The Role of the Designer in Play

by Daniel Lambert

Abstract

This thesis endeavors to answer the question, “What, if any, is the role of the designer in facilitating play?” I base my answer to this question on years of play studies, design projects, conversations with experts, classes, conferences, seminars, travel, and careful observation. I ran an extensive literature search on play theory, design, science, philosophy, and playwork, only to discover that there was little agreement on the matter of defining play. By reviewing the ‘cited by’ tables of online resources (lists of papers that cite a given article), I was able to find a contemporary definition in line with my own understanding of play, active frivolity, which I explain in Chapter 1. Working through a complex landscape of historical interpretations of play, Chapter 2 explains the evolution of contemporary play theories and concludes with what I call Omnidisciplinary Play Theory, a synthesis of Joe Frost’s Integrated Theory of Play and Nathaniel Gindele’s Naturalistic Philosophy of Play. Omnidisciplinary Play Theory is an instructive tool for understanding the phenomenon of play, and explains it in five ways: exemplars, motives, behaviors, content, and developmental correlates. Chapter 3 argues that play is a fundamental part of a complete human experience and should be treated as a human right rather than a leisurely privilege. This has important implications for designers, namely that their duty is to allow for the widest possible variety of play in an environment designed for such purpose. Implicit in this obligation is the need to respect the agency of prospective users as designers, builders, and directors of their own space. Chapter 4 describes how meritocracies are antithetical to play and are one of the major reasons our ethical obligation to provision play is beset with systemic, societal resistance. Chapter 5 describes how external goals of value such as education are also antithetical to play. It stipulates, however, that once primary agendas of players are met, external agendas may be covertly introduced as long as said agendas are not in conflict. Chapter 6 outlines the practical applicability of the theoretical, ethical, and philosophical perspectives covered in previous chapters by translating them into actionable design guidelines. The thesis concludes by suggesting that the role of the designer in facilitating play is to understand it deeply; engage in it; practice empathy; respect the agency of players; advocate for the right to play; provision time, space, materials, and permission so as to allow for the widest possible variety of play; design exemplary playscapes; consult over the lifetime of the project; and learn from its evolution.

Table of Contents

Table of Figures

Glossary of Terms

- **adults**: (n.) persons of an age and disposition such that they assume full societal and legal responsibilities for themselves, and may also assume responsibility for dependent non-adults
- **adventure play**: (n.) a play typology which positions children as designers, builders, and directors of their own space; a play typology involving the use of loose parts in freely chosen, personally directed and intrinsically motivated play
- **agency**: (n.) the capacity of a person to act in any given environment
- **anthropometrics**: (n.) physical measurements of the human individual, such as body dimensions
- **autotelic**: (adj.) having a purpose in and not apart from itself; for its own sake
- **biophysical**: (adj.) having biological and physical properties (replaces problematic word: 'natural')
- **correlate**: (n.) either of two or more related or complementary things
- **curate**: (v.) select, organize, and look after the items in a place
- **design**: 1) (v.) decide upon the look and functioning of something, with a specific intention in mind; create a plan or convention for the construction of an object, system, or measureable human interaction – often requiring consideration of aesthetic, functional, economic, and sociopolitical dimensions of both product and process. 2) (n.) something which is designed
- **empathy**: (n.) the capacity to understand or feel what a person is experiencing from within the other person's frame of reference
- **ergonomics**: (n.) an applied science concerned with designing and arranging things people use so that the people and things interact most efficiently, comfortably, and safely
- **ethics**: (n.) the rules of conduct recognized in respect to a particular class of human actions or a particular group, culture, etc.
- **exemplar**: (n.) a typical example or instance
- **facilitate**: (v.) assist the progress of
- **frivolous**: (adj.) having little or no perceived value beyond something's own context; self-contained and non-contributive to a society of people
- **hazard**: (n.) unforeseen danger or threat
- **meritocracy**: (n.) a hierarchical system in which people advance according to their ability and talent
- **non-normative**: (adj.) not based on a social group's standard for acceptable patterns of behavior; not based on a pattern that is regarded as typical of something
- **omnidisciplinary**: (adj.) inclusive of or pertaining to all disciplines and branches of knowledge
- **philosophy**: (n.) a system of rational principles which guides a person on how to think or act; the critical study of the basic principles and concepts of a particular branch of knowledge, especially with a view to improving or reconstituting them

- **play**: 1) (n.) active frivolity, or behaviors which closely resemble it. 2) (v.) act frivolously
- **player**: (n.) someone engaged in the act of play (replaces unnecessarily specific subject: 'children')
- **playground**: (n.) an area or apparatus designated for the purpose of play, especially child's play
- **playscape**: (n.) an environment thoughtfully and purposefully designed for visitors or inhabitants to play in, often outdoors but not exclusively, which integrates its contexts (environmental, cultural, aesthetic, etc.) and communities (socio-economically, demographically, etc.)
- **playwork**: (n.) the theory and practice of creating and maintaining spaces for children to play; the job of ensuring that the broadest possible range of play types can be engaged in or accessed by players, and observing and analyzing the play that is happening so as to intervene or make changes only when necessary
- **provision**: (v.) supply with opportunities to engage in an act; supply with required resources for engagement in an act
- **risk**: (n.) a predictable and anticipated danger, assumed as a personal challenge
- **semasiological**: (adj.) relating to the study of a word's meaning
- **temporality**: (n.) the state of existing within or having some relationship with time
- **theory**: (n.) a system of ideas intended to explain something, which is testable and supported by evidence

Preface

The Genesis of a Playful Worldview

They were my parents who taught me how to see. They taught me that the growing things have names, and in learning them I would have access to their secrets and gifts. They taught me that when I had questions without answers I could reason my way to good ones. No surprise that I clung to science and the natural world, to naming trees and learning landscapes. The real surprise is how we made play of some serious business. Science is meticulous, methodical, complex, and infamously unforgiving of belief or myth – which may run counter to what many of us understand play to be. Superficially cold and unfeeling, it is not hard to see the dark side of science. Looking deeper, I think you'll find true science to be an utterly human discipline, driven by curiosity, passion, love, and caring. It is an attempt to understand the universe on its own terms, a suppression of ego and expectation. It is marveling at the unimaginable; it is playful, repetitive tinkering; it is dreaming and storytelling; it is hands-on, dirty, messy fun. My parents understood the essence of good science and called it by its right name: play. Our journey through history, mysteries, muddy earth, swollen creeks, mossy trees, craggy mountains, and winding country roads began with the promise of play. There was the world and we would wonder at it in our own way – as a companion in our playful indulgence.

Much play is made of mimicking society and the people closest to us – and some twenty years or more later, I find myself revisiting those familiar plays and remembering how much they mean to me. We don't forget the fun we've had – we integrate it into our being. And this may be the most valuable lesson yet, one that has taken me quite some time to learn: play becomes who we are. It was a professor of mine, B.T. Oles, who finally reunited me with this knowledge. He implored us to think deeply about our obsessions, the passions that drive us to action, and channel them into our work. It didn't take me long to arrive at play as my greatest obsession, but I had little idea where that would take me.

Figure 1. The start of a play-centric journey (photographing for my first playground project)

The Road to Play Studies

For the past two and a half years I have been pouring over playgrounds, camera at the ready, revisiting all the familiar ludic environments I had grown up with, and discovering others I hadn't. I traveled across the country and internationally to play in notable playscapes. I began compiling all the literature I could find on playgrounds, playscapes, their history and design. I looked to it for guidance in my own designs until I spotted an unexpected trend emerging. In all that I had read on the subject of playgrounds, I had not seen adequate care given to their most essential element: the player. There is ample fluff about how play develops this or that, but what of our inalienable right to discover the richness of life available in abundance all around? For me, play takes on near spiritual significance of a deeply philosophical kind, bridging life and meaning. If our biological destiny is merely reproduction, what of the rest of our time? Our achievements fade, legacies die out, and most of who we are is forgotten. Cast in this light, of what value are our goals and plans, really? Like will-o'-the-wisps, they goad us on into mires of dissatisfaction, leading us astray from any personal sense of fulfillment. Of paramount importance, I think, is to enjoy the process of living, rather than to look forward to its end and outcomes. Unfortunately, this is advice we so rarely follow; except, of course, when we are at play.

Play releases us from the burdens of societal expectation and judgment, and is one of the only aspects of life through which we may fully explore our own free agency. I found no mention of this in design dialectics or scientific literature. I did find it, however, in the tradition of adventure play.

Adventure play is a play typology which positions children as designers, builders, and directors of their own space. Consequently, it almost never relies on professionally designed play areas, leading me to question the role of design in play. I wondered if play might be better off without it. I was bothered by this line of thinking because my intuition instructed me otherwise, that design could enhance play and vice versa. I began to attend adventure play conferences and made acquaintance and lasting friendships with a number of 'playworkers,' adventure play facilitators. Some were interested in my studies and curious about what a professional designer might glean from the adventure play tradition; others were skeptical about designer involvement.

Figure 2. Adventure playground in Ithaca, NY on International Mud Day

What I came away with was a better understanding of how playworkers provision play: by giving control of it to the players. Playworkers provide players with four basic play ingredients: time, space,

materials, and permission – no restrictions, only possibilities. This made perfect sense to me. I clearly saw that there could be no substitute for human facilitators of play, but I still suspected that design could improve everyone's experience of the playscape – I only needed to work out how this would be done. And so this thesis endeavors to answer the question, "What, if any, is the role of the designer in facilitating play?"

A Methodology and Outline

First, I sought a definition of play, in line with my own understanding of it, to explain exactly what designers for play ought to be facilitating. This proved significantly more difficult than I had anticipated. I began an extensive literature search, trying to find information on free, unstructured play, play theory, play science, and playwork, only to discover that there was little agreement on the matter of defining play. Rather haphazardly, I stumbled on the definition I was after by digging through academic resources online and reviewing their 'cited by' tables (lists of papers that cite a given article). A Duke University dissertation by Nathaniel Gindele (2015) succinctly describes play as active frivolity, which is the subject matter of Chapter 1.

Next, I wanted to find a comprehensive theory that could incorporate the play studies of all disciplines. Joe Frost outlined such a theory in his work *Play and Playscapes* (1992), but it fell short in one critical dimension: defining play. Rather serendipitously, Gindele's dissertation was an exquisite supplement to Frost's theory. The synthesis of these two frameworks I call Omnidisciplinary Play Theory. I devote Chapter 2 to tracing the evolution of historical play theories into this new one.

Theory alone does not address the philosophical perspective that play is fundamental to a complete human experience, and so I explore precedents for the right to play in Chapter 3. What these precedents lack, though, is a clear definition of play, which is reflected in public policy. I advocate for an ethical approach to design which, like adventure play, respects the agency of prospective users as designers, builders, and directors of their own space. I found that the ethical obligation of provisioning such play is beset with systemic, societal challenges, not least of which being meritocratic doctrine, the subject of Chapter 4. In it I argue that meritocracies are antithetical to play. Chapter 5 describes how external goals of value such as education are also antithetical to play. However, it stipulates that once primary agendas of players are met, external agendas may be covertly introduced as long as said agendas are not in conflict.

I then felt I needed to demonstrate the practical applicability of the theoretical, ethical, and philosophical perspectives covered in previous chapters by translating them into actionable design guidelines in Chapter 6. These guidelines reflect my personal interpretation of Omnidisciplinary Play Theory, tempered with an ethical approach to design as well as my own play philosophy, and are intended to be general rather than prescriptive. The thesis concludes with a discussion of the roles I believe designers have in facilitating play: understanding it deeply; engaging in it; practicing empathy; respecting the agency of players; advocating for the right to play; provisioning time, space, materials, and permission so as to allow for the widest possible variety of play; designing exemplary playscapes; consulting over the lifetime of the project; and learning from its evolution.

I did not arrive at these conclusions suddenly, nor did I have them from the outset of this thesis. My process of arriving at them has been evolving over years of focused study, design projects, conversations, classes, conferences, seminars, travel, and observation driven by a passion for play developed over a lifetime of experience. In addition to those already mentioned, I owe a debt of gratitude to my advisor Peter Trowbridge, who has encouraged me on every step of this journey. His sagely advice and unwavering encouragement are what made the daunting task of writing this thesis possible. I also wish to thank Dr. Lorraine Maxwell, whose passion for children, academic rigor, and background in play studies make a most formidable combination in advancing the field of environmental psychology. She has helped me to keep the 'science' in conscience for the purposes of this thesis, and is the inspiration behind my appendix essay 'Advancing Our Understanding of Adult Play.' To all my friends and colleagues who have cheered me on and helped to shape this thesis, Rusty Keeler, Alex Cote, Erin Davis, Morgan Leichter-Saxby, Suzanna Law, Josh Cerra, Brian Davis, Maria Goula, Genki Takahashi, Ryosuke Takahashi, Wisler Charles, Frank Cernik, Caitlin McKenna, and all the wonderful people at Ithaca Children's Garden, Design Connect, Savannah Playground Committee, and the Community Design Collaborative in Philadelphia: thank you! May you all play often and freely. May you keep playing, and continue to discover the richness of life we are all entitled to.

Figure 3. Keep playing! (Rusty Keeler and me at American Adventure Play Association)

Chapter 1 - Defining Play

As broad in scope and multifaceted as any word in the English language, *play*, like love, takes on unique meaning according to its owner. Such inherent adaptability predisposes play to gestations of theory in disciplines spanning the academy, resulting in a body of knowledge caught in tension between severe fragmentation and robust diversity. Joe Frost, the first theorist credited with developing an *Integrated Theory of Play*, finds "it is still not possible to arrive at a simple, clear, scientific definition of play," (J. L. Frost, 1992, p. 21), though others may have succeeded since, as will be discussed in this chapter.

It would not do to proceed through the entirety of a thesis on designing play environments without first addressing the elephant in the room: "What is play?" This is not a new question, as we will soon discover, and has been puzzling prominent minds for millennia. Philosophers may seek to define play simply because it is important to humans. "Play is a generous and underutilized source of meaning and fulfillment. It enriches our lives, plays a role in our ethical lives, and in our moral development. Having an account of play is crucial to our understanding of what it is that is doing all of these things," (Gindele, 2015, p. 172). Scientists may seek to define play for other reasons: to develop objective criteria on which to test hypotheses and better comprehend a pervasive phenomenon, its causes and effects. Even still there are disagreements internal to science and to philosophy about what play is, in part, I think, due to the many forms it takes. A broader, more fundamental definition is needed to bridge divides within and between disciplines, which Frost does not provide. But to put the reader at ease, I believe we are finally arriving at a definitive answer to the semasiological question: "What is play?" In this chapter I will illuminate what I see as the very vanguard of thought on defining play, and in the next chapter I will discuss how this novel definition helps to bridge disciplinary divides.

Nathaniel Gindele offers a compelling and novel definition of play by means of *exemplar theory* in which conceptual judgments, such as "what is play," are based on relative similarity to previously categorized exemplars. I believe this to be a huge advance in our way of thinking about play because it explicitly acknowledges play as a conceptual judgment, a product of the complexities of the mind rather than a categorical biophysical phenomenon. This should make sense considering that without the mind, play does not exist. It is deeply psychological, yet perfectly palpable, and so we have a word for it which we attach to our conception of typical play exemplars. Here is Gindele's nutshell version of the definition:

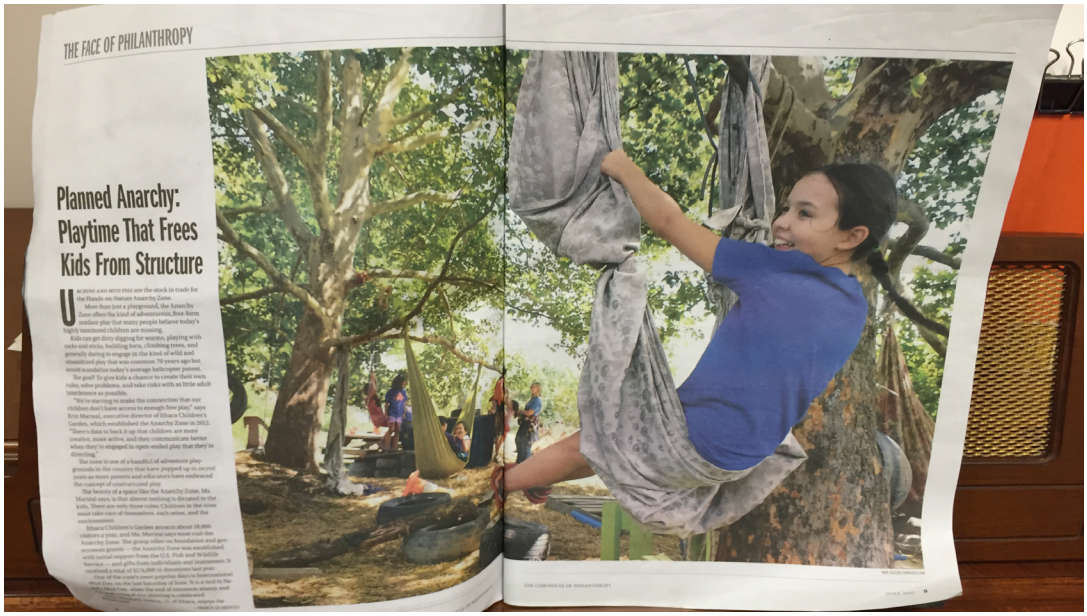
Play is active and frivolous. More specifically, all typical play activity exemplars require that one exhibit a degree of active, rather than passive, engagement and require that one either have (a) no goals, (b) valueless goals, or (c) inert means, means that cannot bring about valuable goals. If an activity requires active engagement and requires that one has no goals, valueless goals or inert means, then that activity is a typical exemplar of play, and other activities may be considered play if they sufficiently resemble it. (Gindele, 2015, p. 176)

Figure 4. Active frivolity at the Strong National Museum of Play in Rochester, NY

To clarify a few points, Gindele states that play minimally requires "active engagement," meaning a player must be manipulating something, bringing about changes in their environment, person or imagination. After meeting this criterion, "frivolousness" is the only other requirement, which Gindele explains in greater detail, and which I interpret as "self-contained." Any of his three criteria for frivolousness are enough to qualify an activity as play, and all have to do with a perceived lack of value outside of the context of the activity – inert means is just another way of saying that one's permitted means of action produces little or no perceived value beyond the activity itself. Gindele bases these criteria on three well-established Piagetian dimensions of play: (1) rudimentary locomotor and object

play, (i.e. Functional Play) – no goals; (2) games (i.e. Games with Rules) – valueless goals; and (3) pretend play (i.e. Symbolic Play) – inert means.

Gindele's definition is, to date, the most congruous with my own understanding of the phenomenon of play, and one which I believe will be instrumental for decades to come. In the context of this thesis it also illustrates a point I will reprise throughout: adults tend to kill child's play dead. When we seek to supplement play with goals of value outside its own context, it immediately ceases to be play. Tell a playful child, for instance, that they should play on the jungle gym to become stronger, and their entire experience of the jungle gym becomes something of an exercise routine: I should use this; it will make me stronger. Nothing deflates play faster than the realization that what the player is doing has some greater purpose – it doesn't, by definition. Now, this doesn't mean there are no valuable correlates of play, as numerous studies confirm the contrary, but these correlates are not drivers of or motivations for the act. It's exactly when we identify these correlates and force them on people through designs and schemes that the essence of play eludes us. It is vitally important to preserve the feeling that play is player controlled. We must respect players' free agency or risk compromising their fulfillment of a complete human experience (see chapter 3 'The Right to Play'). If play is allowed to assume too many external agendas, we risk players developing externalized loci of control in perhaps the only aspect of life they have complete control over! This is an unacceptable devaluation of their agency.


THE FACE OF PHILANTHROPY

Planned Anarchy: Playtime That Frees Kids From Structure

Figure 5. Planned Anarchy: Playtime that Frees Kids from Structure (Anarchy Zone, Ithaca, NY)

This definition further illuminates another important dimension of contemporary conceptions of play: value judgments. Gindele wisely remarks on the nature of the question "What is play?" that "We already know what play is. Our intuitive concept of play is sufficient to make all of the judgments necessary," (Ibid., p.5). We are perfectly capable of identifying an activity as play, "knowing it when we see it." This is a rapid conceptual judgment driven by subconscious processes which Gindele might suggest are based on an individual's understanding of value. But which value system is an observer relying on to make this rapid judgment? An individual may still see value in play by first identifying such activity as "generally perceived" to be frivolous, having the requisite characteristics of play exemplars, but containing latent, "generally unperceived" value.

On the contrary, an individual whose value systems are predominantly utilitarian or direct may have some disdain for play, as any value inherent in such activity is latent, correlational (not causal), and difficult to quantify. This brings us to our present conundrum with studying the value of play. Historically an act seen as valueless, puerile, frivolous, and subject to disregard, play is now well-regarded across many disciplines as a means to sundry valuable ends. What remains important to the players, and the integrity of their play experience, however, is the perception that their activity is frivolous, under the radar, something self-contained that only the players value because they are parcel to it. It is something others ignore. As a general (not universal) rule, players should remain ignorant, or at least feign ignorance, of the surveillance of normative utilitarian audiences.

This may be why adults find it more difficult to play as freely as they did when they were children. The more knowledgeable an individual becomes, the harder it is to feign ignorance of utilitarian surveillance. When adults play, and most do, it is often in private spaces free of judgmental audiences or in public spaces with children or where a set of pre-scripted types of adult play are encouraged or accepted – such as at a beach, club, ski resort, or other leisure destination. It is not uncommon for an adult to retrospectively wonder at why they succumbed to some playful indulgence in a public setting. On reflection, said adult may choose never to repeat such indulgences, as doing so may lead peers and elders to call into question attributes of their character (maturity, practicality, dependability, etc.). Adult frivolity may be valued among generations of people raised within the context of a leisure culture, yet in other contexts it is often subject to social stigma.

To value frivolity is both paradoxical and play's single best defense against those who would seek to stifle it, which "educational" programs throughout human history have been wont to do. It is little wonder that scientists have overwhelmingly sought to study its benefits rather than prove its

inanity. It is an act that is consistently under attack by those who disdain its lack of greater value and its chaotic, unruly tendencies. Defending play, therefore, requires it be shown to have greater significance, latent value educed through complex psychosocial mechanisms, else it may see widespread prohibition. The good news for those of us who already value play is that most studies support our intuition; play is incredibly healthy and meaningful. A note of caution, however, is that our valuation of play has the unfortunate tendency to corrupt the essence of its frivolity. The benefits of play serve best as an aegis against opposing forces, rather than its driving purpose.

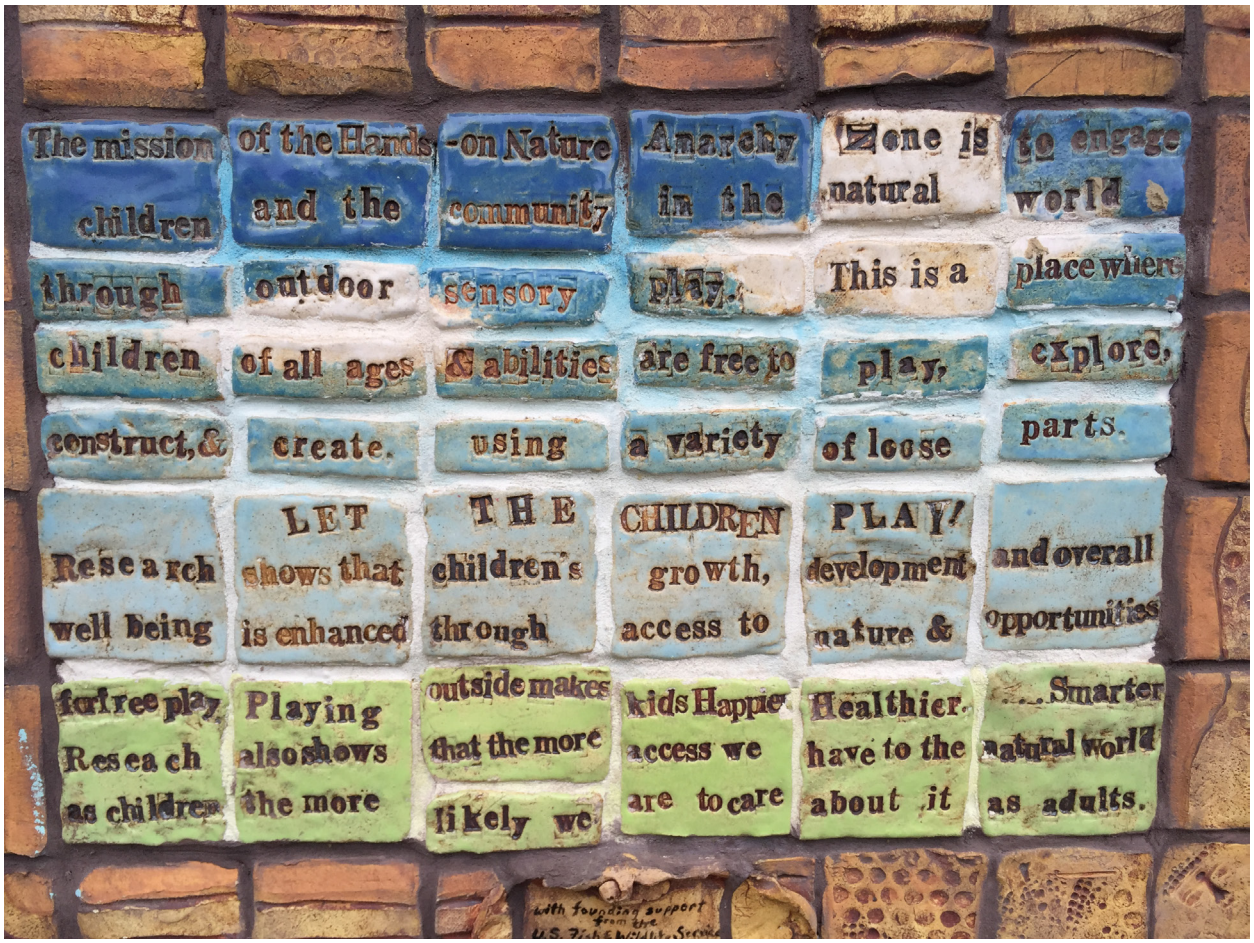


Figure 6. A note to adults in defense of free play (Anarchy Zone, Ithaca, NY)

Chapter 2 - Play Theories

Situating oneself in the spectrum of play theories is not as difficult as one might think. They are numerous, but many older theories amount to little more than folk wisdom containing some faithfully observed elements which are not entirely defensible on their own. To name them individually almost lends them too much credence as stand-alone theories, yet they persist even today and deserve to be addressed. Ultimately though, Frost's move toward integrating play theories into a single unity is not so radical. It should be stated that elements of many play theories are both observable and reconcilable. That being said, one need only know that Frost's Integrated Theory of Play has remained the cutting edge of play theory for over 20 years, and merits some contemporary revision. This will be covered in greater depth at the end of this chapter.

2.1 - Five False Pillars of Play Theory

Theories of play elaborated prior to the advent of contemporary psychology are by most accounts disproven. They do not adequately define play or explain its dimensions; they do not explain the observational data they were based on; and they are not reliably predictive. In this section, five such theories will be discussed: Platonic, surplus energy, recapitulation, instinct-practice, and relaxation.

Among the earliest theories to come out of the Eurocentric world is Plato's view that children's play is instructional and that "one should see games as a means of directing children's tastes and inclinations to the role they will fulfill as adults," (D'Angour, 2013, p. 300). He believed play to be of utmost importance, but for very different reasons than we do today. It was Plato's concern that the introduction of novelties in play would instruct children to seek new laws and social institutions as adults, disrupting the foundations of Greek society. It is fun to imagine that he may have been right, and that the transformation of ancient Greek society was due to the invention of curiosities for children. Plato further recommended children's play be regulated to maintain social stability, inferring that play could be given utilitarian purpose via state control. Despite making Plato appear alarmingly totalitarian, this theory may contain a hint of objective insight behind its rather contemptuous façade: It suggests that a child may be conditioned and develop a personality or inclinations through the act of play, which happens to be a tenet of contemporary Freudian and Piagetian theories. Though I am strongly opposed to adult control of children's play, I acknowledge Plato's early inference that play has a role in human development.

Figure 7. Spun Chair – a playful novelty item – what would Plato think?

Some two millennia later Friedrich Schiller birthed the 'surplus energy theory,' which posits that play is the burning off of excess energy. The kind and source of said energy is not expounded upon. How do we define and measure an energy surplus? If the surplus is relative, what is it relative to? How does this theory distinguish play from exercise? Do people stop playing when they no longer have energy in "excess?" No. One may readily see that this hypothesis raises more questions than it answers. It remains unsubstantiated conjecture, addressing play dismissively and underlining the theorists' position that it is unimportant. I regard this theory in the manner it regards play, but believe it rightly points out a requisite of play: energy. This is in keeping with Gindele's suggestion that play involves "active engagement," which would require concerted mental effort and/or the conversion of metabolic energy on the player's part.

Another early, popular hypothesis is the 'recapitulation theory,' one among many ascientific assertions rooted in a corrupted Darwinian logic, suggesting that children at play mirror the stages of *Homo sapiens sapiens'* behavioral evolution. As one doctor put it, "It appears to be not only true that the body rehearses the life of the race; it appears to be true that the mind must do so also, and that the plays of children are the rehearsal of the activities of the race during forgotten ages—not necessarily the

selfsame activities, but activities involving the same bodily and mental qualities," (Gulick, 1898, p. 803). We have no way of testing this theory, and have identified no mechanisms or means by which the human brain would be able to recapitulate a mysteriously stored history of our behavioral evolution. G. Stanley Hall (1906) is credited with formalizing this theory, suggesting a number of linkages between types of play and their ancestral origins. Though these linkages may have seemed reasonable at the time, the recapitulation theory no longer holds. Contemporary children at play are known to incorporate futuristic and fictional elements into their activities which have no obvious connection to the evolution of our ancestors. Though children's play cannot be shown to mirror the stages of our behavioral evolution per se, children do mirror what they have experienced and act according to their physiology and interests. Climbing trees may be less a mirroring of our ape-like ancestors' behavior, and more a reflection of our vestigial ability to do so. Pretending sticks are lightsabers and laser guns suggests that a child mimics certain experiences, real and virtual, forging them into new imaginary versions of reality and demonstrating a rare mental ability in the animal kingdom. Play's link to our behavioral evolution is not a direct mirroring of ancestral behaviors, but rather a reflection of the physiological and cognitive outcomes of our species' evolution.

Figure 8. Sisters hit the open road on their motorcycle – contemporary, not evolutionary, play

Another famous play theory to arise out of Darwinian logic is Karl Groos' 'Instinct-Practice Theory,' (1898, 1901). This theory combined earlier Darwinian ideas about instinctually-driven play behaviors with the Platonic intuition that the act of play conditions young animals for their adult lives. It asserts that while animals inherit instinctual behaviors, practice (through play) is required to develop them. In opposition to Hall's belief that infants mirror their species' behavioral evolution, Groos' believed that infants experimentally model their behaviors on those of others as a means of training specific instinctual skills. This is problematic in that imitating others does not guarantee advancement in any specific skillset, nor is it purely instinctual. As Groos himself remarks, imitation is creation and production as much as it is reproduction (Groos, 1901, p. 290). This mimicry, therefore, is not merely preparation for adulthood and its requisite skills, but an experiment, done without express purpose, which generally leads to greater control of the body, mind, and environment. If a child's behavioral models were to truly influence career choices as Groos suggests (1901, p. 306), this theory would have proven more predictive than it actually is. What is more likely is that a child's behavioral models influence the development of an identity, personality, and proclivities. While this theory does not hold water under contemporary review, it does call attention to play's importance in human development.

Figure 9. Mimicking skateboarders, an experiment leading to greater control

Finally, among the incomplete older theories is G.T.W. Patrick's Relaxation Theory, which positions play as a means to relieve mental fatigue (1916). Patrick believed that the demands of the contemporary workplace (circa 1916) were mentally taxing well beyond work demands of older societies,

which relied more on large muscle groups and physical exertion. He believed nervous disorders to be more common among contemporary working populations as a result, and the need for play particularly pertinent for adults. While this theory fails to adequately state the relevance of play for children, it brings up an interesting aspect of play that had yet to be explored: its ability to evoke a sense of relief in players. The validity of this assertion was untested and the mechanism by which relief occurs was unexplained at the time, though some research has been done since regarding the effects of play on perceived and measured stress levels. Though results are complicated by many factors, research thus far points to playfulness and physical exertion reducing perceived stress (Hegberg & Tone, 2015; Magnuson & Barnett, 2013). Likewise, other forms of play (e.g. competitive, high-intensity video games) may temporarily increase stress hormones, indicating that play does not always have an immediately relaxing effect, but have also been shown to lead to greater mood management and depression reduction (Ferguson & Rueda, 2010).

Figure 10. Climbing a rock wall can be stressful, even scary, yet still fun and playful

All of these theories, though misguiding on their own, contain momentary insights into play which are observable and reconcilable. They should not be accepted in totality as factual, but each has

helped make incremental progress toward a critical reexamination and societal valuation of play. Plato acknowledged some of the instructional capacities of play, Schiller acknowledged its active disposition, Hall stimulated interest in children's behavior and suggested it might be linked to aspects of our evolution, Groos highlighted the importance of play in human development, and Patrick notes that play can sometimes be pursued as a relief from mental taxation.

2.2 - An Incomplete Integrated Theory

The five "theories" presented above are neither particularly predictive nor backed by substantial evidence. Some are not even testable. As such, they fail as theories. Those which follow, however, present more sufficient hypotheses of play which can be evaluated and built upon. They tend to be well-reasoned, with examples to corroborate their assertions, but are also imperfect. Their main failures often lie in the limit of their scope, tending to address aspects of play rather than play in its most general sense. By the end of this chapter on play theory I will propose a modification of Frost's Integrated Theory of Play to include Gindele's definition, with the aim of enabling all disciplines concerned with the phenomenon to engage with it on equal terms and from a common understanding. The Integrated Theory of Play is based on two contemporary psychological theories: the psychoanalytical and cognitive-developmental (Piagetian).

2.2 - Part I: The Psychoanalytical Tradition

The psychoanalytical perspective was set forth by Sigmund Freud, Robert Wälder and Erik Erikson in the first half of the 20th century. Freud believed play to be motivated by wish-fulfillment, what he called the "pleasure principle," which could sometimes manifest as a desire to reduce anxiety – a play typology known as cathartic play (Freud, 1955). Wälder, unsatisfied with Freud's cathartic play hypothesis, reasoned that the observed repetition of play activities associated with unpleasant experiences is due to an inborn repetition compulsion (Wälder, 1933). This compulsion allows a child to master unpleasant experiences by assimilating them gradually through repetition, rather than all at once. Freud and Wälder also believed fantasy to be an integral component of play for young and old alike, noting some variation in the construction of fantasies as one's mind develops and ages. Children tend to weave make-believe around tangible objects, while adults are said to engage in pure fantasy, wholly separate from reality. This led them to what I believe is a false perspective: that the opposite of play is reality. In Freud's own words, "The opposite of play is not what is serious but what is real," (Freud, 2010, p. 1921).

While engaging with fantasies may be a means to play, play is not merely fantasy. A child building small structures out of blocks, climbing a tree, or spinning a wheel does not necessarily connect these acts to a fantastic universe. They may just as likely be engaging with the reality they are a part of by means that suit or please them. Skateboarders, myself among them, are known to play enthusiastically without dreaming up fantasies – it is enough simply to skate. And when throwing animal play into the mix, unable to discern whether animals are imagining fantasies of their own, one sees that Freud's proposition does not hold. Not only does fantasy fail to define play, Freud's assertion that play's opposite is "not what is serious," is also misleading. If play is frivolous, it means people see the act as generally lacking value or purpose outside of the act itself – it is not serious business weighed against the necessities of survival or civilization, and is known to be a behavior that is suppressed in stressful and threatening environments. Players may certainly take their play seriously, but society (and the individual, for that matter) does not absolutely require it for daily operation. Societal valuation of play is therefore indirect. Play does not serve society directly because it is generally non-contributive, but may be seen as societally valuable in as far as it strengthens the individuals and groups engaged in it. Those who are permitted the freedom to play may develop more wholly and pro-socially, thereby contributing more valuably to society as they age. Such is our current play valuation paradigm, and why I think Freud's definition is inaccurate.

Figure 11. Not all play is fantasy, but it is frivolous – this skater is not serving society by skating

Erikson, alluding to and expanding on Freud's observed differences between the fantasies of adults and children, suggested that play is part of a developmental progression with discrete, categorical

stages associated with one's level of environmental mastery (Erikson, 1950). The three stages he defines are the autocosmic (body-centered), the microsphere (including toys and possessions), and the macrosphere (shared and social). Erikson accurately points out that play behaviors change over the course of one's life and may be associated with development or mastery (a position similar to Groos'). I disagree with Erikson on his point that an adult at play "slips sideward," or merely recreates while a child advances to new stages of mastery. Behaviors, including play behaviors, change throughout a person's lifespan, discounting the commonly-held belief that adults are "fully developed," and that adult play is "re-creation" rather than further mastery. I believe Erikson had no basis to suggest an adult was not also developing or still in the midst of mastering their environment. He, like many, succumbed to that too-often unchallenged cultural doctrine which positions adulthood as the developmental pinnacle of one's existence. One need only look to a few cultural anecdotes to understand such an assumption is false. This is explored in greater detail in Appendix A, 'Advancing Our Understanding of Adult Play.'

Figure 12. Adults climbing and swinging with teens in Montreal, QC

While there is an apparent lull in the rate of one's behavioral development after one's twenties, especially when compared to the frenetic changes of adolescence, mental and physiological changes over the lifespan are undeniable. Attending college, starting families, embarking on new careers, going through menopause, experiencing a mid-life crisis, children moving away, living through the deaths of friends and family members, going gray, retiring, taking up hobbies, travelling, reading, seeking new experiences, and learning to make the most of the time one has left are all obvious signs that

fundamental shifts occur in the way a person lives, thinks, and behaves. How one chooses to act frivolously is undoubtedly affected by these shifts. Play is motivated by all manner of processes, takes many forms, and has unique qualities and significance according to the individual and where said individual is in their personal developmental progression. I think Erikson would agree. Though his ideas about motivations for play have been criticized as being too subjective, I would levy the counterpoint that our very definition and understanding of play is predicated on subjectivity. Scientists and researchers encounter problems with this as they attempt to objectify play and discover what makes it a discrete phenomenon. It is not such a thing. Play is a word, an idea, a loosely defined conceptual judgment about 'frivolity' that encompasses a great many facets of our biological existence.

2.2 - Part II: The Piagetian Tradition

In the cognitive-developmental framework pioneered by Jean Piaget, play is described as follows: "In play the primary object is to mold reality to the whim of the cognizer, in other words, to assimilate reality to various schemas with little concern for precise accommodation to that reality," (Flavell, 1963, p. 65). Piaget's theory of development is based on the biological model of environment-organism interchange, which emphasizes the bidirectional nature of interactions. In the case of play, Piaget is suggesting that the counteraction, being acted upon by the environment, is of little importance to the player, who is primarily concerned with adapting the environment to the self. Piaget contrasts play with imitation, positing that the imitator is more concerned with accommodating their environment, adapting according to its instruction.

Here Piaget stumbles into the same problematic categorization as Freud's definition of play. Each attributes play in general terms to activities involving fantasy, somehow distinct from "reality." As previously stated (in the examples of skateboarding, tree climbing, wheel-spinning, etc.), activities need not involve fantasy to be considered play. While Piaget (1962) describes certain modes of play (i.e. functional play, symbolic play, and games with rules) and how they correspond to various cognitive stages of development (sensorimotor period: 0-2 years; pre-operational subperiod: 2-7 years; and concrete operations subperiod: 11-15 years; respectively), his definition of play is narrow in scope and therefore inapplicable in studies that don't prescribe to or utilize this theory. Identifying aspects of play helps researchers more clearly define the scope of their study, but understanding play holistically requires a significantly broader view. This is where Joe Frost's Integrated Theory of Play comes in.

> *"Contemporary theorists recognize that play is a complex class of behaviors, yet their creative energies have been directed to explaining play essentially within the framework of respective*

> *disciplines or interests. Researchers have followed their lead, collecting and analyzing data on explicit categories of play or on patterns of play behavior and effects of play, relevant to specific disciplines rather than across disciplines. As a result, explanations and mountains of data are available, but critical analysis that would explain interrelationships across academic disciplines and corresponding dimensions of play needs to be conducted"* (J. L. Frost, 1992, pp. 12-13).

2.2 - Part III: Amending Frost

Joe Frost proposes unifying our understanding of play by explaining it "from five interrelated perspectives: characteristics, motives, behaviors, developmental correlates, and content" (J. L. Frost, 1992, p. 13). However, he proceeds without a concise definition of play, instead citing Erikson's idea that play has a unique, personal meaning to each individual. While poetic, this definition is inadequate for theory-building. Here Gindele supplements Frost exquisitely. The purpose of Frost's Integrated Theory is to bridge existing theory across a wide range of disciplines, as Gindele seeks to do with his definition of play, coming from the perspective that "science and philosophy are continuous with one another," and acknowledging the "imperative that we set aside institutional divides" (Gindele, 2015, p. 5). Refer to the section 'Defining Play' for a more focused explanation of this definition, but for the sake of clarity regarding amendments to Frost's theory, it bears repeating here.

Gindele's definition of play is by far the most holistic and general I have found. It is both logically constructed and defensible, and therefore excels where many former definitions have failed – generally due to a reliance on personal philosophies and lack of testing. In the dissertation titled *A Naturalistic Philosophy of Play*, Gindele devotes Chapter 5 to answering the question 'What is Play?' He states, "Most seem to agree that play is autotelic, pursued for its own sake, or at least don't disagree that it is. However, it can rather easily be shown that autotelicity is neither necessary nor sufficient for play," (Ibid., p. 156). Without getting too detailed into the rationale for this, consider two of Gindele's proofs: "Play pursued for the sake of pleasure or for curing boredom is not autotelic," as these are psychological benefits its players seek (Ibid., p. 159), and "from the evolutionary perspective, play is not for its own sake, it's for the sake of the benefits it provides the individual," (Ibid., p. 160). This is the kind of logical testing which other attempts at definitions have lacked from the time of the eldest play theories, and precisely why I believe Gindele's definition is, to date, the most superior. Should the reader need more convincing, I recommend reading the full dissertation, particularly Chapter 5. That said, aspects of Gindele's theory are bound to change as scientists discover more about how humans make conceptual categorizations. Gindele relies somewhat on exemplar theory, which is not without contestants

(Feldman, 2003; Rouder & Ratcliff, 2006; D. J. Smith & Minda, 2000), and is likely to evolve into more sophisticated theories about how humans categorize concepts. I think the rationale for Gindele's assertion still stands, though, and that is that humans generally rely on rapid perceptual judgments to categorize activities as play, a testable hypothesis (Ghose & Harrison, 2009). An activity's close resemblance to preconceived notions of play is sufficient for observers to categorize it as being such.

Figure 13. What are they doing? How long did it take you to categorize this activity?

To summarize, this comprehensive definition of play is composed of three parts: two hallmarks and one condition. The hallmarks are active engagement and frivolity, and the condition is that an activity may be considered play if it closely resembles its typical exemplars (exemplar theory). The first of the hallmarks is easiest to accept, that play requires action, and is not passive. However, frivolity is a judgment, as in, society would judge this activity as being non-contributive, lacking specific goals or value outside of its own context. My initial reaction to reading that frivolity is a hallmark of play was to contest the notion. I didn't believe that having no goals or goals without value was sufficient for all cases of play. As I read on, I found Gindele in agreement with me, citing exemplar theory to accommodate such cases. "One might play chess with the goal of becoming better at reasoning, one can play house to

better know one's neighbors. These are perfectly good instances of play. They are just not typical exemplars of play," (Ibid., p.185). Gindele suggests that for one to be engaged in a typical exemplar of play, one's goals must be of no *objective* value (neither intrinsically nor instrumentally) and also of no *subjective* value to the player (personally valued). This logic of comparing play activities to typical exemplars is the safety net of the definition and a reasonable conclusion. A person will judge whether or not an activity is play within seconds of observation, without any explicit knowledge of play theory. Such judgment is accomplished through rapid comparison to similar activities the observer has experienced (typical play exemplars) and is more than sufficient for categorization; though I suspect that any person without prior conceptions of play would be extremely confused by such activities.

Figure 14. Playing games to get better at teamwork and strategy still qualifies as play

2.3 - Omnidisciplinary Play Theory

2.3 - Part I: Exemplars

This, finally, is the generalized definition for which Frost's Integrated Theory of Play has longed. It is broad enough in conceptualization to encompass all forms of play across disciplinary divides, and

serves as a replacement for Frost's problematic explanation of play by its characteristics. Play, then, can be explained by similarity to typical exemplars of active frivolity rather than by distinctive characteristics which set it apart from other activities. This is something Frost also had problems with, as many of play's cited characteristics are not exclusive to play. Implications for practice in explaining play by similarity to its typical exemplars are much the same as they were in Frost's section on 'Characteristics of Play'; one may assess whether an activity is or is not play, and thereby strike the desired balance between such activities and others. One may also assess the integrity of play activities and determine whether they sufficiently embody active frivolity. One may then easily substitute typical play exemplars for Frost's notion of "pure play," as in the following sentiment: "Knowledge of '[typical play exemplars]' helps to determine whether the environment is properly equipped and arranged; whether adult intervention is needed; whether individual and group play needs are being met" (J. L. Frost, 1992, p. 15).

Figure 15. This scene embodies many typical play exemplars (fantasy, role play, dress up, chess)

With Frost's Integrated Theory of Play now properly amended with an adequate and comprehensive definition, it attains new vigor as a contemporary theory. It is no longer merely integrated, but an Omnidisciplinary Play Theory. Frost's remaining perspectives by which to analyze play (apart from its typical exemplars) are its motives, behaviors, content, and developmental correlates.

2.3 - Part II: Motives

Based on Frost's understanding, motives for play can be divided into three primary categories: power, therapeutic, and acculturation. Common power motives include possession, rivalry, and recognition. Therapeutic motives include pleasure, arousal, and relaxation. Acculturation motives include mastery, identity, and adaptation.

Figure 16. Three children exerting control over a skateboard; the most stubborn wins

At this point it may be necessary to stress the importance of frivolity in play. Power motives may lead to certain types of play behaviors, but for an activity to continue to feel like play – and not cross lines into a bitter feud – the stakes must be low, and therefore representative of internal goals with little or no external values. Therapeutic motives have no immediate value beyond the individual experiencing the pleasure, arousal or relaxation; even though one may experience positive indirect effects, these are not the goal of the player. Acculturation motives for play are either subconscious, perhaps instinctually driven, or of little external value. If one is explicitly attempting to develop mastery, identity, or adaptation, one is probably training, not playing, unless said training is for a purpose with little external value.

An understanding that each motive is linked to specific play behaviors enables one to evaluate whether there are sufficient opportunities available for players to channel their motivations

constructively and/or pro-socially. A seasoned play provisioner's decisions will be tempered with a solid understanding of the driving motivations of their players and their associated play behaviors.

2.3 - Part III: Behaviors

Specific play behaviors are what play researchers have focused on for much of the last century. Among the most popular behavioral frameworks are Parten's social play categories, and Piaget's cognitive play behaviors. Mildred Parten (1932) identifies six archetypal social play categories: unoccupied behavior, onlooker behavior, solitary play, parallel play, associative play, and cooperative play. Piaget (1962) identifies three categories of cognitive play behaviors: functional, symbolic, and games with rules. These two frameworks have seen widespread use in observational play studies, but there are many others, and the framework chosen for a specific study often depends on the interests of the investigator. There are a number of important implications to assessing play behaviorally. It enables us to understand how behaviors vary across ages and developmental stages. Familiarity with these variances enables play provisioners to better accommodate audiences of target ages. Additionally, studies of play behaviors reveal marked differences across gender and socioeconomic status depending upon their context. Studying these differences, and the environments associated with them, may aid provisioners and play leaders in determining how best to address apparent inequities.

Figure 17. Young child watches from a corner as others play

2.3 - Part IV: Content

What is meant by the "content" of play is specifically the sum of those objects which are used in the act. These objects can be either physical or symbolic, and determine much of what a particular play

session is about. Physical content includes outdoor play equipment, electronics, props, toys, tools, animals, other people, buildings, structures, plant matter, terrain, and materials. Symbolic content includes imaginary environments, roles, jobs, superpowers, missions, goals, points, currencies, and mythical creatures. Combined, these are the things which make up the world of play, and generally are of more concern to the players than any other facet of the Omnidisciplinary Play Theory.

When someone recounts a story of their play, content is what is discussed. It is the easiest of the five facets to document, and simultaneously the most dynamic. This is also the facet Plato most feared – suggesting that changes in the content of play lead to generations of adults with wildly divergent values from their forebears. Ethical concerns bar this speculation from ever being tested, but it certainly paints the content of play as something of significant importance. For the play provisioner, content is the material directly controlled; it is what is allowed or disallowed; provided, restricted, or rationed. Players bring their own content with them (symbolic or otherwise) and combine it with whatever they find. This is chaos incarnate, entropy at work haphazardly casting symbols and forms into one another. It is not something easily planned for, yet, despite the fray, content is the only element anyone can reasonably control.

Figure 18. Content of play is the only element anyone can reasonably control

This should not discourage play provisioners; after all, what is life if not order out of chaos? The seasoned provisioner feeds on this chaotic energy and channels it into creative visions – iterations for a

generation to enjoy before they are dismantled and replaced. Space (a three-dimensional void for accessing), materials (physical things to occupy and define the void), time (the space in which change happens and experience occurs), and permission (relief from social restrictions) are the four fundamental ingredients all play provisioners provide in the service of enabling play. Yet, what is depressingly apparent in most public play areas are their restrictions: fences to keep people in or out, equipment that only serves one function, signs or gates limiting hours of operation, and long lists of prohibited activities, animals, or persons. Parents and supervisors do enough to inhibit aspects of play without provisioners getting in the way too. It is not the provisioner's responsibility to inhibit anything except clear and imminent hazards. They should instead focus on maximizing opportunities for play in ways that avoid endangering the lives and health of the players. Provide for, do not limit, play – there are already enough social pressures at work to limit it.

2.3 - Part V: Developmental Correlates

Another means to study play is to investigate aspects of human development which correlate positively with play activities. One of the most fascinating features of play is that it has the capacity to improve mental and physical faculties despite being a fundamentally frivolous act. This is what I have come to refer to as the 'Paradox of Play.' A player may set out to improve nothing, and yet through action benefit tremendously, regardless of purpose. Studies over the last century, more often than not, confirm what was previously speculative: the existence of numerous constructive developmental correlations with play (Axline, 1969; Bornstein, 1993; Bruner, 1976; Cutter-Mackenzie, 2014; J.L. Dansky, 1980; Jeffrey L. Dansky & Silverman, 1973; Fein, 1979; J. L. Frost, Sunderlin, S. eds., 1985; Isaacs, 1933; Klein, 1937; Pepler, 1982; Piaget, 1962; Scarlett, 2005; Schousboe, 2013; Smilansky, 1968; P. K. Smith & Dutton, 1979; Sutton-Smith, 1979; to name but a few).

Due to the versatility of the term play, it helps to first identify the specific activities, behaviors, motives, and/or content being evaluated. Doing so enables researchers to approach an understanding of the mechanisms by which benefits are achieved. The science of play, after all, ultimately aims to explain these mechanisms so that we might put them to greater purpose. For example, when we limit our study of play to its forms which involve some degree of physical exercise or exertion, we find that said activities result in cognitive benefits for young people (Hillman, Erickson, & Kramer, 2008). We see that play itself does not bring about these cognitive benefits (it wouldn't, play is far too broad a concept), but it is a means to achieve the same ends. Many forms of play encourage children to engage with their environments physically, so that they may increase their fitness by means that please them. If

strengthening the cardiovascular system and improving executive functions are linked (Diamond, 2010), why not also have a good time doing these things? One might be inclined to exert for longer were the activity fun to do and self-initiated, the way a playful child continues to run and jump despite being utterly out of breath. Such a relationship is synergetic – combining functional means for self-improvement with a brand of activity that directs one's attention away from improvement and toward enjoyment of the act. Remember, frivolity is all about the self-contained nature of the act and not any external agendas it satisfies.

Figure 19. Children run up and slide down this play feature endlessly, enjoying the challenge

Researchers are constantly discovering new mechanisms by which individuals develop through play. These discoveries often begin as general correlations, and are tailored to be more specific over time. Keeping in mind that play is a very broad concept, certain aspects and types of play have been shown to benefit individuals *emotionally* (via enjoyment, relaxation, and self-expression); *cognitively* (via creativity, abstraction, imagination, problem-solving, empathy, and mastery); *affectively* (via self-

confidence, self-esteem, and anxiety reduction); *socially* (via cooperation, sharing, conflict resolution, and leadership); *physically* (via gross and fine motor skill development); *attentionally* (via concentration and persistence); *linguistically* (via communication, vocabulary, recounting stories, and literacy); and *educationally* (via application of concepts and skills in meaningful contexts, fun and engaging learning moments, self-actualization, discovery, exploration, experimentation, risk-taking, and collaboration with peers and adults)(Singer, Golinkoff, & Hirsh-Pasek, 2006). Again, these benefits should not be the focus of play because acting with the intent to benefit is antithetical to frivolity. The benefits of play can, however, remain happy byproducts of the act.

2.4 - Concluding Remarks on Play Theory

The goal for this chapter was to reconcile play's many historical interpretations by settling on a single comprehensive theory that marries their many insights. Synthesizing the work of important play researchers and theorists, Omnidisciplinary Play Theory helps to bridge long-standing disciplinary divides that have been tabled for far too long. This has been done by treating play broadly and putting to rest the notion that the jury is still out on defining it. Nathaniel Gindele (2015) has done play theorists a great service in offering a description of play that is both sufficiently broad and specific: active frivolity (and those activities which closely resemble it). This definition proved instrumental in patching weak points in Joe Frost's Integrated Theory of Play (1992). Frost's theory lacks a concise definition of play and also proposes explaining it (in part) by its characteristics, which Frost himself acknowledges is a weak methodology beset with contradictions (1992, p. 14). However, by applying Gindele's definition to Frost's broad, scientific analysis, I found that play is better described by its similarity to typical exemplars of active frivolity. This allows one to explain play in its broadest sense and evaluate it from the perspective of any discipline (a goal of both Gindele's and Frost's). This new explanation accommodates everything from philosophy to biology, and offers the foundations from which to develop all manner of play studies, presently and beyond.

Beyond explaining play by its similarity to typical exemplars of active frivolity, Omnidisciplinary Play Theory can be further dissected into four other facets: motives, behaviors, content, and developmental correlates. Studying player motives may help clarify what drives people to act on their playful impulses. Motives also share an important link with player behaviors that should aid in building predictive models. Such models would be useful tools for designers and play provisioners to employ in evaluating whether there are sufficient opportunities for players to channel their motivations pro-socially (via associated behaviors). Behavioral studies further enable provisioners to identify disparities

among groups of players and address any apparent inequities. The content of play (that which is used in the act) is one of the easiest facets to document (by way of being observable), and together with behaviors is often the window through which play studies take shape. Content is the only aspect of play a designer has control over, and is almost paradoxically the same aspect which should not control play. Content absolutely has an effect on how players behave, but does not ultimately control them, nor should it be made to try. The more directive an environment, the more it serves to stifle play. In stifling play, any associated developmental correlates may also suffer. Developmental correlates along with motives are the hardest facets to study, but are among the most important to consider in a respectful treatment of play. The benefits of play are valuable, and are therefore antithetical to its frivolity; benefits need to remain external to the act – happy byproducts (not goals) – in order for players to be absorbed in the world of their own play. The feeling that an activity is frivolous enables players to take their minds off of external goals and enjoy the experience. A person actively working toward external goals is not engaged in a typical exemplar of play, and will be difficult to study as if they were.

Figure 20. Training for a race can be fun but is not frivolous; it does not feel like play

To frame these five facets of play another way, let's begin by identifying those facets which are internal to the act of play: motives, behaviors, and content. Internal in this sense means only those

aspects which are directly involved in the act. *Motives* drive players; players then *behave* through the vehicle of *content*. Content and behavior also feed back into the player experience, altering motives in iterative cycles, resulting in a great deal of interplay between the three internal facets. Exemplars and developmental correlates are external facets of play, in that they have little bearing on what happens in the act. Exemplars are simply our means of categorizing, naming, and defining a phenomenon. Play, however, would carry on with or without our conceptual framing of it. Developmental correlates are also external to play, being removed in time from the occasion of the act(s), and being distinct from what drives players.

Omnidisciplinary Play Theory approaches play from the perspective that it is distinct from other activities, is open to study in any discipline, and is important. Even if a person has trouble explaining the difference between play and other activities, they sense it. It is a low-stakes, high-agency endeavor. Its outcome does not matter, but the experience of it does. Thus far, much of this discussion about play has advocated preserving it for its own sake, or for the sake of its benefits. But there is another, more important, reason to preserve the integrity of play: the *right to play* in fulfillment of a complete human experience. In the next chapter, I make a case for treating play as a right rather than a privilege, and outline what I believe are the duties of play-provisioning designers.

Figure 21. Play is a low-stakes, high-agency endeavor; outcome does not matter, the experience does

Chapter 3 - The Right to Play – An Ethical Approach to Design

While play may be inherently frivolous, its positive impact is irrefutable. Evidence has overwhelmingly mounted in support of its benefits (see 2.3 – Part V: Developmental Correlates), and so it shall be taken as given in this thesis that play is fundamental to a complete human experience and will be treated as a human right rather than a leisurely privilege. International precedent for the right to play already exists, at least for children, via the United Nations ("Convention on the Rights of the Child," 1990):

Article 31

1. *States Parties recognize the right of the child to rest and leisure, to engage in play and recreational activities appropriate to the age of the child and to participate freely in cultural life and the arts.*
2. *States Parties shall respect and promote the right of the child to participate fully in cultural and artistic life and shall encourage the provision of and equal opportunities for cultural, artistic, recreational, and leisure activity.*

For rights to leisure and enjoyment see also ("Universal Declaration of Human Rights," 1948):

Article 24

Everyone has the right to rest and leisure, including reasonable limitation of working hours and periodic holidays with pay.

Article 27

1. *Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits.*

There are some semantic complications with interpreting these declarations of rights as specifically sanctioning the “right to play.” First, *play* is not defined within the context of the *Convention of the Rights of the Child*, and therefore stands open to wide interpretation across linguistic and cultural translations. Second, it is not expressly stated that “frivolous activity” is a human right in either of these documents. Though, one could still defend that this definition of play is covered through the articles set forth, which generally protect the rights of individuals to fully develop their personality; to participate in cultural and artistic life; and to leisure. It is a reasonable interpretation of these precedents to suggest

that the right to engage in frivolous activities (i.e. play) is implicit in the UDHR and explicit, though undefined, in the CRC.

Adopting the position that play is a human right enables one to address the topic of play without need for defending or proselytizing its merits. It allows one at once to explore a design methodology unbeholden to adult valuations of education, fitness, cognitive development, mental health, etc. as these are not measures the designer is obliged to improve. The act of play (not playscapes) has proven itself an exemplary progenitor of mental, physical, and social benefits when freed from arbitrary restrictions imposed by well-meaning but misguided adults. It therefore becomes the designer's obligation to allow for the widest possible variety of play in an environment designed for such purpose. Implicit in this obligation is the need to respect the agency of prospective users as designers, builders, and directors of their own space.

Figure 22. Treat players as designers, builders, and directors of their own space

Another advantage to proceeding with play as a human right is that it directs attention away from play's sundry utilitarian values, considerable though they are, and encourages designers to focus their efforts on what should always have been at the core of their play advocacy: the players. Where

previously content and correlates of play stood paramount, the exaltation of play as right puts an end to the now rampant “see what we built” vainglory over designed affordances and begs the question, “have we done all we can to respect the agency of the players?”

I believe this ethical approach to designing for play is how we should proceed, but we are far from making such a transition in the US. We may seek to facilitate freedom and variety in play, enabling as much as possible while minimizing our impositions, but for the professional designer working on projects for schools, parks, subdivisions, and public spaces, practical realities quickly set in. It may surprise the reader to hear that *cost* is not always biggest among them. In professional practice, cost always limits what is possible in a design, but as I have seen demonstrated repeatedly, playscapes are able to be built far more extensively with much less money than typical landscape design proposals. Part of the reason for this may be due to what many call “community spirit.” If there’s one thing communities inevitably rally around, it’s their children. These days, it is not uncommon for neighborhood playgrounds to be built with volunteer labor and donated materials. Couple this with the fact that many children are just as happy playing with sticks they’ve found in the woods as on an expensive jungle gym at the park, and it becomes clear that facilitating play can be done as cheaply or extravagantly as we desire.

Figure 23. Play doesn’t need to be costly; expensive playgrounds may be compensating for something

The most insidious practical pitfalls are far more contextual than financial. These typically include governing policies, regulations, and standards. Said policies, regulations, and standards come in many flavors: educational, governmental, organizational, professional, local, regional, national, etc. The more complicated their bureaucratic context, the more challenged a professional designer will be in producing anything in the spirit of play. A playscape designer might set out to maximally enable children's freedoms and find that, through cascades of regulatory compromises, the end product actually discourages free play. One can look to New York City parks for examples of how various playground rules and features discourage free play. The last thing anyone wants to see when they enter a place for play is a list of prohibitions, yet in New York City parks such signage is ubiquitous! Some of the listed prohibitions are common laws which seem strange to include, while others appear arbitrarily restricting:

- No bicycles, roller skates, scooters, or skateboards
- Adults without children
- Feeding birds or squirrels
- Entering the playground [after dusk]
- Standing on swings
- Performing
- Bare feet

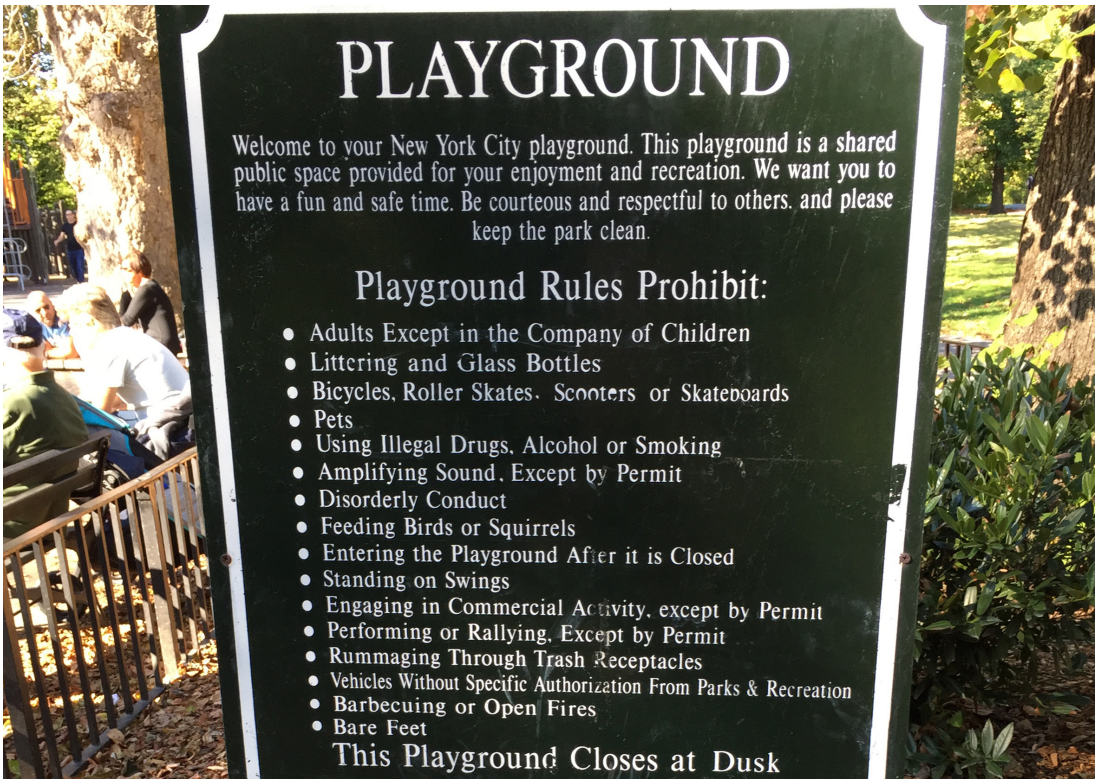


Figure 24. We want you to have fun, but… don't do any of these things

Why preface play by disallowing it? To reiterate, designers and regulatory authorities should strive to enable play as much as possible in places designed for such purpose. If a swing can only be sat upon, it has limited use with a large footprint and does not belong in a playscape. Such a swing is a garden prop – a piece of dynamic furniture – not a plaything. A carefully designed and situated swing set, however, might make up for a large footprint with a variety of uses and possibilities. Should a child's free play be limited to unsupervised, vacant parcels and natural areas? In taking an ethical approach to designing for play, I believe the answer is definitively, "No." If designers are discouraged from respecting the agency of children to engage in self-directed frivolity, then the only possible outcomes are playscapes devoid of meaningful use.

A place designated for play should encourage it broadly, not merely promote a few specific exemplars and uses. For example, if a playground somewhere is designed primarily for building up children's fitness, it is essentially a child's gym dressed in a clever guise. To the untrained eye this may look like a play space, but it is something very different. If a playground somewhere is primarily intended for applying concepts learned in the classroom, it is a learning laboratory. Though it may look like a place for play generally, it is not, because it is not used this way. Allowing play for the sake of play, in fulfillment of a complete human experience, is the ethical standard I believe is insufficiently being addressed on a systemic level in the U.S. and elsewhere.

I believe much of the reason we fail to address this ethical standard adequately is due to our earnest belief in meritocracies, systems in which success is earned according to one's applied effort. Such an idealistic notion rarely reflects reality (Khan & Jerolmack, 2013; Reynolds & Xian, 2014), and may paradoxically be detrimental to one's own sense of achievement (de Botton, 2009). A belief that those who merit success earn it, implies also that those who do not achieve success deserve their failure, making failure seem all the more devastating. In societies that subscribe to this belief, the right to play is frequently subordinated to, even eliminated by, the external agenda of merit. Frivolous activity has no purpose in meritocratic societies which favor competition, hard work, and goal-oriented mentalities. Such societies dangerously externalize notions of what it means to be successful, undermining the very foundations of an individual's free agency and sense of self-worth. Meritocracy and how it is antithetical to play is the subject of the next chapter, 'Meritocracies versus Play.'

Chapter 4 - Meritocracies versus Play

People feel that their lot in life is merited, deserved. Not like in the middle ages where "unfortunate" was the title given to lower classes. In play, all players may feel useful by defining the context in which they are acting – this, in a sense, is the essence of recreation: to re-create oneself in response to sometimes daunting realities and feelings of inadequacy. Returning to "nature," to simple lifestyles where performance is not cast into light as the most valuable aspect of one's life, is restorative. One may commune with a world of living things which are considered successful simply for being what they are: alive. By surrounding ourselves with such environments, chronic stress and cortisol levels have been shown to decline (Gidlow, Randall, Gillman, Smith, & Jones, 2016). Repose may be found for those who seek it in the solace of biophysical environs – freedom from judgmental eyes perhaps the key. One may reflect on the immensity of the universe – the beauty of its intricacies, being at one with such grandeur, and our birth from stardust – such that our performance in universally menial tasks falls blissfully into irrelevance.

Figure 25. Play in biophysical environs, where performance is irrelevant

It is our performance in modern societies that we value so, convincing each other that we ought to. That very same performance, which we perpetually measure ourselves against, burdens our being. It is not uncommon for individuals to suffer prolonged feelings of inadequacy and encumbering character judgments in meritocratic societies where paths to success are clearly defined, and personal notions of success carry little social weight. A perfectly extraordinary individual may simply be outperformed by peers across a series of societally valued metrics and consequently give into despair at not having been "better."

While teaching in Korea I met dozens of brilliant, bright-minded teenagers utterly despondent at the notion that they were not performing well enough in school, despite devoting the majority of their days to academic pursuits. Before breakfast they were studying for that day's classes; next they were off to school; after school, cram school; after cram school, homework; after homework, dinner, then more homework followed by an exhausted collapse into slumber at day's end. Rinse, wash, and repeat – so went their daily routine, all day, every day. The notion of play, freedom to do anything without fear of reproach or judgment, was distinctly foreign – a distant, motivating reward afforded only after completion of an endless queue of tasks, which, like the pot of gold at the end of the rainbow, is ever just beyond reach. Students are by no means the only victims; professionals, too, thrust themselves headlong into meritocratic careers at the expense of quality time with their families and, perhaps more importantly, themselves. Individuals unable to take time to find contentment for themselves are inadequately prepared to care for those closest to them. After all, the company of contented people is far more enjoyable than the company of those who are listless or actively suffering.

The meritocracy is our current gold standard for human valuation despite being profoundly problematic. In such a system, we fear failure and its attending heavy baggage, brimming with ridicule and judgment. As Alain de Botton points out in his talk *A kinder, gentler philosophy of success,* modern society is unique in its approach to worshiping human achievements rather than more transcendent ideas like older societies' conceptions of gods, spirits, and the universe. "Nature" supplements this loss of transcendent idolization and serves as "an escape from our own competition and our own dramas," (de Botton, 2009). Passive recreation in nature and active recreation through play allow us to step back from our personal rat races and contemplate being. The meritocracy, on the other hand, force feeds us an idealized form of success by idolizing the qualities of those who do well in the system. At no point do

personal notions of what defines a "successful life" weigh in on the meritocrat's judgment – societal valuation trumps all.

Play is antithetical to meritocracy in operation, by definition – it is self-contained, societally valueless. It is an expression of independence, self-determination, and self-valuation. The answer to why an individual is important in a meritocracy requires navigating labyrinthine social interrogations and regurgitating pre-scripted itemizations of accomplishments. The answer to why an individual is important in play is simple: without me these actions were impossible. As players, we should be "the authors of our own ambitions," (Ibid.). We may evaluate ourselves against our own standards, but only if given the space, time, and freedom to do so. The mere presence of any figure perceived to be judging a player's actions is enough to stifle the essence of play.

Figure 26. Some of my students felt comfortable enough around me to really let loose and play

Of course, true freedom to play may at times invite anti-social behaviors. In these instances, the presence of a watchful adult is generally desirable. Trained playworkers strike the requisite balance between encouraging pro-social and solitary play, while also discouraging or redirecting anti-social behaviors so that a player may work through them. Playworkers endeavor to be as open and encouraging of self-determined play behaviors as their context permits. This is an incredibly noble, and in my mind *essential*, role for adults to play in guiding players toward self-determination and -valuation in pro-social, rather than anti-social and anarchic ways. It instructs players that in their pursuit of being, they can play harmoniously with neighbors over the long term – live and let live – play and let play.

Figure 27. The presence of trained adult playworkers can improve play experiences for everyone

While minimal adult involvement in the play of children is desirable to the extent that it facilitates and encourages pro-social behavior, it is all too easy to assume the role of pedagogue (e.g. "Hey, be careful on that, you'll hurt yourself!"). There are few more meritocratic systems than pedagogy, especially in formal educational settings, making play in the presence of teachers (judges) and classmates (competitors) dubious business. Play is not a time to get ahead or outperform one's peers in earnest social contests under the watchful eyes of academic appraisers; it is a time to exercise uninhibited freedom. The next chapter is devoted to the problematic unification of education and play, and offers a means by which educators and play-provisioners might synergize their work.

Chapter 5 - Where Education Fits into Play

To say education has no business in play would contradict the intuition of most and the clear indications numerous scientific studies give in support of play's many constructive benefits in educational environments (Cutter-Mackenzie, 2014; Diamond, 2010; Schousboe, 2013). Even so, there are people who strongly favor one side of this education-play relationship over the other. Some believe educational imperatives get in the way of true play, while others seem to believe that play is only valuable as an educational instrument. I currently fall somewhere in between, favoring the former. An instructive example can be found by looking to the many failed attempts to create popular educational video games.

To date, the only truly successful mass-market educational video game (selling greater than one million copies) is "Brain Age" for the Nintendo DS (plus its sequel, and one very similar game by another developer). This game was designed to be a kind of virtual cognitive exercise equipment to test and develop the "age" of one's brain. As has already been noted, "exercise" does not fit within typical play exemplars, though this game may share enough in common with other games to qualify in a player's mind as being "close enough", and therefore play. It is also important to note that this game is not overtly "educational", though it does fit within this poorly respected genre of video games. It relies mostly on a player's decision-making and problem-solving skills (which many non-educational video games rely on without marketing themselves as mental exercises).

Having played Brain Age myself, I found it neither very fun nor very playful. It serves mostly to boost the player's ego and sense of accomplishment with respect to shallow measures of intelligence. Any actual cognitive benefits from "brain trainers" are suggested to be attainable through other means (Melby-Lervåg & Hulme, 2013), including simply socializing with friends (which, in my mind, would be far more rewarding than playing "Brain Age"). If this is the only example of a successful educational video game model, it stands to reason that in a market driven by and predicated on frivolous activity, consumers are not seeking educational experiences. Well-meaning educational video game developers fall into the trap of injecting "play" into education without understanding what play really is. They fail to deliver a fun play experience by remaining disconnected from their target audience's desires and motivations while pressing external agendas. If you're looking for a means to kill play, this is precisely how to do it.

We can compare this situation to a contemporary food analogy. If we take an audience whose primary goals are to eat meals that are delicious, filling and cheap, and try to sell them the external agenda of being healthy vegetarians, what method is going to be most successful? Whichever one delivers on all of the audience's primary goals *in addition to* the new agenda. If we try to sell this audience raw broccoli, touting its healthfulness, simplicity and affordability, we're completely neglecting the audience's other goals of eating delicious and filling meals. We would be much better off selling them a rich culinary option like vegetarian Indian cuisine, with filling portions and bountiful flavors. Even if you personally dislike vegetarian Indian cuisine, the point stands: to successfully integrate external agendas, one must understand and satisfy the primary goals and desires of the target audience.

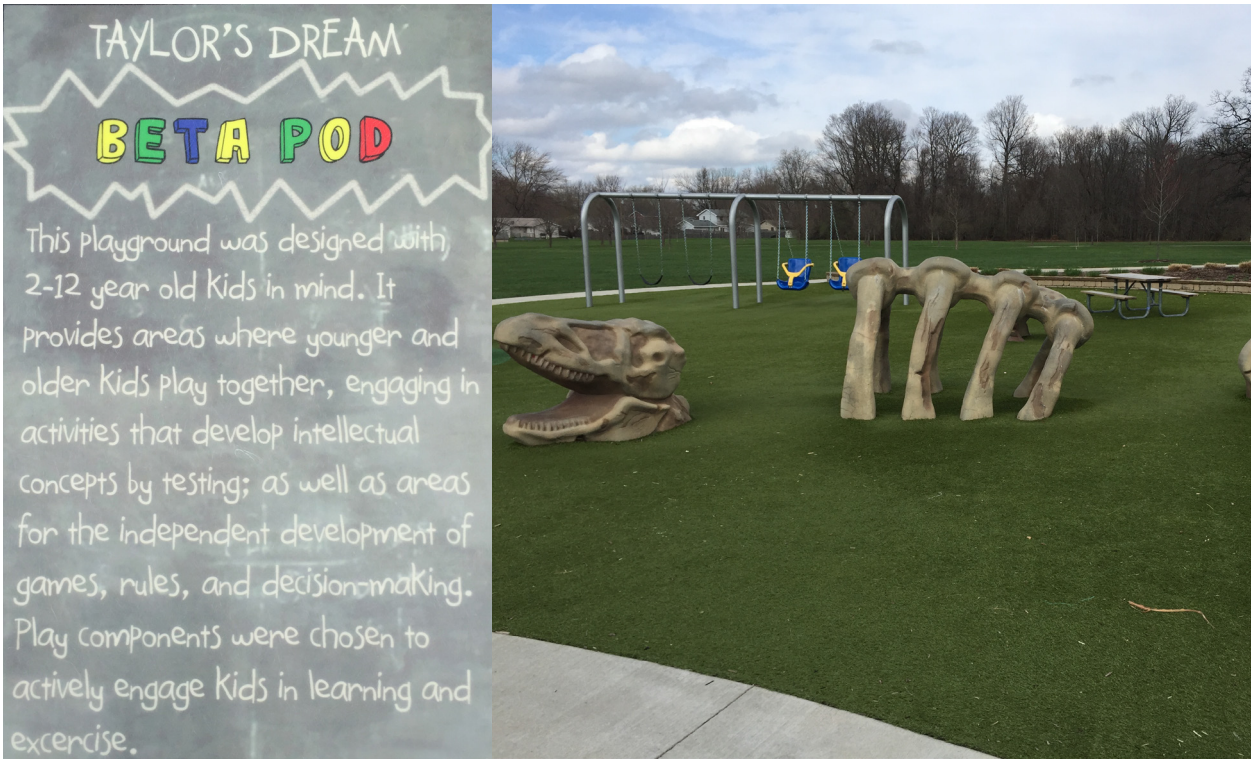


Figure 28. Whose agendas seem most important here, the players' or their caretakers'?

What do players want? Well, they want to play, of course. But what does that really mean? In this investigation I have been using Gindele's principle of active frivolity to define play. According to this definition, to seek play is to seek the experience of an activity that is frivolous or at least substantially similar to other frivolous activities. This "similarity" to other frivolous activities is the only window through which one might successfully integrate external agendas into the realm of play. First and foremost, the new experience must feel like it is frivolous or even autotelic, having a purpose in and not

apart from itself. This makes it painfully clear how at odds educational agendas are with player agendas; education has nothing but purpose apart from itself and is far from frivolous. A colleague of mine proposes a solution for designers and educators which satisfies both agendas. He calls it LUK, or "Learning Un-Knowingly," and believes that those who are unaware they are learning something of value are still at play despite being educated, and are more likely to have positive associations with the learned material. Most scientific evidence we have for play-based developmental correlates suggests that development occurs subconsciously – which fits nicely into the proposed model of learning unknowingly. While players are always learning, they are seldom aware of it, and their primary goal is certainly not to learn, though they may take advantage of learning moments.

Even if we were to ignore all evidence and posit that play has no educational or developmental value whatsoever, this would not be grounds to dismiss or undermine play. As I state in Chapter 3, 'The Right to Play,' there is a substantial case to be made that play is fundamental to the human experience and should be afforded as a right rather than a privilege. Like with personal feelings, if play is found to have no significant societal value, we are still entitled to it as parcel to our experience of being. Additionally, because play minimally requires time, space, and permission, we also have a right to these things by implication. How much of each are we owed? Some, more than none, and less than too much – that is really up to us to decide. The important takeaway is that every person deserves ready access to a place where they can spend some of their time playing. In Chapter 6, 'Designing Exemplary Playscapes,' I discuss how one might approach designing such play environments in accordance with an understanding of play as it is treated in Omnidisciplinary Play Theory (Chapter 2), the ethical perspective that play is a fundamental human right (Chapter 3), and the philosophical perspective that meritocratic systems and overt external agendas like education are antithetical to play (Chapters 4 and 5).

Chapter 6 - Designing Exemplary Playscapes

The significance of the present chapter's title is derivative of the content in Chapters 1 and 2. 'Exemplary' in this case is a play on words, at first highlighting the link to Exemplar Theory and its importance in defining play in its broadest sense, while also suggesting that one may design outstanding playscapes (i.e. exemplary ones) by means of an omnidisciplinary understanding of play. Though the guidelines in this chapter are not the primary objective of this thesis, they help to outline the practical applicability of the theory outlined in previous chapters. Theory alone is an insufficient means to explore any idea. It should always be tied back into reality, tested, worked back into theory, tested again, and so on. The process of theory building is highly iterative. The following guidelines are my first pass at this, so it should be noted that all ideas presented in this chapter are predicated on my current interpretation of the theory outlined in Chapter 2, and are intended to be general rather than prescriptive. Prescribing anything is a dubious task, especially when addressing a topic so broad as play. A reasonable use of this chapter would be to evaluate and modify these guidelines to suit a project currently underway. The guidelines are intended to remind designers of considerations they may have overlooked. Not all points will be applicable in all cases.

Figure 29. Guidelines help designers test ideas and reflect on their work – they are not rules

6.1 - Know and Understand Your Audience

Each individual has a unique set of needs, motivations, and abilities that are difficult to predict and adequately complement when designing for general audiences. That said, it is good practice to identify distinct user groups and meet them on their own terms. Empathy is an asset in this case, but so is an understanding of psychology and human development. Recall that I believe external agendas (generally those of adults) are best subordinated to fun in a play experience, and that things like jungle gyms ought not to become outdoor fitness equipment! This is because the feeling of frivolity (a perceived lack of value beyond the activity itself) is the 'secret sauce' of play. It is free of stakeholders with agendas, and can be wholly owned by the players. That the players remain in control is key.

6.1 - Part I: Age

We begin to know our audience by first identifying them. Age immediately comes to mind when beginning a playground project, but consider expanding the audience beyond tots (3-5), children (5-12) and teens (13-18). Fledgling adults (18-25) have their own distinct interests and behaviors which might be welcomed by your playscape. Adults too (25-40)! They are integral to many play experiences already, especially as parents, but might be better invited into the space with features that entice them. Consider too the middle aged (40-60) and senior (60+) crowds and the entertainment they might seek outdoors. How can we better meet their play needs? For design guidelines that cater to an audience of elders, see the thesis by my colleague Huan Liu (Liu, 2016) being published in parallel.

Figure 30. City Museum (St. Louis, MO) has a full-service bar inside their playground for all ages

6.1 - Part II: Physical Impairments

When we have roughly identified where our audience is in their life path, we must also hone a keen awareness for disparities that arise in the passage of time and circumstance. Begin by understanding more about mobility impairments and imagine what it would be like to engage with your playscape if you had a bound limb or limited range of motion. It's easy enough to default to provisioning wheelchair access, an important consideration, but what entices someone out of that wheelchair? Did you think they would really want to stay in it the whole time? There are countless ways in which the human body can be limited, but merely providing ramps and swings for wheelchairs is not the answer. It's the start of one, but we cannot stop there. As with unimpaired players, challenge must be ever available. Making a playspace accessible does not mean we must make everything risk-free. A "rocker," intended to accommodate players in wheelchairs, that barely moves even with the help of eight children, is not a meaningful challenge (see Figure 31). A wheelchair-using player must rely on others to get the apparatus going, which I can only imagine deepens their sense of dependence on others.

Figure 31. Wheelchair-accessible rocker is frustrating to move and lacks meaningful challenge

6.1 - Part III: Non-Normative Cognition

As with physical impairments, the human mind is diverse and wonderful. There really is no standard-issue brain, only a vacuous notion that we call 'normal'. Understandably, it is quite difficult to

think like someone else, because we must think with our own brains to accomplish it. We are not wired the same way, and find it nearly impossible to get into the heads of those that think or perceive differently from us. Take autism, for instance (an incredibly broad categorization) – can someone without autism reasonably be expected to empathize and understand the needs and motivations of someone with it? Not without a lot of careful studying, observation, and role play. In the case of people with exceptional brains, it takes exceptional effort to do right by them. This is not a task that should be tackled alone. The process of building a playscape for people with various forms of autism should be as participatory as possible. There tend to be many stakeholders in the lives of autistic individuals that ought to have a say in the design process (autistic self-advocates, parents, siblings, teachers, special education staff, therapists, support groups, community organizations, etc.). Designers should be reviewing contemporary literature and collaborating with experts. A broader set of expertise than is typical in a playscape designer is essential in a project like this (communication, occupational therapy, developmental psychology, special education, learning sciences, etc.). It is important to recognize these limitations and fill out a team of collaborators to advise through the process. There is great variability even among a niche audience like this, and one-size-fits-all designs are rarely, if ever, appropriate.

Figure 32. Teaching children with special needs, I learned that everyone's needs are unique

6.1 - Part IV: Inclusion – Expanding an Audience with Empathy

Most would agree that accommodating people of all types and faculties on a playscape is a noble cause. I, and many others, would take this a step further and suggest that it is actually a moral imperative. I must also acknowledge, however, that it is not always obvious how best to accomplish this. An empathic exercise is a good starting point. Start by thinking beyond the people who are immediately around you (beyond the obvious cases you've already thought of). Ask yourself who you're not considering, and begin to consider them. Would they have fun in this space? Don't simply trust your instincts; be sure to ask them directly. Test your assumptions.

In most cases, a playscape of your design is not for you, so it is absolutely essential that you get out of your own head when imagining it. Try filling the shoes of an audience member you're considering. Try to play as they would, being careful to imagine all the circumstances surrounding their playtime – How long are they allowed to play? What are their difficulties in the play space? What are the different things they can and cannot do? Go through a day on the playground with them and see what you notice. Pretend you are them, and try it yourself. Get over your own ego here; you might think you look like a dope – rest assured, you are anything but.

Figure 33. Adults getting into the muddy shoes of children on a rainy day at the Anarchy Zone

6.2 - Relinquish Control and Embrace Ambiguity

While the previous section reminds us to empathize with our audiences and engage with them on a meaningful level, this section is a reminder that players are free agents. We don't control how or when they choose to challenge themselves. The best we can do as designers is provide opportunities. We should consider developmental goals (physical, social, emotional, cognitive, etc.) and provide

platforms for these to be exercised. That said, no one needs to (nor should they) force players to make developmental advancements. If opportunities are not enticing enough on their own to encourage player participation, a design flaw is to blame; reevaluate the opportunity.

Additionally, remember that both education and play happen everywhere, not just in the places where we want them to happen. To arbitrarily designate a space for either activity is highly artificial and unnatural. Building schools and playgrounds is but a convenient means for adults to organize their world. It is not, however, the same as meeting your audience on their own turf. Play happens well beyond the boundaries of playgrounds and could be better accommodated in the designs of all places. Acknowledge that any playground you build serves a very specific condition of play (i.e., playing when or where it suits adults). To design a 'playground' or a 'playscape' is a forceful act; it implies that people who visit it should play, and that people who want to play should do it in the designated space. Acknowledge too, that designs of any kind do not control their users – at most they can suggest how they are to be used, but ultimately a free agent will control their own use of your designs. Relinquish any sense of control you think you might have, and carry on.

Be sure not to design any play space such that it is overly directive. There is great value in ambiguity of places and objects. This does not mean one should make everything on a playscape totally obscure and incomprehensible, though that would be an approach worth studying. By leaving room for ambiguity, we entice the imagination to think creatively about the possibilities inherent in a place or object: a most desirable outcome. Ideally, play elements are inviting, non-directive, and allow for divergent uses.

Figure 34. It's ambiguous what should be done in this play area, but players enjoy experimenting

6.3 - Anthropometrics (No Such Thing as One Size Fits All)

Studying the human body and its movement at different ages provides useful insights into how we might shape playscapes to better serve specific audiences. Designs for tots require very different ergonomic considerations than do designs for adults. Consider shoe sizes and how many there are. If we want an environment to fit someone particularly well, we need many sizes to choose from, not a one-size-fits-all "shoe." That one size fits nearly everyone poorly.

6.3 - Part I: Scale of the Environment

Environments contain infinitely many nested scales, like fractal geometries, the perception of which depend entirely on the observer. Practically speaking, relevant scales that a 2-year-old perceives will be different from a 5-year-old, 10-year-old, and so on. We observe our environment at the scales that make most sense to us, usually those which feel comfortable. Ever look closely at an object and start to see it in a different way? Ever imagine what its surface would be like to walk around on if you were small enough? If so, you were experiencing a perceptual shift in scale.

There are at least two things worth noting at this point. First, clever designs may, by intention, shock their audience into a perceptual shift in scale (imagine a fun house, or an oversized insect statue).

Figure 35. Funhouse demonstrating a perceptual shift in scale

There is awe to found in encountering a large object when all around are only smaller versions. Second, because our minds default to scale-perceptions that vary from person to person, a designer may do many things at once with a single area. By layering in different uses according to eye level, reach, and typical range, a single playscape might do the work of multiple ones. For the young and small, low heights, nooks, and close spaces are comfortable scales. As a child grows, their range and abilities increase, compelling them to roam further and take in ever larger environments. I speculate, however, that a person's range increases at a greater rate horizontally than vertically. This is due partly to anthropometrics, specifically those of the eyes. Our eyes, positioned laterally, perceive much more peripherally and ahead toward the horizon than in the space above or below us. Visiting a city with tall skyscrapers and attempting to look up to the top of them from up close can be disorienting and uncomfortable. Bending one's neck back far enough to look straight up can throw a person out of balance, and leave them feeling vulnerable with their neck fully exposed, unable to see what is going on immediately around them.

Figure 36. A vulnerable posture made more comfortable with peripheral reflections

Similarly, fears of heights and falling long distances make looking down an even more uncomfortable endeavor. The human body is well-suited to perceiving and moving laterally, and while we are comfortable with some verticality, it can quickly overwhelm us. Leverage this knowledge to delight an audience with dramatic verticality that doesn't frighten, and vast play areas that invite exploration. Remember that spaces where humans feel comfortable are mostly horizontal, and if any significant heights are to be introduced, careful consideration should be given to the desired effect and how best to accomplish it.

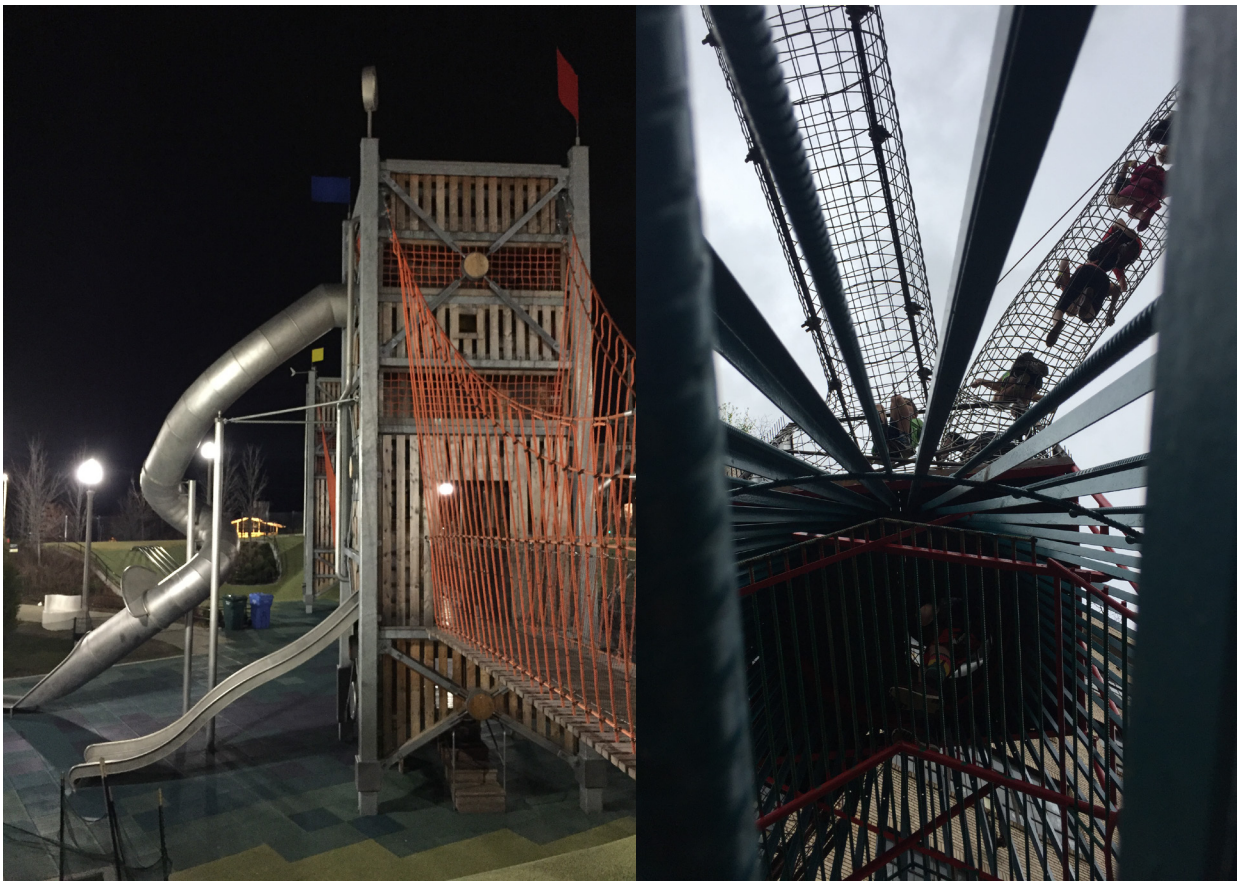


Figure 37. Vertical playscapes (left: Daley Park, Chicago, IL; right: City Museum, St. Louis, MO)

On the note of expansive play areas, one cannot always afford the space. A pocket park will never have the same allure as a large open play area. In this case, build up if it is safe and efficient. Consider perceptions of verticality and provide safe harbor in suspended features. Draw the eyes and head comfortably upward to help open the throat for the gasp that is to follow (not forgetting to provide something to gasp at). When a playscape has reached its maximum useful or allowable height, how can one build more value into it? Consider how one might simulate an expansive play area – room to run, wander, and roam. When space is tight, advocate for developing a neighborhood network of playscapes that players can safely commute to. By creating constellations of activity, each member of the constellation accrues value by association. A star may stand out, but never so memorably as when it is part of something greater than itself. We are driven to wander, and a playscape always satisfies this drive, either through its expansiveness or its networks (else it is truly just a playground).

6.3 - Part II: Ergonomics

Everything from doors, seats, steps, paths, shelves, rails, ladders, handles, tables, ceilings, etc. can be sized and heighted to fit a target audience. Ergonomics not only determines who can most easily exploit certain features, it communicates a non-verbal message about who the space is for. It matters whether something is big or small. It matters which prerequisites there are for engaging with a space, and there are always prerequisites.

Big things can be difficult to use by smaller people. If a person is still growing, these objects or places might be alluring. They may be seen as something that *will be* meant for them at a later time. Children may, and often do, approach adult spaces and attempt to interact with them. As with verticality, if something desirable is made too big, people may feel overwhelmed. Small things, on the other hand, are difficult or impossible to use by big people. It is not possible for a grown person to shrink down to the size at which a child's nook would be comfortable for them. A large person may find it impossible to exploit spaces that are too small for them. They will observe from a distance or stick their head in, but may not do much else. Nostalgia for youth may come to mind. Envy and disappointment at not being able to fit is another possibility. If something desirable is made too small, some people will feel excluded.

Can one strike a balance? Of course! Exclusion is easily remedied by providing vast opportunities for engagement. In forest schools, for example, children demonstrate better management of their abilities due in part to the infinitely diverse tasks they might engage in. If they are unable to perform a certain task, they go off and find one that they can do. What is important here is to include opportunities for people of all types to engage with the playscape in close proximity (even symbiosis) with one another. Separating areas out by age, size, or ability is not the most elegant solution. People can certainly play alone, but they can also do that on their own time and just about anywhere. A playscape is for congregating, and that congregation should be met with opportunities to play together.

Figure 38. Playscapes are for congregating - there should be opportunities to play together

It is important to remember that all objects and places have prerequisites, either physical or mental. Some things are heavy or require strength in specific muscle groups to operate. If someone is too weak or lacking the presence or operability of a necessary part of their body, they will not be able to take advantage of the object. Some objects may be operated by another individual, such that the experience of the object is shared. Pushing someone on a swing is one such example. This type of multi-user object offers opportunities for cooperation and socialization. Players in groups with diverse physical abilities are ideal in such a scenario. I rarely see complex combinations of abilities as an ideal operating scenario for the use of something, but the possibility exists that one could need: someone strong, someone gentle, someone flexible, someone short, someone tall, someone thin, someone fast, someone with good balance, someone heavy, someone light, someone who can swim, someone with big hands, someone with small hands, someone who uses a wheelchair, etc. The potential combinations are plentiful, and should be explored more regularly. Simply needing a strong person to push, lift, etc. is not so playful for said person and bestows too great a value and burden on them. Consider as many physical conditions as are applicable, and try to imagine how a multi-user object might leverage each person's unique traits to contribute to their fun.

Some objects require skill or special knowledge to use, such as a tool or device. Without training or experience with this type of object, players may struggle to find utility in it. Some objects can be designed to communicate their use very clearly, yet still require skill to operate. These are *instructive items*, that teach players enough to use them, and allow players to begin working with them and develop their skill over time. Others, still, can be very difficult to decipher. Objects that are incidentally or designed-to-be understandable only by trained or initiated individuals are *enigma items*. Something that does not clearly indicate how to use it will require instructions, reading, training, etc., and will not feel very much like play until use of the object is mastered. A caveat of this is when the goal of play is to discover how to use the object – in which case, the mystery of the object serves as a driving motivation for discovery. This would be a case of a *contextually instructive item*. Rather than the item itself instructing players on how to use it, clues in the environment are available such that players can discover its use. Some items which are too old, artistic, or obscure to be well-understood may pique curiosity and experimentation – these are *interpretive items*. They run the risk of being dropped quickly if they lack sensory appeal, but can be an exciting addition to playscapes to get people thinking creatively.

Figure 39. What is this thing?

6.4 - Self-Initiation

Fundamental to most play experiences is self-initiation. A person is less likely to feel that an activity is frivolous when actively being directed by others. By self-initiating, players feel more in control of their own play. They become masters of their own desires and destinies. Wherever possible, don't leave it up to adults to direct play. Frost (1992, p. 43) agrees: "The facilitative, not the directive, adult is needed in children's play environments." While they make excellent facilitators, adults in control of play are actually stealing it from those they are supervising. The same can be said of designs that heavy-handedly push specific objectives; when there aren't many clever ways to use a design, it is doing as much to control play as intervening adults. Play features should invite clever, divergent uses by rousing latent questions in the observer. One might think of such features as appetizers, or starters, that serve as a jumping off point for doing more.

Figure 40. Boy experiments with a water pump and watches to see where the water goes

6.5 - Temporality

Consider that a playscape need not stay the same forever and always. In fact, it very likely will not. Playscapes are fleeting, lasting maybe 15 years before they're demolished or replaced. Embrace this and accept transformations on shorter intervals. With the assistance of play leaders, a playscape might transform weekly or daily, as in a typical adventure playground. They might even serve different purposes at different times of the day. In a brilliant move by former Mayor of New York City, Michael Bloomberg, school grounds were opened as parks after hours to help fulfill the goal of bringing all New Yorkers within a 10-minute walk of a park. Before this, "most schoolyards were locked to the surrounding community all summer, every weekend, and every evening," (Barker, 2013). This need not only apply to schoolyards. What other underutilized spaces are there up for grabs at certain times of the day? How might entire towns and cities grow into more playful places simply by removing temporal restrictions?

Figure 41. When this parking lot is not in use, it's a basketball court (and vice versa)

6.6 - Weather Test

Related to the temporality of playscapes is how their contexts determine the experience on them. Weather is dynamic, and outdoor playscapes are exposed to it around the clock. Rain is often considered “bad weather,” but it doesn’t have to be. How is the experience different during and after such a serendipitous event? Consider how rain might be transformed into a fun experience under the right circumstances. Consider storing rainwater from onsite and releasing it slowly over time so that rains have a lingering effect. If water is stored onsite, can people see the storage level? Remember that weather is much more than rain. Ask yourself if you could play here when it is hot, cloudy, cold, blustery, dark or snowy. How does the experience change in each condition? For example, if it snows, where is the snow piled? Can this become a fun new mound, castle or activity for visitors?

Figure 42. Playground in snow (note: all powdered metal surfaces were too slippery to climb)

Figure 43. South fence shadow creates playful snow shapes

6.7 - Boundaries and Borderlands

Boundaries serve many historically important purposes, but when they are generalized and applied without careful consideration for context and desirable permeability, that which is being bounded can be made poorer for it. To offer a specific example from my neighborhood, a black, four-foot-high fence surrounding a toddler's play area may be doing more harm than good. It is likely to have been erected to keep children from running out into the street, but it has the added effect of limiting both physical and visual access to it. With only one gate, traffic in and out is highly controlled. It is no coincidence, I think, that I rarely see children at this playground. Not only is it small and tightly fenced, its hard boundary prevents access to the incredibly fun slope immediately behind it. It both looks and acts as a cage, locking its inhabitants away from the wonderful world of possibilities around it. Even a low, two-sided fence would suffice for keeping toddlers away from the road and under the watchful eyes of their parents, while keeping the playfulness of the slope and a wide entrance readily accessible.

Figure 44. How the Fence Stole Fun

If a barrier is nonessential, remove it. Boundaries do not always imply barriers; they are simply the meeting place of one or more distinct areas. Think of ways boundaries might be clear and useful without a hard barrier. Such fluid boundaries are known as borderlands. A great diversity of play happens in borderlands, which can be better encouraged through thoughtful design. Expand the gradient where vegetation and hardscaping meet, or where one playscape merges into the next and observe what happens there. You are likely to be surprised.

6.8 - Rules

While rules are important to set in organized games, or any situation in which expectations and fairness are paramount, remember that players are capable of setting their own rules. Telling anyone what they should or shouldn't do is an impediment to free play. It is also vital to remember that rules tend to operate on the basis of good faith, and that much of the time people are going to do what they want anyway. Instead of setting rules on a playground, try putting up signs reminding visitors of all the things they could do but might not have thought of (roller skating, kite flying, building forts from loose materials, role-playing, tea parties or café games, drawing on the pavement, etc.). Any "prohibition" should be very carefully considered before being implemented, as it will shape the perception of the place and those that manage it.

Rules are also frequently enacted out of a concern for safety. In my opinion, if a place invites a certain type of activity which is likely to result in injury due to a lack of rule-following, it is either poorly designed, or was never designed in the first place. Begin by investigating whether there are any dangers

that visitors are likely not to see or predict. Frequently called “hazards,” these have no purpose in a designed environment and should be remedied at once. In contradistinction to hazards, “risks” are dangers which are readily seen and predicted by visitors. They are often considered valuable and instructive challenges worth maintaining, or even building in. Humans of all ages have the ability to risk-assess and become quite adept at it as they age, especially if they are presented with graduated risky challenges throughout development. It is the job of ‘designers for play’ to scrutinize their own work to ensure it allows for risk-taking, but does not present hazards.

Figure 45. Risk assessment proficiency begins at a young age

6.9 - Don’t Just Default to Traditions – Innovate!

“Traditional” play objects such as slides and swings are well-known and carry a heavy set of associations and use-cases that are hard to break free of. It will not be easy to coax an audience to see such objects with fresh eyes. The newcomer experience, though elusive, is an effective means of reminding audiences of their earliest experiences on the playground – a time when they were still filled with wonderment and awe over foreign objects and their infinite potential. This brief nostalgic

connection can pay rich dividends, especially with regard to facilitating divergent thinking. Putting visitors into unusual situations and positions invites sensations that are new and different from their everyday.

Figure 46. Archway defies expectations and invites unusual experience

It is the job of designers to paint fantastic pictures, to weave compelling stories that take visitors on unexpected journeys into a playful bliss. Despite what is often done (purveying catalog equipment and plunking it down in some flat place) serious designers will not be satisfied with heeding tradition alone. Designers are harbingers of innovation. Embrace this role and the value progressive societies place on it.

This, however, begs the question: is novelty inherently fleeting or can it have lasting appeal? The pursuit of new ideas can sometimes seem futile, especially when so much of "creativity" is predicated on prior ideas that inspire it. I would argue that it is not futile, but essential for progress. There is a misconception that creativity is the creation of something new from nothing – it is not. Creativity is the synthesis of disparate ideas in an ever-expanding ocean of thought. This is important to note, because

while a novelty may at first seem gimmicky, it adds to the vastness of all our collective human ideations for future synthesis into something newer. A creative idea's popularity may wane, but its existence is rarely forgotten. Generating a novelty with lasting appeal is often the goal, though, so how is this achieved? Refer back to the first section of this chapter: 'Know and Understand Your Audience.' By always keeping your audience in mind and tailoring experiences to add value to their lives, something that catches their attention is much more likely to keep it. Add enriching internal value to play, something players love and come to rely on – such as the now ubiquitous experience of swings and slides – while avoiding the overt shunting in of external values.

Figure 47. Pipe slide on slope enhances traditional slide experience with more possibilities

6.10 - Lifelong Curation and Maintenance

Playscapes have much in common with museums. They both contain collections of elements for visitors to interact with at their leisure. Both ideally have some measure of curation always ongoing, lest their collections grow stale or irrelevant. Curation is simply the selection, organization, and presentation of elements, an act often done more expertly in museums than on playscapes. Here, again, the

adventure play tradition excels and offers designers an exceptional guide to learn from. While adventure playgrounds may appear chaotic, their elements are not chosen completely at random. Playworkers carefully sift through donated objects in search of those which possess the greatest ludic potential. Sometimes they even set the best ones out in obvious places for easier discovery (Davis, 2015). They also discard any elements which pose immediate hazards (i.e. unforeseen dangers) to players. Then, at the end of the day, playworkers comb through the playground, removing any newly emerged hazards, animal attractants, rotting or useless garbage, and so on. These playgrounds are only superficially chaotic. In reality, like any good museum, a great deal of care and expertise is put into building and maintaining adventure playgrounds. Figure 48 depicts an adventure playground in Ithaca, NY, which has had elements such as ropes, wood, tape and tires set out for its visitors, who have combined them in creative and unexpected ways. These elements have high play value, and have been vetted for hazards.

Figure 48. This adventure playground appears chaotic, but is actually highly curated

But how do designers know when and what to curate? A good first step is to get training in playwork. If you have the opportunity to get certified, I highly recommend it. The authors of *The New Adventure Playground Movement* (Leichter-Saxby, 2015) offer these training services internationally. In

some parts of Europe, people can even earn advanced degrees in playwork, though this level of depth is hardly necessary for curation.

There is, however, one major difficulty designers face in playscape curation: designers are often called in at the beginning of a project, and do no further work on it post construction. This is a sad state of affairs, and more often than not, there is not much that can be done about this. If a client is not seeking assistance beyond preliminary designs, that is their prerogative. But there may be a few ways out of this predicament.

One good practice is to always create detailed maintenance plans and deliver them to developers. Be as specific as possible and insist on their importance. Follow up with clients, even if it's just a phone call or email twice a year, to ask whether they are adhering to your maintenance plans. Clients may be busy and forget to take requisite care of their investments. Issue them friendly reminders to let them know you are serious about upkeep and care about the life of their investment. You will become known for your standard of excellence.

Consider legal documentation that guarantees yearly inspections. You might even come to a business agreement in which your design firm is paid to reassess the project every few years. I do not know of many firms which currently employ this practice, but it would be a great way for them to learn from the successes and failures of former projects. Even if there are no contractual obligations to revisit projects, I believe it is in the designer's best interest to do so. Reassessment provides one the opportunity to develop in-house post-design evaluations, analyses of met and unmet expectations, a hot topic for advancing design in the twenty-first century. If possible, reevaluate projects yearly. Estimate the life of various features and objects onsite. Try to identify what were merely trends. Were there any elements with greater lasting appeal?

6.11 - Encourage Decision-Making with Prepositions and Verbs

Provide your playscape's visitors with ample opportunities to make decisions. This helps to make their visit feel more self-directed and free. Some general guidelines for accomplishing this are to diversify topography, make paths diverge, allow for the emergence of shortcuts, provide moving and loose parts, and provide variety and complexity of elements. Additionally, you might consider making a prepositions checklist to see how many opportunities for movement there are available throughout the playscape (e.g. up, down, around, across, in, out, over, under, between, through, etc.).

A verbs checklist may also help. Here are a few to get you started: sitting, crouching, crawling, standing, walking, running, skipping, sprinting, sprawling, jumping, bouncing, pulling, pushing, balancing, climbing, sliding (which can be done while standing, crouching, sitting, lying, prone, sprawled, or hanging), swinging, launching, flipping, spinning, rolling, flopping, tumbling, hanging, and flailing. There are countless more, so try to accommodate as many as you can. And as long as we are on the subject of words, why not do like Lewis Carroll and try making up a few? Can you design a playscape that embodies your word? You might try and see where that takes you.

Figure 49. Gallivanting through a labyrinth of sunflowers - O frabjous day!

6.12 - Allow Risk and Preserve Safety

Play should be free, but it is not entirely unlimited. In some cases, protection is necessary, particularly when the danger posed to the individual is not predicted. As a designer for play it is important to limit unforeseen, highly threatening consequences. When we speak about playground safety, what we should be most concerned with is the prevention of death and serious injury. Though

such cases are rare on playgrounds, they have occurred. These are always tragic, but are not always due to design flaws. Bruises, blood, tears, even broken bones are all part and parcel of being alive. On the playground, as with anywhere else, these things happen, and that is perfectly acceptable as long as they are not the result of neglectful design. Children are adept at risk assessment, much more than we give them credit for. Occasionally they fail a risky challenge, but this is exactly how they get better at risk assessment. There is no need to pad and soften everything on the playground. The world is a hard and treacherous place. Teaching players otherwise may be counter-productive to their development, and may be undermining their agency. Soft places can be quite fun and enjoyable experiences in their own right, but they also lower the guard of otherwise cautious individuals, making them more susceptible to unforeseen dangers. Just make sure you know *why* you are padding and softening something. Is it for the experience of it, due diligence, or just overzealousness?

6.13 - Allow Chaos

It is not a bad thing to embrace a little destruction. Destruction is simply another type of play and can help people to work out internal issues they may be having. People play in all kinds of moods, not only when they are joyful. It is important to express our emotions, and play can help facilitate this. As designers, we should not stifle destructive play just for the sake of keeping things orderly. Where possible, employ playworkers. Playworkers can often help players navigate these emotions safely by guiding them toward destruction that is not socially or physically harmful.

6.14 - Biological Functions

If you want people to stay at your playscape for any length of time, you must consider their biological needs. This may seem obvious, but it is nuanced enough to merit inclusion in these design guidelines. Playscapes are fundamentally human places, and deserve to be treated as such. Humans have many biological requirements, many of which stem from the digestive system. While having a place to get food and drink nearby is not required, it may improve people's perceptions of the playscape. Hunger makes people irritable, and thirst makes people exhausted. Water fountains and barbecue pits are often found in parks near playgrounds, but there is more that can be done. Maybe it wouldn't be a bad idea to give food trucks some real estate on which to do business. A skilled planting designer should also be able to populate the playscape with fruiting and edible flora. That's free, healthy snacks!

Visitors will also need a temperate place to sit and a surface to set things on. A place to sit while spectating, resting, or eating is a fundamental part of any playscape; so is ready access to toilets and

washrooms. Many isolated park playgrounds I have been to lack these, possibly due to a lack of plumbing. When plumbing is not an option, a portable toilet is a better-than-nothing alternative. They may not be ideal, as many people view them as being unhygienic, but they can suffice when other options are not available. Toilets and washrooms should have a nearby, easy-access first aid station, ideally with an attendant to assist in finding the right equipment and contacting paramedics if necessary. Accidents happen, and getting help will be a person's first priority when they do. Making it easy for people to get help is in everyone's best interest.

Figure 50. Even Maggie C. Daley Park in Chicago has to resort to portable toilets - better than nothing!

6.15 - Don't Repeat Yourself

It is important not to become too formulaic in your approach to playscapes. Keep challenging yourself as a designer. Keep growing. When you start to treat every play area identically from the outset, you are valuing your own expertise over the identity of a place. This is precisely the problem with our overuse of prefabricated play structures. They have become ubiquitous, and now so few places for play feel truly unique. Ask yourself, do you want a franchise playground or a playscape with character? Consider what other local playgrounds are already doing and try to fill a niche that is not yet met in the community. Destination playgrounds understand this, and attract visitors by standing out, but local

playgrounds can be outstanding too. Make each play area special. Visitors will appreciate them all the more for their character and identity.

6.16 - The Unplugging Test

Never rely too heavily on any single element in a playscape. Doing so may lead to catastrophic failure when that element becomes unusable. Water play areas, for example, have very little purpose when their water is shut off. In many parts of the world, public water features are non-operational during winter. Water use may also be restricted in times of drought. By relying solely on water to make a play area fun, designs can fail to account for the very likely scenario of water being unavailable. I like to do what I call the unplugging test. I simply ask myself, what happens if I unplug this, or remove that? Is the play space still okay? Is it better than okay? Is it still really fun? If so, you have designed it right. By diversifying your playscape's design foundations, you make it more resilient to a wide variety of circumstances.

6.17 - Memorial and Honorary Playscapes

When you think of memorials solemnity may come to mind, but there are occasions in which happy, playful memorials are called for. Memorials, however, are notoriously difficult to get right. It is very easy to miss the point of them. If attempting a memorial or honorary playscape, try not to be too iconic. Let the memories of the persons or events speak for themselves. A memorial does not need anyone's designerly stamp on it. Always keep in mind who and what you are trying to honor. What was their name? What kind of person were they? How did they think? What did they do? What should they be remembered for? Who will see this and what do they need from it?

An example that strikes me as having partly missed the point is a place called Taylor's Dream in Fort Wayne, Indiana. They call it a "boundless playground," as it is intended to be a spot where children of all abilities can play together. The idea came from a young girl named Taylor who noticed her classmate, Mallory, was unable to use the playground equipment at their school due to a physical disability. She stumbled on this systemic problem and brought it to the attention of the city. The schools and parks in the city had not been addressing the play needs of children with disabilities, and so they set out to remedy that. Taylor is now the playground's namesake, memorialized on a giant sign at the entrance, instead of the real inspiration for the playground, Mallory. Taylor is probably a wonderful person, but I disagree with naming the playground after her. I think this project needed less of a tone of "good on you," and more of a tone of "shame on us for not realizing this sooner." This playground is for

people like Mallory, children with disabilities that had not been given the same opportunities as other children on public playgrounds. Why not give it a name that reflects that?

Figure 51. A rather magnanimous dedication to someone without disabilities

In contrast, the Bulb Labyrinth Memorial Garden at Ithaca Children's Garden in upstate New York is a deeply thoughtful example of a memorial playscape. It was designed in partnership with the Ithaca Childbearing Loss Network to remember babies and children the Ithaca community has lost. At its center lies a purple flowering redbud and a totem inscribed with "hope, peace, love and remembrance" in 15 different languages. From the ICG website: "The labyrinth provides a place for intimate interaction with bright and bountiful blooms, and invites all to experience it, whether for contemplation and solace, or exuberant exploration... Bulbs symbolize hope and the cycle of life... The labyrinth at the Ithaca Children's Garden is a beautiful, peaceful, uplifting and sensory experience for all to enjoy, in times of great joy, and in times of grief."

Figure 52. I found this garden to be both incredibly playful and deeply respectful

Conclusion – The Role of the Designer in Play

Whether you have read along from the beginning or skimmed through to the end, it is worth noting that this thesis has come a long way from its point of origin. I have travelled, suffered, and triumphed in many unexpected ways over the past two years, making the content better for it. As an indirect methodology in its creation, maintaining a playful worldview has undoubtedly been my greatest boon. Play, as you may have already discovered, happens everywhere, not just in the places designated for it. By practicing play-seeking behavior, I have uncovered many wonderful secrets along this journey that have informed the conclusions herein. As a rule of thumb, those wishing to replicate my approach to designing for and writing about play should cultivate a deep personal connection with play well in advance of putting pen to paper. This means watching for when and where it happens, taking lots of photos, reading blogs, playing with children, volunteering at neighborhood events, taking road trips to playful destinations, looking for any way to work play into your designs (even if, at first, it doesn't seem to belong – play is and should be everywhere there are people), and most importantly, playing whenever you get the chance. The deep understanding that you develop in this process will empower you with the requisite respect to accomplish great things in the name of play.

Figure 53. Play whenever you get the chance

Chances are you can already identify play when you see it; this stems from a personal connection with play. However, a clearer image of play is attainable if you devote time to conceptualizing it consciously. This is one of the most important lessons I learned while writing this thesis. Clearly defining play, and understanding its role in human and animal life – scientifically, philosophically, and ethically – is a difficult task requiring substantial mental effort. It will not become clear all at once, but it will take shape if you put the time into shaping it. A designer for play must minimally make this effort. It is not enough to rely solely on your own experience of play, as this will differ from person to person. It is essential to think more broadly about how this phenomenon fits into the life, agency, and personal fulfillment of others. Practicing empathy and respecting the agency of all players (literally everyone, everywhere) is a necessary ingredient in designing exemplary places for play. If you are already good at this, you are a rare person indeed. Most of us probably need to work at developing empathy. It is typical of humans not to be considerate of all people, all the time. It is a challenging exercise, which you are very unlikely to ever be perfect at, but the closer you come to advocating for the play of all, the better designer for play you will be.

Figure 54. You have nothing to lose by practicing empathy, and everything to gain

The adventure play tradition is a wonderful precedent to look to for guidance on how to respect the agency of players. By provisioning time, space, materials, and permission, you are practicing the expansion of possibility, and warding off its collapse. You are also transmitting a non-verbal message to players that their actions and imaginations, not yours, are what matter most. They intuit from the skill of your hand all they need to know about play: that it is theirs to shape. Your role as the designer is to allow for the widest possible variety of play in places meant for such purpose, and to engender playful possibilities in all others. Designing a place for play is about educing, teasing out, the playful personas of its visitors and inspiring them to take control and do more. Have your environment play with its guests and engage them actively. You are not controlling behavior through design; quite the opposite, actually. You are setting players free.

Figure 55. Teasing out playful personas of visitors and inspiring them to do more (with mud!)

In combining your deep understanding of play, playful outlook, empathy, respect for player agency, and play advocacy with the provision of space, time, materials, and permission, you are on the path to building exemplary playscapes. As a designer for play, you recognize play's exemplars and strive to evoke them by rousing players to action and kindling their playful indulgence. It is a magical day when your visions finally manifest, but even after your plans are built, your responsibilities as a designer are far from complete.

All projects have a lifespan, and those which are well-loved are among the shortest lived. A designer for play is an expert creator, and with that title comes a certain duty to each project that must be upheld. Very few parents leave their children to fend for themselves out in the wild, yet designers do this surprisingly often with their own work. Your designs will always carry a part of you with them, and by putting them out in the world and never looking at them again, you abandon this part of yourself. Your designs will not grow according to your vision, and you will not learn anything from their existence. Wherever possible, become a lifelong consultant for places of your design. Watch as they grow and change with use, and advise on how they might be improved. Your skill will only wax with time, so as you revisit old sites, bring this skill to bear and keep your work growing with you – never abandon it. And if you are not in a position to consult or improve former works, revisit them anyway. Review how they are used, and how they aren't. Have they lived up to your expectations of them? Ask yourself and others why they have or haven't achieved certain desired effects – and avoid displacing blame in the event that your designs have not lived up to your vision of them. Even if their failures are not explicitly your fault, think of other ways you could have approached this project to ensure a more desirable outcome. And lastly, play there. Are you having fun? Are you enjoying the moment? If you are, maybe you have accomplished exactly what you set out to.

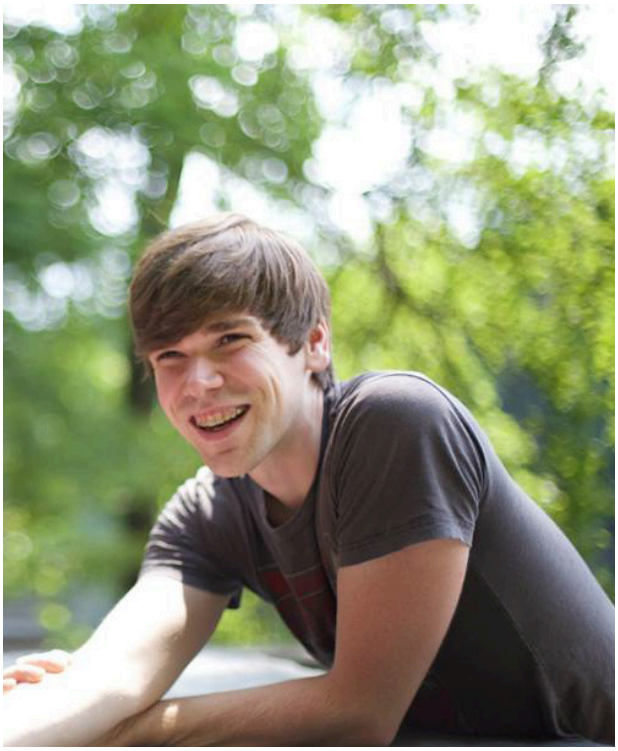


Figure 56. Enjoy the moment

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Appendix A - Advancing our Understanding of Adult Play

After an extensive search through contemporary literature (published in or translated into English) I have found adult play behaviors to be extraordinarily understudied in all scientific disciplines. There is little to no evidence to suggest that the many touted benefits of play in adolescence cease to apply in one's adulthood. However, there is evidence in support of a deficit or total absence of play behavior in individuals who have experienced a traumatic event (Perroni, 2014, Ch.2) leading one to suspect that an individual's lack of spontaneous play has more to do with personal trauma than it does with age. Because an individual's personal characteristics, behaviors, and contexts change over time, as posited in the Bioecological Model of Human Development (Bronfenbrenner, 2000), designers will need to be cognizant of how each of these variables affects play behaviors in order to better create environments which maximize enjoyable and healthful affordances for a broad spectrum of adult user-groups. The current dearth of opportunities for adults (with or without children) to play spontaneously outdoors or in public in the U.S. limits me to informed speculation based on a synthesis of concepts I consider relevant to a preliminary understanding of adult play behavior in outdoor environments.

This section is divided into seven subsections according to specific research topics: The Developmental Needs of Adults; The Specific Role of the Outdoor Environment; Stress Relief and Cognitive Performance; Friendships and Chance Encounters; Intergenerational Relationships; Challenge, Risk, and Learning; and Scale. This is intended to be a starting point for future investigations in the field of adult play studies; it is neither exhaustive nor complete in scope. It is this author's hope that initiative will be taken in the venture of producing adult-friendly outdoor play areas, and that research will be coordinated with their installation and use.

A.1. The Developmental Needs of Adults

While the developmental needs of children are widely-studied, the pervasive misconception that upon reaching adulthood an individual ceases to develop may be partially to blame for the limited body of research on this topic, especially regarding play behaviors which are commonly associated with childhood. The societal conception of maturity carries the nuance of a steady-state pinnacle of human development, beyond which no further development occurs. A similar misconception exists within ecology regarding the successional stages of ecosystems achieving an equilibrium state at "maturity." This is demonstrably untrue in ecological succession, as it is in human development. Ignoring

developmental changes, which are always ongoing, greatly impedes scientific understanding of real phenomena. Neurological studies have shown quite conclusively that human minds grow and change throughout one's lifespan (Havens, 2014).

Intimacy has been shown to be of great importance in what literature exists on adult development (Olszewski, 1990). The formation of close friendships and intimate partnerships predicated on trust is a fundamental component of healthy adult development (Ibid.). As one ages, these relationships and the trust-building exercises that accompany them become increasingly important. Bonding with others cannot be understated as a fundamental human need. If designers take this into consideration, a cooperative adult play environment may provide unique and healthy opportunities to build trust and establish close friendships.

A distinction between three adult developmental categories, "Socialized Mind," "Self-Authorship," and "Self-Transformation," has been shown to be instrumental in predicting wellbeing preferences and actualization in adults (Havens, 2014). Socialized-Mind individuals limit their conception of wellbeing to things outside of their personal control. They tend to express wellbeing as being related to feeling loved and accepted by their personal group. Adults in the Self-Authorship category assign their wellbeing to achievement experiences, expanding their locus of control over wellbeing. They also assign some amount of wellbeing to their relationships, but less so than those in the Socialized-Mind category. The most developmentally advanced state of the three, Self-Transformation, exercises the greatest control and cognitive flexibility over their wellbeing experiences, and tends not to allow circumstances to dictate whether they are able to experience wellbeing or not. They often place greater emphasis on helping others than those in the other categories. This has implications for the design of adult outdoor play areas in a few ways.

First, as is mentioned previously, close relationships are important to most adults. In all three of the aforementioned developmental categories, relationships play some part in determining an individual's sense of wellbeing. Second, adults in less developmentally advanced categories attribute much of their own sense of wellbeing to feelings of belonging or being part of a group. A locally-sited adult play area where people are encouraged to gather and play cooperatively will likely aid in the growth of friendships and communities. Third, opportunities for achievement in adult play environments can help to satisfy the needs of adults in the Self-Authorship category. Rope courses offer some good examples of how adults might experience well-being through achievement and cooperative play in an

outdoor play area. Lastly, by building in opportunities that require individuals to help others, developmental growth may be encouraged in an adult play environment. Through the acts of offering and accepting help from others, adults may come to feel a greater sense of agency, belonging, and control over their own wellbeing.

Play areas allow individuals to test ideas, strategies, and limitations in relative freedom. They are places where adults and children alike learn about themselves and their environments, and how to live harmoniously together. Without socially acceptable places to play outdoors with new people, I fear that adults in the U.S. today have isolated themselves from a useful means of advancing their personal psychosocial development. Control over one's own experience of wellbeing seems a rare thing, and the potential for adult play environments to afford such agency is worth exploring.

A.2. The Specific Role of the Outdoor Environment in Adult Play

There is observational evidence that children play more complexly and for longer durations when they are outside (Rogers, 2006). It is reasonable to assume that adults would behave similarly given the physical and social space to play freely. Very few outdoor play environments are designed with adults as a target audience. This strikes me as unusual given the amount of time and money American adults spend on leisure activities. The U.S. Bureau of Labor Statistics offers some insight into exactly how much time an American adult spends on leisure, which for Americans older than age 15 amounts to an average of 5.3 hours daily – approximately 35% of one's waking hours. More than half of this time (approximately 2.8 hours) is devoted to watching television. Given greater access to compelling outdoor leisure opportunities, how might these leisurely hours get reapportioned? With growing concerns over epidemic obesity in the U.S., greater access to places that facilitate and encourage physical activity seems prudent.

A benefit of siting play areas outdoors is that outdoor areas are frequently more spacious with fewer obstacles than indoor environments, affording occupants greater opportunities to engage in a diversity of physical activities. The absence of a roof and walls might leave one exposed to weather and wind, but it also allows for free movement in all directions. In an outdoor environment, an individual is likely to experience a greater sense of mobility and freedom to climb, jump, dig, run, hurl things through the air, get dirty and sweaty, and make noise. Limitations imposed by the physical and social contexts of indoor environments may be lifted simply by being outside.

A limitation imposed by the indoor environment is its relatively limited allowance for getting messy. Generally speaking, responsible adults endeavor to keep indoor environments relatively clean (an observation that would seem to hold for most developed countries). In the book *Why Dirt is Good: 5 Ways to Make Germs Our Friends* (Ruebush, 2009), the author suggests that small children put things into their mouths because their bodies need a means to boost their immune systems, something that occurs with repeated exposure to anything or anyplace that contains pathogens, such as soils. It would be interesting to investigate whether the same applies to adults - and whether or not persistent exposure, or exposure later in life, to trace amounts of outdoor pathogens has significantly different effects than does childhood exposure alone. There is some compelling evidence in support of the healthfulness of small pathogenic creatures called helminths, intestinal worms which can trigger positive metabolic and immune responses in humans (Brody, 2009). It has been suggested that the increasing prevalence of metabolic syndrome in developed countries follows as a result of the near-eradication of these helminths due to what might be considered “excessive” sanitation requirements (Wu et al. 2011).

In addition to the affordances of greater mobility and exposure to healthful doses of pathogens, the outdoor environment offers far greater solar exposure than do most indoor environments. UVB wavelength solar energy activates a metabolic chain reaction in humans which results in the production of vitamin D. Medical research shows that many people in the U.S. have low vitamin D levels and are likely not getting requisite doses of sunlight (Quinn, 1999). This is not surprising if we consider how most adults in the U.S. spend their daylight hours: sitting at their desk in an office. The relationship between low vitamin D levels and poor bone health is widely published and well-documented. Additionally, low vitamin D levels have been correlated with conditions believed to be triggered by environmental factors in genetically susceptible individuals, such as prostate cancer, multiple sclerosis, and seasonal affective disorder (Ibid.). Overexposure to UV radiation, however, is associated with various types of skin cancer. Yet, there is evidence to suggest that adolescence is the most dangerous time to get sunburned, while sunburns in adulthood have much weaker associations with the development of malignant growths (Veierød, 2003). This may imply that adults are more resilient to some of the negative effects of UV radiation, and could be spending more time playing outdoors in the sunlight safely.

A.3. Stress Relief and Cognitive Performance in Adults

Many studies have been done on play behavior in children and its effects on stress and cognitive performance, while relatively few have been conducted on the effects of play behavior in adults.

Physical activity through play has been shown to alleviate stress and help children to manage their feelings and gain a sense of self control (Stegelin, 2005). Investigations into whether or not these same or similar effects are observable in adults would go a long way toward expanding the body of literature on the benefits of adult play.

In a study on the role of recess in children's cognitive performance and school adjustment (Pellegrini, 2005), the authors found that unstructured breaks from demanding cognitive tasks facilitated general social competence, learning, and adjustment to school. If similar correlations could be demonstrated in adult populations, such findings would have substantial implications for higher education settings and workplaces. Greater social competence, learning and adjustment associated with unstructured breaks in each of these settings could greatly improve individual performance, motivation, and attitude, a theory which companies like Google have already integrated into their corporate cultures and campuses.

There is evidence to suggest that visits of any duration to nature areas can have positive effects on perceived stress relief (Tyrväinen et al., 2014). Additionally, spending time in natural outdoor settings has been shown to improve human mood states, concentration, and performance (Ibid.). More investigation is needed on the topic of the outdoor environment's role in stress relief and cognitive performance, but this line of inquiry shows some promising leads in support of spending more time outdoors. If spending time in nature environments and the act of spontaneous, unstructured play are both associated with stress relief, improved mood, and increased cognitive and social performance, then the combination of these two factors in outdoor play environments could dramatically improve the quality of life for adults who have ready access to them. The role one's culture plays in the free use of such areas is not clear, but without many adult playgrounds in the U.S. to study, one is left to speculate what cultural factors might preclude adults from using them. It will be important to consider and to try to predict those social factors which could inhibit the use of adult play environments so that they might be better designed for.

A.4. Friendships and Chance Encounters for Adults

Adult play areas may additionally facilitate healthy forms of social networking. In a study on how adolescents cope with social problems, Shin (2012) demonstrated that public settings offer children opportunities to interact and form lasting bonds with others, and that the relative importance of these experiences intensifies as one ages. Educational psychologists studying adolescents suggest that as

children age and become more independent from their immediate families, they rely more than ever on friendships for companionship, intimacy, and support. There is little reason to doubt that adults rely just as heavily on friendships for emotional support as older children do, though it is likely that some adults become increasingly reliant on immediate families of their own creation, such as domestic partnerships or families with children. That said, it is becoming increasingly common for people to elect not to have children. In the United States, for example, the percentage of women who have not given birth by their 40s (20%, or 1 in 5 women) has doubled since 1976 and this trend shows no signs of stopping (Blackstone, 2014). With this in mind, the fact that public, outdoor play places for adults are rare in the U.S. means that the task of meeting new people and seeking support from others is often relegated to culturally acceptable adult social hubs such as bars, clubs, online gaming, and the internet (Facebook, websites for dating and hookups, etc.), each of which may have harmful consequences on an individual's mental and physical wellbeing if too frequently relied on. Public spaces that encourage adult free play (non-virtually and without the influence of alcohol) may facilitate friendship formation via casual encounters, introductions, and cooperative play. Having a public place where open socialization across ages is acceptable and encouraged can increase the affordance of healthy face-to-face social interactions with strangers in safe environments. There may additionally be benefits for families with children who observe their parents playing freely with others on playgrounds. Playful solidarity between adults and children, as well as role-modeling how to play nicely with others, may strengthen familial bonds and improve relationships.

A.5. Intergenerational Relationships

There is some evidence that strong relationships between young children and older adults can have positive effects on the lives of said children. With strong relationships, younger generations may learn to respect older generations, rather than fear them (Kennison, 2012). This phenomenon has even been shown to increase awareness of human mortality in teens, leading them to act more cautiously and avoid negative risk-taking as they age (taking drugs, having unsafe sex, drinking alcohol, etc.) (Ibid.). As previously mentioned, if adults are encouraged to participate in play on playgrounds near younger children, there may be benefits in the way of role-modeling and the bridging of social generational rifts. In the U.S., non-profits such as the Trust for Public Land (TPL), have implemented their own intergenerational initiatives with a similar goal in mind. TPL's "Fitness Zones" bring gym equipment for adults to outdoor settings, often locating them next to children's playgrounds (Solomon, 2014, Ch.7). These are meant to encourage casual and spontaneous interactions between young and old visitors.

Such initiatives could be taken further, expanding “Fitness Zones” to include multiform use cases with a greater emphasis on active adult play and with less of an overt emphasis on exercise for exercise’s sake. Implicitly encouraging unstructured play has the benefit of de-emphasizing the difficulties of a physical challenge while calling users’ attention to what is enjoyable about it. This overlaps with the concept of ‘gamification’ (Luminea, 2013) in that the goal would be to produce a desirable experience that motivates users to remain engaged, rather than exhausting them with tedium and discouraging them by focusing on subtle, distant rewards (such as weight loss or muscle gain). An environment which is fun to engage with over time, that provides enough of a challenge for adults of all fitness levels, and enchants people with its form and complexity, will be the kind of place that boasts a consistently large adult user base. Such a player base in close proximity to playgrounds for younger age groups could serve to strengthen intergenerational relationships. The presence of more adults nearby has the potential to increase the safety of children’s playgrounds, as there would be a greater number of watchful eyes and able bodies at hand in the event of an accident or dangerous situation. An obvious next step would be to start designing and building such places so that researchers may begin to observe how social dynamics operate in intergenerational play areas.

A.6. Challenge, Risk, and Learning for Adults

An unfortunate corollary of rigorous safety standards in the U.S., the U.K., and Australia is that they have led to cultures that are increasingly risk-averse, and highly litigious (Wyver, 2010). This has deleterious effects on playground design options in general, though I suspect that providing greater opportunities for risky play behavior in adults could affect the degree to which parents allow for risky play behavior in their children. This suspicion is based on Nordic studies of culturally acceptable risk in daily life and development (see Sandseter 2009a). Risky play often occurs outdoors and has been defined as a thrilling and exciting form of play that involves risk of physical injury (Sandseter, 2009b). Differences between any two cultures' tolerances for risk can be staggering. For example, children handling knives and saws, climbing high up in trees and cliffs, and sledding down steep snowy slopes at high speeds are common occurrences in most Norwegian child care institutions (Sandseter, 2009a). Reexamining the U.S.’s position in this continuum of risk tolerance is already under way, and evidence suggests there is a need for risk in human development at all ages.

When a child fractures a bone, they tend to recover quickly; fractures need to be set and often do not require surgery. Similar injuries in adults often require more time to heal (Clinton, 2013). This

could be seen as an opportunity to improve adult health awareness, in that injuries, which take longer to heal in older individuals, will have heuristic value that could inform an individual's risk assessment in age-appropriate ways. Minor injuries may also serve as motivating challenges to be overcome, but much more work needs to be done in the way of investigating physical injuries incurred during outdoor play and adult responses to them.

Children have been shown to negotiate their way between truly horrifying activities and ones that are merely intimidating, When children reach their own sense of equilibrium, they express delight by laughing, shouting, smiling, screaming, and yelling (Sandseter, 2009b; Solomon, 2014). A sense of glee accompanies having an experience for which there is no definite conclusion. Adults also often claim to feel "alive" or invigorated after dangerous events, so there is reason to believe that this gleeful experience is not limited to children alone. Providing the illusion of danger is often enough to trigger such a response (as in a roller coaster ride or rock wall climbing). Actual physical injuries need not be imminent for adult populations to experience glee and, in fact, are probably less likely as adults typically have much more informed understandings of the physical consequences of their actions than do children. Moving forward, designers of outdoor play environments for adults ought to consider planning for the affordance of navigable risks that are not life-threatening. This will add diversity and meaning to the everyday accomplishments of adults in these environments.

A.7. Scale

Designers intervene at many scales. When designing a new place for people to use, there is often a need to consider factors that operate at both larger and smaller scales than the scale of the design intervention. This is because any given context is part and parcel of larger contexts and contains within itself smaller contexts, according to both Ecological Systems Theory and the Bioecological Model of Human Development (Bronfenbrenner, 2000). The application of scale considerations from Ecological Systems Theory has been popular in design fields for over fifty years. In the late 1960s, for example, many architects, planners, and other advocates for better public spaces were calling for interconnected networks of small, unfenced, open areas which were both relevant and congruent with their larger urban contexts (Seymour, 1969). Small interventions are economically viable and have low area footprints that can be worked into neighborhoods with relative ease. These places serve purposes locally, and can address the needs of small communities, but when connected with other small

interventions that serve other functions and user groups, they begin to function as a system at a large scale that increases the relative value of all the interventions that are part of the system.

In a recent report on parklets and how they create public space (Stephens 2011), it was suggested that tiny, localized interventions lend themselves well to incorporating design ideas offered by prospective users of the area. This participatory design approach has been gaining popularity in recent years, but this report cautions designers from relying too heavily on specific design ideas offered by said users. Stephens (2011) suggests that children are imaginative, but they draw only on what they have seen, and asking them to design a playground will therefore simply maintain the status quo. Stephens' assertion may, however, be tinged with having asked the wrong questions.

Literature on game design suggests that players should be involved in design development from the earliest possible stage to offer feedback about what is working and what isn't, but there is little evidence to suggest that average players are well-equipped to innovate new styles of gameplay (Fullerton, 2008). Similarly, when trying to design outdoor play areas for adults, it would make sense to involve adults throughout the process to test ideas, but not to rely on them for innovative solutions, as status quos are more likely. This is where the specific role of the designer comes in. A designer is well-equipped to invite the input of potential user groups while keeping a finger on the pulse of creative opportunities for innovation.

When considering large-scale interventions, it has been suggested that they are most effective when they transform underused or abandoned urban space into areas of activity for a diversity of potential user groups (Solomon, 2014). This is one of the most equitable and ecologically sensitive models for implementation of adult playground designs, as it caters to many different user groups and redevelops urban land into something productive for the community. Sustainable solutions like this deserve a place in all future developments, irrespective of field or profession. Redeveloping urban land into large outdoor play areas offers low-income individuals and families a means to recreate and play for free. Large interventions allow room for designers to develop many different sub-areas within a playground to accommodate all manner of people and use cases. The larger the intervention, the greater are its synergistic possibilities. An added benefit of converting urban land into an intergenerational playground is that it is likely to imbue a park-like natural character on what was previously a rough, impervious lot or building. While many lots and buildings often have an exclusive or

uninviting appearance to the passerby, a gleeful play area that encourages people of all ages to let loose and enjoy themselves could prove to be even more inviting than the respite of most urban parks.

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Biography

Hailing from Gainesville, FL, Daniel Orion Lambert graduated from the University of Florida in 2010 with a B.S. in Environmental Science. While at U.F., he volunteered for a hospital program offering peer support and companionship to terminally ill teenagers, not knowing how profoundly he would be moved by the experience. Since then, he has made volunteerism and youth support integral parts of his lifestyle. After graduating, a Fulbright grant enabled him to teach and mentor students in South Korea. There he volunteered after school, leading alternative clubs and tutoring North Korean defectors. The more time he spent with young people, the more he began to appreciate the depth of human growth that is cultivated in the spirit of play. In 2016, he completed his master's degree in Landscape Architecture at Cornell University with a concentration in designing play environments. He led playscape design competitions and projects throughout his master's studies, and has travelled thousands of miles to study play environments in the U.S. and abroad. He is currently Chief Creative Officer for Fight or Flight Games, an indie game studio dedicated to scientifically inspired play.