords entry if it is suitably sized for the agent and a closed door does not offer such an affordance. The assertion that 'a narrow doorway will not afford entry to the room for a wheelchair user, and a closed door will be too great a constraint for someone who does not know that the handle must be turned to open it' (Kennewell, 2001, p. 106) does nothing to separate or identify an affordance from a constraint because 'not affording' entry is equivalent to 'constraining' entry and if someone does not know how to turn a door handle then the affordance for entry through a closed door does not exist. The view put forward here is that the use of the term 'constraint' in this way is problematic and the concept of affordance does not require it. The term constraint merely serves to increase complexity when used in relation to *physical* aspects of action in any space. However, the term constraint may be useful in considering the social and cultural aspects of a space that may mediate the agent's perception and/or actualisation of the affordances of the space. This notion is explored further in the next section.

AFFORDANCE AND THE SOCIAL ENVIRONMENT

It may be more useful, then, to reconsider Gibson's ideas through the lenses of a twenty-first-century socioconstructivist view of learning and a sociocultural approach to understanding human behaviour. The term 'constraint', then, may be useful to encapsulate the mediated, contextual understandings through which behaviour is enacted. We might adopt the term 'constraint', for example, to denote the socioculturally definable

aspects of a particular time and place in relation to a specific individual that may mediate behaviour. Arguably, the term *constraint* is embedded, within the English language at least, as a negative term and the separation implied by defining *constraints* and *affordances* is therefore unhelpful and simplistic when attempting to remove duality in theorizing. It might be considered more helpful to describe the actualisation of physical affordances of a space as being potentially constrained by the sociocultural context in which action takes place.

As Fjørtoft (2001) suggests, a rock may afford throwing, this will be contingent upon the size, weight and texture of the rock, and the size and strength of the thrower. However, arguably the throw-ability of the rock is also subject to aspects of the environment that are social and cultural in nature. In a nursery class in the UK, for example, there are likely to be rules that are set out by the adults for the children that they must not throw stones. Such rules are associated with and reflect the cultural understandings of the community and may be linked to concerns for safety and 'appropriate' behaviour. The same rules might not be applied, for example, for children attending a pre-school kindergarten in Norway, where 'appropriate' behaviour may be differently defined and safety concerns may be considered alongside respect for children's physical and exploratory play with natural objects. The cultural context of the setting mediates the affordance for action. While a child in the UK may encounter a rock and may perceive the rock as throw-able the child's need to adhere to the rules of the setting (or the close proximity of an authority figure) may prevent the action. In Kyttä's terms the affordance for throwing may be *perceived* but not *utilized*. What is argued here, then, is that in order to fully understand the beneficial – or otherwise – features of a space it is not only the physical affordances of the environment that we need to attend to but also those that exist within the less tangible domain of rules and understandings

of behaviour, those that reside within the individual and the group, the explicit and the implicit cultural understandings of the broader environment that mediate how children perceive and make use of the spaces they inhabit. We might usefully term such notions as 'sociocultural constraints'.

Modelling the Affordance of a Space

Kyttä (2004) states that the concept of affordance has the potential to be extended to comprise 'even [the] emotional, social, and cultural opportunities that the individual perceives in the environment ... many individual characteristics, social and cultural rules and factors as well as practices regulate which affordances can be perceived, utilised or shaped' (p. 181). She builds a picture of potential affordances as being made up of three particular subsets: the field of promoted action (socially + culturally regulated), the field of constrained action (design features, inclusive or otherwise nature of the setting) and the field of free action (children's

independent discovery of affordances of an environment); see Figure 2.1.

Kyttä (2004) suggests that 'in future research there is reason to emphasise analysis of the role of various socio-cultural factors that regulate the fields of promoted, free and constrained action' (p. 196). This has been considered in a doctoral study in which the notion of affordance was central (Waters, 2011) and a socioculturally embedded model of affordance theory was proposed. The view taken in the thesis was that a child's action – and interaction – in a space is shaped not only by their perception of the physical affordances of the space but also mediated by the sociocultural context, the 'cultural conventions' (Oliver, 2005, p. 407) of the space as well as by their previous experience.

INTERACTIONAL AFFORDANCE: A SOCIOCULTURAL THEORY OF AFFORDANCE

The study explored the activity and interaction of children and their teachers, in three

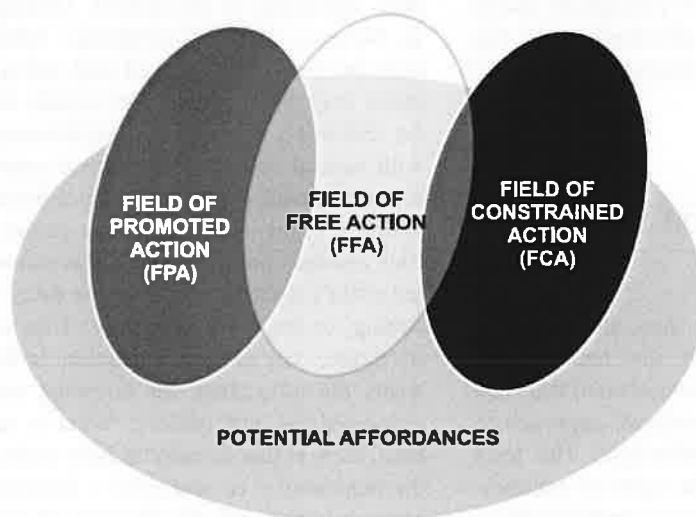


Figure 2.1 A schema of the environment as potential affordances, the actualisation of which is regulated by the fields of promoted, free and constrained action (Kyttä, 2004, p. 182)

classes of 3–6-year-olds, over the course of one academic year when they were inside and outside. The empirical data was used to inform the development of the concept of affordance from the socioconstructivist position of knowledge and understanding being socially, historically and culturally mediated. The thesis suggested that a socio-culturally located theory of affordance provides a better understanding of action – and indeed interaction – in different spaces.

Use of the terms ‘action’ and ‘interaction’ to depict separate aspects of human behaviour becomes unhelpful in this consideration. Interaction between humans is a central feature of human action; it takes place within a space in which the humans are also interacting with the objects that are present (e.g., Bang, 2008, Lenz Taguchi, 2010). In the proposed model, then, the term *interactional affordance* is adopted since this represents interaction between children and adults and also encompasses the interaction of these agents with the spaces in which they act. Human physical action is then seen as the mediated interaction between humans and nonhuman elements of the environment (see also Lenz Taguchi, 2010). The model sought to represent the complexity of spaces in which interaction takes place and yet allows particular mediating features to be identified. These mediating features earn their place in the model as a result of the empirical findings from the doctoral study.

It is argued, then, that the act of perceiving an affordance of an object (or a space for interaction) is always socioculturally mediated. Carr describes this as the power of social practices to ‘reframe’ (2000, p. 76) the perception of physical affordances. The act of perceiving an affordance is informed by, not only the physical attributes of the object in relation to the person who perceives it, but also informed by the sociocultural context of the perceiver which includes their previous experience (virtual or otherwise) of similar objects, cultural norms and expectations. Any encounter also informs future encounters. This is simplified in Figure 2.2.

Throughout this chapter the notion of physical constraint has been rejected in favour of a concept of environments being variably affording for any particular agent. However, the term constraint may be used to describe the mediating role that the sociocultural context has on the actualisation of affordances in a space. For example, in a children’s playground in the UK the act of spitting is viewed as antisocial and likely to be reprimanded by an authority figure and viewed with disgust by adults and other children. This behaviour may, or may not, have been explicitly stated at some time but ‘no spitting’ is not usually a rule that is explicitly reiterated on a regular basis. It is an implicit understanding of how to behave. In the proposed model such implicit sociocultural ‘rules’ of a space are considered to constrain – mediate or guide – behaviour in that space.

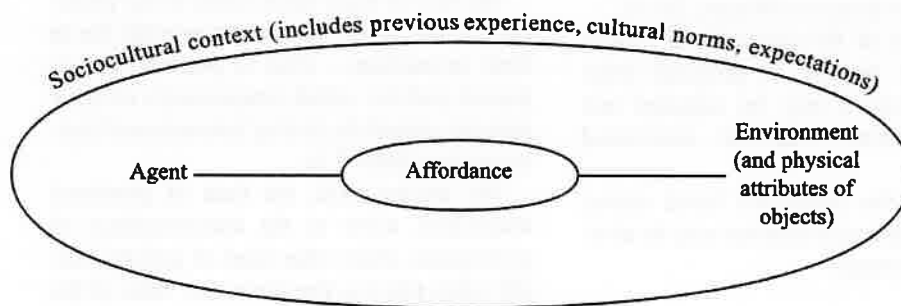


Figure 2.2 Affordance is located between agent and environment and mediated by the sociocultural historical context in which both reside (Waters, 2011)

Aspects of the sociocultural context that may constrain action by children in educative settings may be placed into broad (and overlapping) categories including, for example:

- institutional (e.g., setting/school) norms of behaviour;
 - pedagogical approach (including practitioner / teacher expectation and intended learning objectives);
 - parental expectation;
 - child expectation and previous experience;
 - the perceived purpose(s) of the encounter;
 - the explicit rules applied to behaviour (particularly when children are the agents);
 - and the presence of other agents (e.g., teacher as an authority figure, peers).
- an awareness of environmental messages suggesting picking items from the undergrowth may be environmentally damaging;
 - adult expectation and the explicit rules applied to behaviour (particularly when children are the agents)
 - compliance with the norms of behaviour (e.g., no picking or eating of wild produce)
 - compliance with other shared rules of behaviour (e.g., no throwing of objects);
 - child expectation
 - to seek approval from authority figures, peers;
 - the purpose(s) of the encounter and the presence of other agents (e.g., teacher as an authority figure, peers)
 - noticing and/or sharing observations with the teacher may bring merit and positive attention to the child and this may impact upon how the child perceives the affordances offered by the presence of the autumnal produce.

Drawing out the categories from within the notion of the 'sociocultural context' allows a deeper consideration and understanding of the affordances of an encounter and how they may be shaped by the sociocultural context. An example follows.

A class of 6-year-olds' first visit in the academic year to a local outdoor area took place in the autumn, on a dry day. The children were drawn to fruits, mushrooms and grasses growing in the hedgerows and by the side of the paths. The potential interactional affordances of such items for 6–7-year-old children might be, for example: to notice, pick, taste, roll, squash, throw, describe, wonder about these items and/or draw them to the attention of others. The empirical data in the study showed a more limited range of actualised interactions however (Waters, 2011).

When aspects of the sociocultural context are considered, the list of potential interactional affordances may be adjusted and children's observed behaviour understood more fully.

Taken from the categories listed above, constraining contextual features may be identified for this context:

- institutional norms of behaviour
 - knowing that some berries are poisonous and should not be eaten;

Therefore, the list of potential affordances, when adapted to consider contextual constraining aspects, may then become: to notice, describe, wonder about or bring to attention. The possibility of picking, tasting, rolling, throwing and squashing is reduced due to the constraining impact of the particular sociocultural context. In another context the same children may be afforded very different opportunities by the presence of berries and mushrooms.

A model for the interactional affordance of a space was proposed, building on the work of Kyttä (2004), detailed above. In the model, three fields of consideration are put forward.

The first of these fields refers to the physical features of the space that provide for or limit interaction – what is present, who is present and the verbal competencies of those present, named the *field of interactional limitation* (see Table 2.1).

The second field, the field of promoted interaction, refers to the understandings of participants about what kind of activity usually takes place in the space: the 'rules of the space'. In an educative setting, the motivation of the practitioners/teachers sits within this field since the purposes to which teachers put

Table 2.1 The broad categories that describe the fields of consideration for interactional affordance

	<i>Field of interactional limitation</i>	<i>Field of promoted interaction</i>	<i>Field of free interaction</i>
<i>Field</i>	<i>Includes local physical aspects of space</i>	<i>Includes sociocultural aspects/ local rules of engagement and may be considered constraining</i>	<i>Includes children's agency and previous experience</i>
<i>Broad categories</i>	What is available for interaction Who is available for interaction Ability and competence of agents in interaction	Culturally defined and socially approved interaction: – school/setting norms – norms of the educative space – parental expectations – child expectations – pedagogical approach including teacher expectations and learning objectives – rules about how to act/interact in the space	Children's initiations – with each other – with the teacher – with objects Children's responses to others' initiations/ actions Children's choices – opting into and out of action/ interaction/engagement

interaction in different spaces was found to be a significant mediating factor in what kinds of interaction were afforded to children by a space in the study.

The final field, the field of free interaction, recognizes children's agency and their choices in any situation.

What is put forward, then, is a model for visualizing the interactional affordance of an educative space (see Figure 2.3) in which all fields are embedded within the wider sociocultural context of the space and the actualisation of potential interactional affordances is mediated by the three fields of consideration, which overlap with each other.

In Figure 2.3, the interactional affordances of the space lie within the sociocultural context and this forms the outer shield of the model. The interactional affordance consists of both potential interaction and – as a subset of these – actualised interaction. The actualisation of interaction is influenced by the three fields of consideration: the field of interactional limitation, the field of promoted interaction and the field of free interaction. The model presented in Figure 2.3 allows the affordance for interaction to be viewed as nested within and mediated by the inter-related aspects of the broad sociocultural context, the physical context and the specific local context of the space and those within

it. In this way the model explicitly places children's agency as part of the field of free action yet acknowledges that such agency is enacted within, and acts upon, the sociocultural context both locally and more broadly.

All the fields that mediate potential interaction are different in different spaces. In the doctoral study, this was especially evident when considering the opportunity for child-initiated interaction in the indoor and outdoor environments. In the study the outdoor space supported actualisation of a wider range of potential interactional affordances than the indoor space. The outdoor environment in the study, then, offered a broad range of potential interactional affordances for child-initiated interaction *and* supported their actualisation. Indoors there was minimal actualisation of affordances for child-initiated interaction. The model allows us to realize that this does not necessarily mean there was little *potential* for child-initiated interaction indoors – it means that children did not generally take up the opportunities that may exist.

In the study the same outdoor environment afforded children in different classes very different degrees of activity. When the field of promoted interaction supported children's expressions of enquiry and interest, the affordance for, and actualisation of, child-initiated interaction was high. In a similar

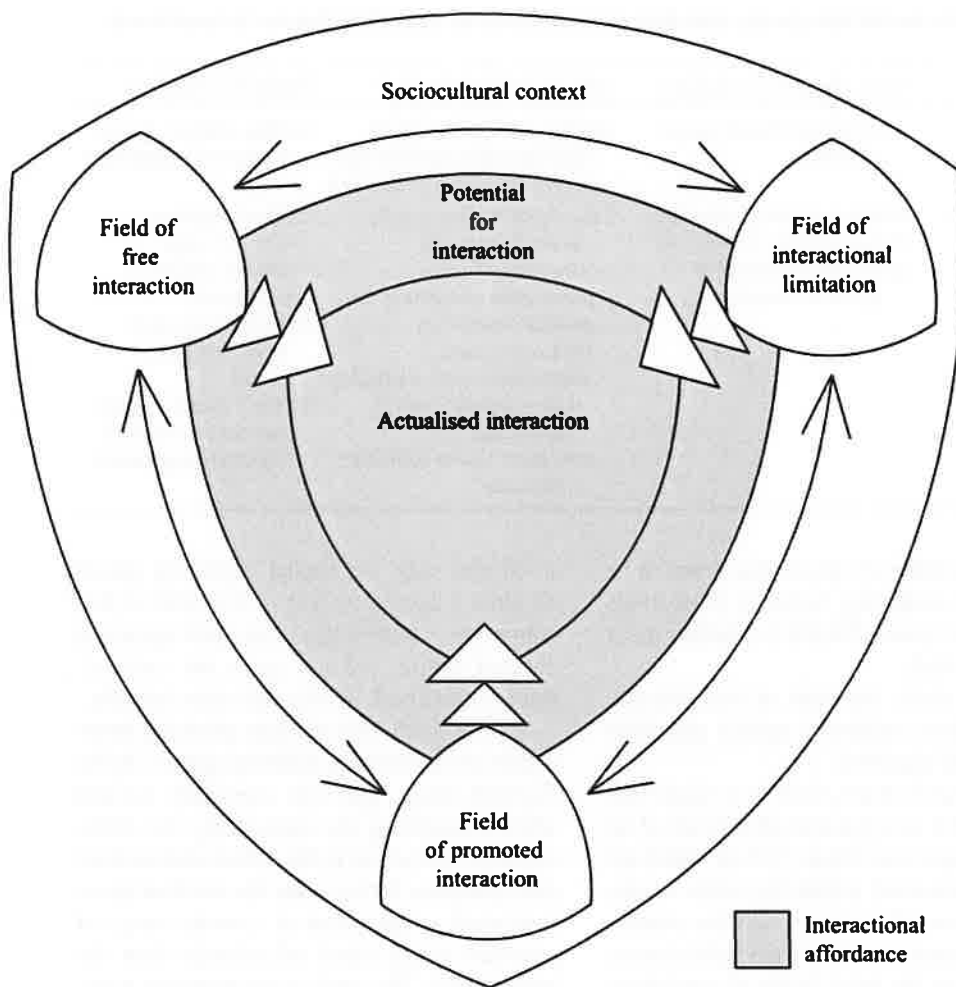


Figure 2.3 Conceptual model for consideration of interactional affordance

environment in which the field of promoted interaction was restricted by, for example, a focus by adults on specific, predetermined content learning, the potential for child-initiated interaction may still have been high but the actualisation of these affordances was seen to be low (Waters, 2011).

The model in Figure 2.3 may offer an opportunity for those considering children's action within spaces to consider, in a systematic manner, the complexity of this endeavour. The model can be more simply represented, as in Figure 2.4.

THE MATERIAL TURN: MATERIAL AGENCY

Lenz Taguchi (2010) proposes a new approach to the consideration of pedagogy in the early years: 'intra-active pedagogy' gives

explicit attention to the intra-active relationship between all living organisms and the living environment: things and artefacts, spaces and places that we occupy and use in our daily practices. (p. 10)

She draws on the notion, from material feminists Barad (1998, 1999, 2007) and Alaimo and Hekman (2008), that

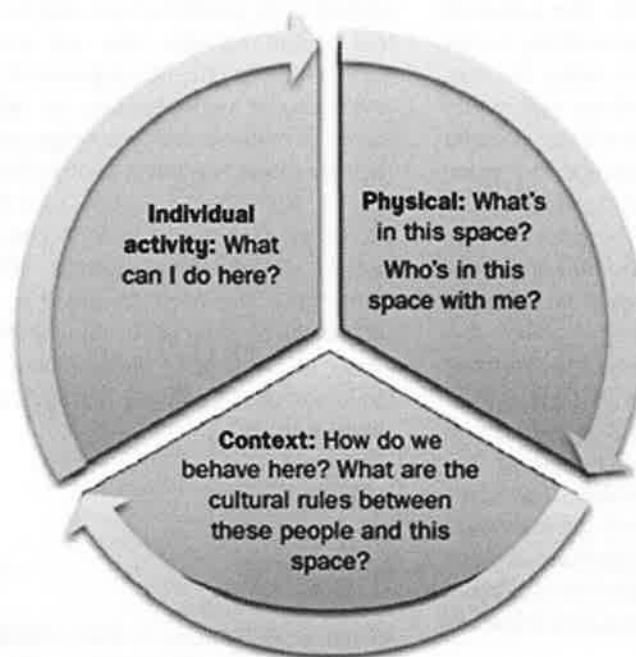


Figure 2.4 A simplified model of the interactional affordance of a space (from Waters, 2013)

not only humans have agency – the possibility of intervening and acting upon others and the world. Rather, all matter can be understood as having agency in a relationship in which they mutually will change and alter in their on-going intra-actions. (p. 4)

Aligned with this notion is the idea that events are the responsibility of all matter and organisms that are present – human and non-human (Dahlberg & Moss, 2010). Material artefacts are therefore understood to be part of a ‘performative production of power and change in an intertwined relationship of intra-activity with other matter and humans’ (Lenz Taguchi, 2010, p. 4). Dahlberg and Moss describe this new approach to understanding action thus:

how, for example, chairs and floors feel and sound matters in our intra-actions with them; from this perspective sitting in a specific space can be understood as a material-discursive phenomenon that emerges in the interaction that takes place in-between a subject, who is inscribed in discursive

meanings, the body, and the chairs and the surfaces. And it is in this intra-action that our sense of being emerges – a sense that can either be empowering or disciplining. (2010, p. xiv)

Lenz Taguchi draws on Barad’s work to further explain that ‘matter and meaning are not separate elements’ (Barad, 2007, p. 3), hence they cannot be understood in the absence of the other: ‘matter and meaning are mutually articulated’ (Barad, 2007, p. 152).

Moreover, sitting on a specific chair in a specific space with specific other human and non-human organisms and matter will regulate how and what we may say or do, or not say or do. (Lenz Taguchi, 2010, p.5)

The location of understanding action, then, is at the *interface* – or the *in-between* – of the material world, the subject and the discursive meanings inscribed therein.

We might suggest that these understandings resonate strongly with and may be theoretically understood in terms of a sociocultural

reading of affordance theory. The notion of nonhuman agency and responsibility is not explored within this chapter; rather the contextual understandings of space and matter that humans enact in the world are brought into focus. Action and interaction in a space is shaped not only by human perception of the physical affordances of the space but also mediated by the social and cultural rules – the context – that relate to the space and all matter within it. Lenz Taguchi's work adds to this notion that the characteristics of the material world and human response to them is part of the mediation embedded within action in a context and any understanding of this action needs to similarly address this complexity. What the space affords the individual (or group) is located at the interface of these aspects; and this notion applies to children's action in outdoor spaces as much as it does to other situations.

Lenz Taguchi suggests that we recognize the 'in-between' (2010, p. 5) of interaction – what takes place in between the subject, seen as 'inscribed in discursive meanings' (p. 5), and the material world, seen as 'an active agent in the construction of discourse and reality' (Dahlberg & Moss, 2010, p. xv). It is suggested here that the notion of the in-between may be conceptually encapsulated in an advanced understanding of the notion of affordance. Our understandings of behaviour are richer when we consider the complexities outlined in the preceding section; to avoid engagement with such complexity risks shallow representation of that which we seek to understand.

CONCLUDING COMMENTS

This chapter sought to provide an account of the development of affordance theory in relation to its use and adoption in literature and practice related to outdoor play. The chapter has outlined the origin of the theory and the inherent tensions within it,

related to its positivist roots and its application within contexts that are understood socioculturally. The development of a socio-constructivist understanding of affordance theory is outlined and it is suggested that as such the theory has much to offer those seeking to understand, explore, develop and encourage children's outdoor play. Visual models of socioconstructivist affordance theory have also been presented in order to support the ongoing application of affordance theory to the field of outdoor play, without the loss of the complexity that such an application implies.

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