A Theoretical Expansion of the Play Cycle

Jakob von Uexküll's Functional Cycle and the Perceptual Cue

Pete King

The author seeks to expand the notion of the "play cycle," first introduced in 1998, to include the "functional cycle," with its "perceptual cue," touted by Jakob von Uexküll. He also discusses Simon Nicholson's theory of "loose parts" and James J. Gibson's notion of "affordances." He outlines the impact of these and his now-revised play cycle and its perceptual cues on professional playwork and other play-related activities, especially those in preschool, child care, and the early years of education. **Key words**: functional circle; Jakob von Uexküll; play cycle; play process; playwork

Introduction

In 1998, Gordon Sturrock and Perry Else introduced the "play cycle" (Sturrock and Else 1998). The play cycle is described as the "process of play" (Else 2011, 287), in which the focus lies on process rather than on the outcomes of play (Newstead and King 2021). This is a key feature of playwork practice in the United Kingdom (UK), underpinned by the eight playwork principles (Playwork Principle Scrutiny Group 2005). Playwork in the UK is defined as "a highly skilled profession that enriches and enhances provision for children's play. It takes place where adults support children's play, but it is not driven by prescribed education or care outcomes" (SkillsActive 2010, 3).

In addition to playwork, the play cycle has been used in other play-related contexts in child care and the early years of education (King and Newsread 2021) and in working with children diagnosed with autism (Conn 2016). Since its introduction in 1998, the play cycle now underpins playwork professional practice, playwork education, and playwork training (King and Newstead 2020).

Sturrock and Else (1998) developed their theory within the fields of depth psychology and therapeutic epistemology and constructed the play cycle. The

American Journal of Play, volume 14, number 2
Contact Pete King at p.f.king@swansea.ac.uk

play cycle has six elements: metalude, play cue, play return, play frame, loop and flow, and annihilation. They expressed this as a formula of L(Ludic or Play Cycle) = Metalude (M-L). Time (T>). Active Development (@). Loop and Flow (§), in which the content and meaning of play is situated in a therapeutic context with reference to Donald Winnicott, Ken Wilber, and Carl Jung (King and Sturrock 2020).

The play cycle continued to feature in their individual writing and thinking, for example Sturrock's interpretation of Winnicott's "third area" (Winnicott 1971), which Sturrock (2003) called "the ludic third, and Else's incorporation of Wilber's (1980) transpersonal view of human development into an "integrated play framework" (Else 2009).

A review of the play cycle (King and Sturrock 2020) provided a theoretical background for each of its elements. For example, the play cue can be linked to the concept first used by Bateson (1955, 1972) and the play frame by Goffman (1974), who built upon the work of Bateson. For a fuller theoretical understanding of the six elements of the play cycle, see the first chapter of in *The Play Cycle: Theory, Research, and Application* (King and Sturrock 2020).

In 2018 King and Newstead undertook a study of the understanding of the play cycle by playwork practioners and, in particular, how they viewed each of its six elements twenty years after the authors had presented a seminal paper about it at the International Play Association (IPA) triennial conference in Colorado. A review of the playwork literature found variations in how each of the six elements of the play cycle had been originally defined in the Colorado paper. These variations were reflected in an online survey, which resulted in a revision of the each of the six elements to reflect both the current understanding by playworkers and the original definitions provided in the Colorado paper, changing two elements from the original paper and revising the descriptions of all the elements (King and Newstead 2020; King and Sturrock 2020).

The revised six elements of the play cycle now are: pre-cue; play cue; play return; play frame; flow; and annihilation (King and Newstead 2020), with clear definitions for each element that enable a more consistent use and understanding of the play cycle in both education and professional practice and that supports the empirical research of *The Play Cycle: Theory, Research, and Application* (King and Sturrock 2019). A revised formula was also developed: L(Ludic or Play Cycle) = Pre-Cue (P-C). Time (T>). Active Development (@). Loop and Flow (§) (King and Sturrock 2020).

As a playwork theory, the play cycle has supported professional practice for

both playworkers (King and Newstead 2019a) and child care workers (King and Newstead 2019b), allowing practitioners to focus more closely on play behavior and to be more consistently observant. The two studies showed that, although the play cycle was first introduced and developed within playwork as a theory, it continues to be useful for playwork practice, education, and training.

The play cycle has also been used to develop an observational tool—the play cycle observation method (PCOM)—that records the process of play. Two pilot studies have shown it to be a reliable way to record the play cues and play returns that form play cycles. The first study, using video, recorded marked similarities among the play cycles of the participants (King 2020). The second pilot study was undertaken in real time in a preschool setting with high interrater reliability using Cohen Kappa (King, Atkins, and Burr 2021). The PCOM records play cues and their rate of return (play return) to establish play cycles. The play return can come from both human and nonhuman sources. For example, an object in the environment may be the play return children need to form their play cycle. The PCOM has implications for anybody who works with children in a play context that includes day nurseries, preschool, and educational settings.

For play to take place—and for play cycles to form—an environment, or a play space, needs to be available. The play space will vary in size and shape and with the objects available and the people who use them. In turn, whatever children want to do in the play space will be determined by these factors. The play space therefore may consist of natural or person-made structures and include people, animals, and objects—anything a person perceives from the environment, or what Gibson (1986) calls "affordances." An affordance comprises a "resource or support that the environment offers an animal; the animal in turn must possess the capabilities to perceive it and to use it" (Gibson, Cornell, and Gill 2017), where "it is a mistake to separate the natural from the artificial as if there were two environments, artefacts have to be manufactured from natural substances. It is also a mistake to separate the cultural environment from the natural environment, as if there were a world of mental products distinct from the world of material products" (Gibson 1986, 130).

Gibson referred to such an environment as involving the activities of looking, listening, touching, and sniffing. And what a person perceives from this environment will vary, as Heft (2003) explains: "At a minimum, affordances are specified relative to an individual. More than that, however, affordance meaning is also typically established by a feature's relation to a broader environmental context. This claim is most easily supported with reference to cases where the

same object can have different functional meanings in different environmental contexts" (172).

The availability of manipulatable objects with which children can play finds theoretical support in what Nicholson (1971) calls the "theory of loose parts," based on the idea that "in any environment, both the degree of inventiveness and creativity, and the possibility of discovery, are directly proportional to the number and kind of variables in it" (30). Basically, the more things in an environment that can be used, manipulated, changed, created, or destroyed, the more the environment can offer for play. Nicholson's theory of loose parts is now widely accepted, both within the playwork profession (Wilson 2010) and in other play and child-related fields like childhood development (Gibson et al. 2017), preschool instruction (Maxwell et al. 2008), child care (Olsen and Smith 2017) and the early years of education (Gull et. al. 2019; Flannigan and Dietze 2017). How children interact with the play space, who is in the space, and what resources are available have been linked to Gibson's affordances. Children's play and affordances have been considered in relation to playwork by King and Sills-Jones (2018), to preschool by Sandseter (2009) and to the early years of education by Little and Sweller (2015).

The three concepts of the play cycle, loose parts, and affordances—and how they interact in children's play—resemble what Sturrock and Else (1998) termed "ludic ecology," the "field of internalized play," meaning the "internalized play space of the child and its meeting with the external world" (83). The theory of the play cycle and the meeting of the internal world of the child with the external world still lacks a theoretical basis for establishing how the play space promotes or initiates children's play—that is, how it sparks the pre-cue. This forms the focus of this article, in which we offer an addition to the play cycle—the play environment that can help initiate play, based on von Uexküll's functional circle (von Uexküll 1982).

The Theoretical Model of the Play Cycle in Brief

The Colorado paper that first introduced the play cycle used several theories from depth psychology, which shaped the original theoretical model (King and Sturrock 2020). These included Winnicott's (1971) potential space, Bateson's (1955, 1972) play cues, Goffman's (1974) play frames, and Csiksmenthilahyli's (1975) flow that linked with the process of play to establish a play cycle connecting children's inner and outer worlds. The focus on the process of play allowed

us to assert that children control their own play (initiated consciously or subconsciously) supported by adults (playworkers, child care workers, preschool workers, and others). Children's play aims not to satisfy any adult-generated outcomes, even educational ones. If adults control the play cycle, it becomes subject to what Sturrock and Else (1998) term "adulteration." So the play cycle considers the adult role in supporting the process of play using a four-level intervention hierarchy (Sturrock and Else 1998; Sturrock, Else, and Russell 2004). The initial hierarchy was established in a therapeutic context, but it has since come to support the day-to-day practice of playworkers (King and Newstead 2020) and child care workers (King and Newstead 2022) as they facilitate children's play. The four levels in the play cycle are play maintenance, simple involvement, medial intervention, and complex intervention (Sturrock and Else 1998; Sturrock, Russell, and Else 2004).

Play maintenance calls for the adult involved to take a more observational role and simple involvement allows them to act as a resource (providing materials, for example). Both play maintenance and simple involvement require the adults to remain passive and not to get actively involved in the play cycle. A more active role for the adults in the play cycle occurs with medial intervention and complex intervention. For medial intervention, the adults often respond to children's play cues inviting them into the kids' play. In complex intervention, both the children and adults may be issuing play cues in a kind of deep play—for example, role play or fantasy play (see King and Temple 2018).

The play cycle has, during the last twenty years, supported playwork practice, education, and training, and it has provided a theory for play in other contexts like child care. The interaction between the playing child and the environment will influence the play cues that emerge from the child's inner world into the outer world, forming a play cycle. However, before play cues are emitted, the environment (and the objects, both human and nonhuman, in the environment) may stimulate the pre-cue (or the conscious or unconscious thought that results in a play cue). This appears to constitute a missing thread from the play cycle theory—one that should be included when we consider von Uexküll's (1982, 2010) functional cycle. This missing thread, too, forms a major focus of this article.

Von Uexküll's Functional Cycle

Von Uexküll's (1982, 2010) functional cycle is based on the ethological study

of animal behavior and the patterns formed by the interaction of animals and their surrounding environment. We call this interaction of living organisms and systems that so interested von Uexküll "biosemiotics." In biosemiotics, animals and their environments are considered a single system. This system von Uexküll called an *umwelt* (von Uexküll 1982, 2010). An umwelt is a "subjective universe" (von Uexküll 1982, 29) experienced subjectively by the animal. Feiten (2020) explains von Uexhull's umwelt this way: "The Umwelt constitutes the sum total of the subject's experience, but the process in which the organism constructs its own Umwelt is not conscious and not accessible to the subject in its experience. Instead, the meaningful objects and the space in which we encounter them appear to us as objective reality" (2).

Von Uexküll refers to the environment—and what the environment contains—as a "meaning carrier" (von Uexküll 1982, 26). What the environment offers for any animal may be perceived differently and provide a different meaning to the animal. The interaction between an animal and the environment thus may differ, as Heft (1988) says, in relation to affordances. Von Uexküll (1982) suggests that each object carries a meaning perceived by an animal but influenced by the environment and its contents. Von Uexküll's umwelt and meaning carrier have the same properties as the affordances developed by Gibson. For Gibson (1986), these affordances refer "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" (127) and what the environment can offer the animal.

Here, both von Uexküll and Gibson are talking about the relationships between environments and animals in which "objects are experienced ultimately in terms of their functional significance" (Reybrouck 2012, 321), and each parallels each other's theories (Feiten 2020). Von Uexküll's original subjective nature of the umwelt developed into a dual description of properties of the organism reciprocal with properties of the environment. This resembles Gibson's (1986) concept of affordance in relation to the subjective "fact of behavior" of the individual but also the objective "fact of the environment" (Futlot and Turvey 2019, 305). Another link between von Uexküll and Gibson is the notion of "the specificity of organism–environment mutuality" in which information "couples the organism's perceptual organs to the ecological properties of its environment" (309) as a behavioral system.

In relation to play, Pellis and his colleagues suggest an initial universal behavioral system in which "the structural components are the same and the functional associations of those components are similar," allowing different lin-

eages to use the same core, causal processes to produce comparable outcomes repeatedly (Pellis et. al. 2019, 6). This idea fits the play cycle's process of play, whether that play involves the locomotor, object, or social play types proposed by Burghardt (2005) or the more typical five types of play—physical play, object play, social play, creative play, and rough and tumble (Whitebread et al. 2012). The same process of pre-cue and play cue applies to any type of play. Pellis and his colleagues call it a "play syndrome," one that makes "all play behavior systems one system, but one that may have different behavioral manifestations" (Pellis et al. 2019, 6). Such behavioral manifestations constitute the different types of play in the play cycle or functional cycle that governs how children interact with the environment.

Meaning Carriers and Loose Parts

When we consider the play environment—the space and the objects in the space—and the people who inhabit it (whether other children or adults), both become potential meaning carriers. These meaning carriers have two properties. The first relates to what von Uexküll (1982) termed the "perceptual cue" that an animal picks up from the environment (or the object—that is, objective structure received by the subjective animal). The animal issues, in turn, an "effector cue," its response to the meaning carrier. The effector cues are "mostly imprinted upon other properties of the meaning carrier" (31) that the animal will use for its own purpose. Von Uexküll called this the "meaning-utiliser" (30). He suggested that the perceptual cue, which came from the meaning carrier, and the responding effector cue, which came from the animal, together form a functional cycle: "Because every behavior begins by creating a perceptual cue and ends by printing an effector cue on the same meaning-carrier, one may speak of a functional circle that connects the meaning-carrier with the subject." For example, a child may see a cardboard box in the play environment. The cardboard box becomes the meaning carrier by catching the attention of the child as a perceptual cue. The cardboard box (meaning carrier) has properties that children will use for their own purposes. They don it like a hat, or squat on it like a seat, or kick it like a football. The importance of the play space potentially provides perceptual cues related to the need for many different resources, which Nicholson (1971) called variables. The loose parts (or meaning carriers) in the environment offer more objects with different properties that children can perceive (perceptual cue) and

use (effecter cue). The more loose parts, the more the environment affords to the child. The link between Nicholson's concept of loose parts and Gibson's concept of affordances with playwork has been well established (Lester and Maudsley 2007; King and Sills-Jones 2018). In relation to the play cycle, the two concepts of loose parts and affordances offer a notion about what children can perceive in the space—in essence, the play space around them.

The Play Cycle as a Functioning Cycle

Figure 1 shows the play cycle. The pre-cue within the child's inner world emits the play cue to the child's outer world. Here, the play cue is picked up by a group of children who respond to the play cue (play return). The play return goes back to the child's inner world and forms the play cycle. The play cycle continues, and the play cues and play returns continue as the play goes into the state of flow. The play cycle exists in the play space and has a boundary (physical or nonphysical) that forms the play frame. Eventually the play cycle or play frame loses meaning and the play cycle gets annihilated (see King and Sturrock 2020).

The play cycle focuses on the process of play (Sturrock and Else 1998),

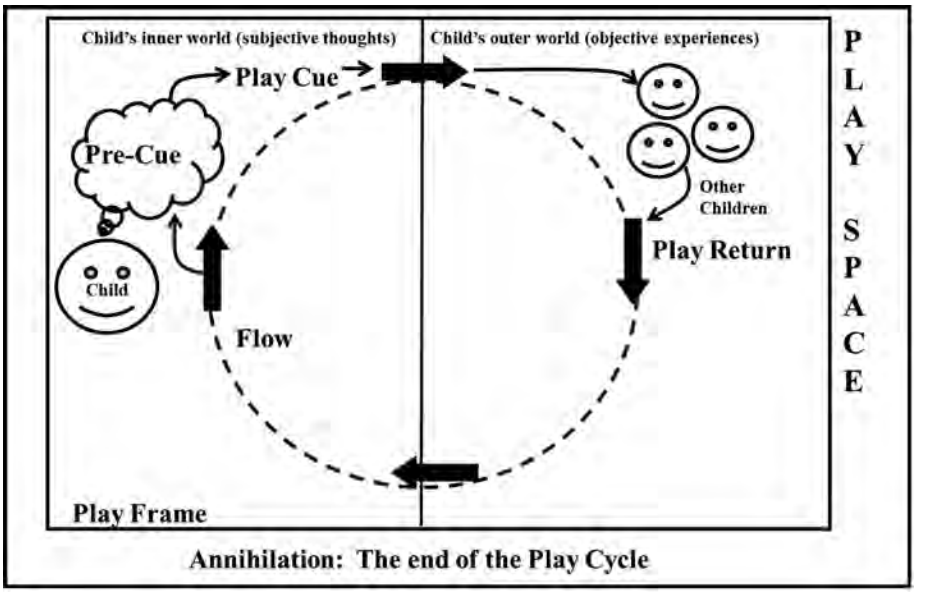

Figure 1. The play cycle

which allows us to consider it in any play-related context. For example, the different types of play put forward by Burghardt (2005), Hughes and Melville (2002), and Whitebread et. al. (2012) will involve children creating or being involved in play cycles. In addition, play has been described in educational, therapeutic, and developmental contexts and used to meet educational, therapeutic, or developmental outcomes. However, to get such outcomes, there has to be a process, and it is in this process that the six elements of the play cycle can be used to describe either in isolation or in conjunction with a more objective focus for play. Whatever the context or the type of play, for it to take place the environment has to be able to stimulate and provide the resources needed.

The functional cycle clearly has resonance with the play cycle (King and Sturrock 2020; Sturrock and Else 1998), and this can be seen in Burghardt's (2005) argument that von Uexkull's concept of the functional cycle unites the external and internal stimuli by viewing motivation as an internal mechanism in relation to animal social play. Burghardt explains how the "cue bearer can be the physical environment as well as the specific object" (135) in which the "responses by an animal to an object or another animal can in turn alter the features of the object or produce responses by the object" (6).

When the perceptual cue comes from the environment, an object or person in the environment will send information from the objective outside world that may stimulate the pre-cue within the child's inner world. This results in the play cue (von Uexküll called it the effector cue) being emitted. If the play cue (or effector cue) gets picked up—or a play return happens—then the play cycle forms. The environment, the objects, and the people within that space all become meaning carriers to the child, and the formation of the play cycle within the play frame forms the meaning utilizer. Kyttä (2002) called these potential affordances (meaning carriers) and actualized affordances (meaning utilizers). The more objects (meaning carriers), the more potential affordances there are for children to use to engage in play and to auctualize the affordances, which could be the different types of play children engage in (meaning utilizers).

The play cycle enables children to merge their subjective inner worlds to the objective outer world. This interaction of the inner and outer world reflects von Uexküll's umwelt becauses it "describes how the physiology of an organism's sensory apparatus shapes its active experience of the environment" (Feiten 2020, 2). Figure 2 expands on the original diagram of the play cycle created by King and Sturrock (2020) and also includes the placement of four hierarchical levels. For play maintenance, the adult is situated outside the play frame and takes on

an observer role. Simple involvement occurs when the adult acts as a resource and is situated just inside the play frame but is not active in the child's play cycle. For medial intervention, the adult may receive a cue to play and be active in the play cycle. In complex interventions, such as role play, both children and adults may take on roles, in which case the play has both the adults and children issuing cues (although the adults have to be careful not to take over the play cycle and adulterate it). In both medial interventions and complex interventions, the adults have a more active role in the play cycle.

The play cycle containing both the child's subjective inner world and the objective outer world reflects von Uexküll's umwelt. As Feiten (2020) wrote: "In order to account for subjective experience, we have to consider both the scientific perspective on an organism from the outside and its own experience from the inside" (6).

The subjective experience can receive an external perceptual cue from the environment, the play space, and everything that it contains, that is, Nicholson's loose parts. This can consist of both organic and inorganic content, which includes natural objects (e.g., trees), built objects (e.g., walls), moveable objects

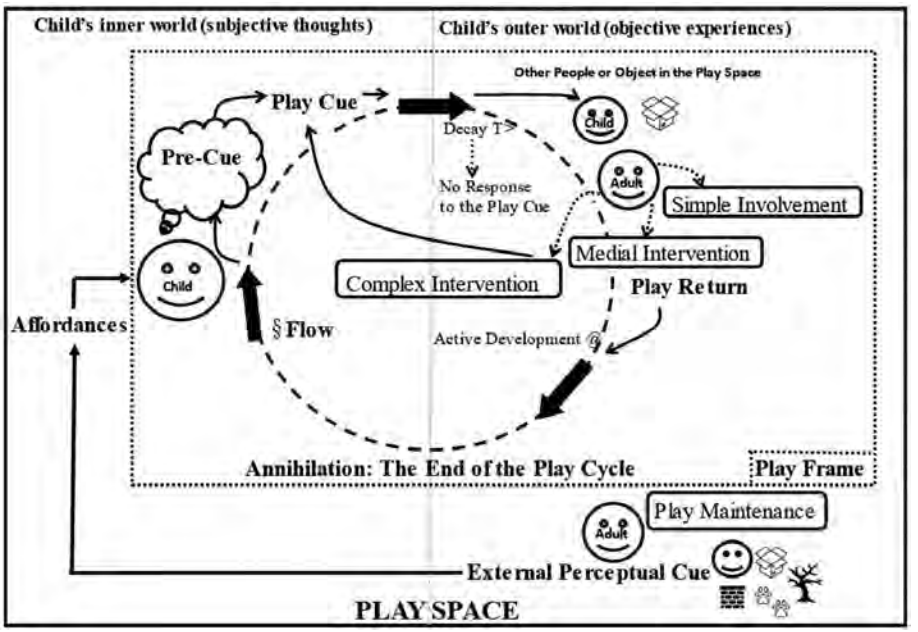

Figure 2. Expanded play cycle inculding four hierarchical levels of adult intervention

(e.g., cardboard boxes), other animals, and people as sources for the external perceptual cue, or what von Uexküll called meaning carriers. The meaning of the external perceptual cue will be different for each person and in relation to the umwelt in which "the meaningful objects and the space in which we encounter them appear to us as objective reality" (Feiten 2020, 1).

Implications of the Functional Cycle for the Play Cycle

Von Uexküll's functional cycle provides a relevant addition to the play cycle. The close links between how organisms perceive their environment relate to the objective outer world perceived by the child's inner world as set out in the play cycle. We need to include the external perceptual cue, von Uexküll's meaning carrier, from the external environment, but it should not to be confused with the play cue issued by the child as the stimulus for the pre-cue.

Although children may know how they want to play before they get to play spaces, pre-cues may—consciously or unconsciously—have already determined the play cues to be issued and may need stimuli from the external environment. However, it is possible that something in the external environment, whether a person or an object, may be perceived and processed by the child, which then forms an idea (pre-cue) to play. In this case, although the perceptual cue from the external environment is not deliberately aimed at the child, the child's senses will perceive an idea to play. For example, if there are other children in the play space, a child may perceive them (perceptual cue) and want to play with them, so he or she sends out a play cue. If, for example, other children in a play space send a cue to the child, this is not a perceptual cue, it is a play cue from other children with an invitation to play. Perceptual cues are not intentionally sent, they are perceived; play cues have intent.

As well as linking with the pre-cue, the external perceptual cues from the external environment can provide a theoretical link with the ideas of affordances and loose parts. Both affordances and loose parts are commonly cited in the playwork literature when both organic and inorganic aspects of the environment can provide stimuli through smell, touch, taste, sound, and sight—what Hughes (2012) called part of the "playwork menu." Perceived cues from the external environment can come through one or more of the five senses and be processed within a child's inner world. As von Uexküll (1982) wrote: "The guide-rope of each functional cycle, insofar as it runs through the animal's body, is the ner-

vous system, which, beginning with receptors (sense organs), guides the current stimulation through the central perception and effect organs to the effectors" (146). The response to the perceptual cue from the external environment could then be an idea to play, a pre-cue that may become a play cue.

Although the play cycle first originated to support playwork practice, the concept can be applied to any environment in which children play. This includes in preschool, child care, the early years of education—and in therapeutic contexts. In addition, the theories of loose parts and affordances have become commonplace in playwork thinking. Although the play cycle focuses on the process of play and applies to any type of play, the theory lacks the link between the environment and how it and the objects within it may stimulate (consciously or unconsciously) through von Uexküll's perceptual cue within the functional cycle. It proves a useful addition to the play cycle.

The perceptual cue provides the relevant theoretical link between von Uexküll's functional circle and the pre-cue (i.e., the conscious or unconscious idea to play), the initiation of the play cue from the child's inner world emitted into the outer world. Von Uexküll's perceptual cue also provides a theoretical link between loose parts and affordances to the play cycle, two concepts strongly related to play across different contexts. What children perceive from the environment (perceptual cue) will depend on what lies in the play space, the people, and resources available. Kyttä's (2002) study of children's mobility considered two aspects of affordances, those which are perceived to come from the environment and those which are actualized by the individual. The environment offers different types of affordances, including structural, functional, and social (Heft 1988; Hyvönen and Juujärvi 2005; King and Howard 2014), and they reflect the fixed structures, objects, and people that could provide perceptual cues. Kyttä referred to the environments that have the least actualized affordances as "wasteland" and "cell" but called those with more actualized affordances "glasshouse" and "Bullerby." The more potential affordances the environment offers, the more an individual can actualize them. To put it another way, the more objects to play with, the more types of play can be acutalized.

Conclusion

The play cycle first introduced by Sturrock and Else (1998) and revised by King and Newstead (2020) and King and Sturrock (2020) have underpinned play-

work education, training, and practice over the last twenty years. Von Uexküll's functional cycle, especially its perceptual cue, offers an important addition to the play cycle. The perceptual cues arise from children's external environments (the outer world) and, through their senses, can initiate an idea to play, or a pre-cue (King and Newstead 2020). The perceptual cues relate to the properties of the external environment, the loose parts (Nicholson 1971) and affordances (Gibson 1986), two theories already embedded in playwork thinking. The revision of the play cycle can provide further theoretical support for playwork education, theory, and practice, and for other professions that focus on the process of play in preschool, child care, and the early years of education.

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