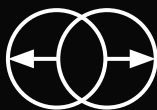


DESIGNING FOR PLAYFUL TENSION



To my father who taught me how to play

Designing for Playful Tension

Or: How I drew two circles and wrote a bunch about it

By

Jess Uhre Rahbek

Acknowledgements

I would like to thank Design School Kolding and the LEGO Foundation for putting this PhD project together and for believing in me as the right person for the job.

Thanks to my supervisor Helle Marie Skovbjerg who has had the ungrateful job of insisting on some scientific rigour from a creative scatterbrain. You have encouraged me to be ambitious and have made sure that the PhD project has been a most rewarding education.

Thanks also to LEGO House where everyone has welcomed me and my project with great enthusiasm and dedication.

Especially thanks to my project supervisor Mike Ganderton and the rest of the design team. Without all your help and hard work this project would never have been possible.

Thanks to my fellow PhD students and colleagues from Design for Play at Design School Kolding for sparring but mostly for letting me disturb you with my nonsense whenever I needed a break.

Thanks to my family for taking such a big interest in my project and supporting me throughout.

Lastly and most importantly, a special thanks to my wife for being willing to listen, discuss and even structure the project whenever I needed it. You always bring some much needed order to my unruliness without which everything would dissolve.

Table of Content

Introduction	8
Sensing that Something is Amiss	11
A Brief Vocabulary Detour	13
Character Creation	18
Here be Dragons	33
Design Research	34
Research Through Design	36
Play Studies	42
Previous Expeditions	47
The Adventure Begins	50
What is the Problem Really?	52
Who Needs Theory Anyway?	63
Theory about the process of design	63
Theory about what is being designed	71
Design Theory as Intermediate Level Knowledge	77
Learning (from) the Tools of the Trade	82
Tales from the Fieldwork: Episode I - The DNA of my journey	82
Building the Bridge from Both Sides	95
Reduction of Complexity in Search of Usability	101
At the Library	107

Selection of Texts	107
A Designerly Way of Reading	109
Reading Schiller - On the Aesthetic Education of Man	110
Reading Nietzsche – The Birth of Tragedy or Hellenism and Pessimism	114
Reading Huizinga – Homo Ludens	119
Reading Piaget – Play, Dreams and Imitation	127
Reading Bateson – A Theory of Play and Fantasy	132
Reading Fink – The Oasis of Happiness: Toward an Ontology of Play	134
Reading Caillois – Man, Play and Games	138
Reading Csikszentmihalyi – Beyond boredom and anxiety: the experience of play in work and games	145
Reading Gadamer – Truth and Method	150
In Summary	153
Playful Tension Taking Shape	155
Tales from the Fieldwork: Episode II – Losing Control	158
The Orderly and the Unruly	162
Models as Epistemic Objects	164
Mediating Metaphors	168
Making the Playful Tension Model	172
Going for Visual Minimalism	177
Exploring Playful Tension	180
Doing Reasonable Fieldwork	181
Playful Tension Analysis of LEGO House Play Experiences	188

Tales from the Fieldwork: Episode III – The MECHANics of LEGO building	190
The Talkback	202
Introducing Playful Tension to the LEGO House Design Team	208
Tales from the Fieldwork: Episode IV – Pool Party	212
The Talkback	222
Tales from the Fieldwork: Episode V – Gone Fishing	228
The Talkback	240
Designing for Playful Tension	244
Tales from the Fieldwork: Episode VI – Unidentified Playing Objects	245
The Talkback	250
Going Viral	253
Across Space and Time	255
Taking it Apart	259
Putting it Together	262
Tension of Possibility	265
Tension of Uncertainty	267
Tension of Novelty	269
Tension of Abstraction	273
Tension of Sociality	276
Tension of Success	279
Tension of Emotion	281
Three Bonus Levels	284
Talkback	291
Back in the Scholar’s Tavern	297

The Dragon's Post Mortem	298
What Exactly Happened Here?	298
The Good, The Bad and The Ugly	301
An Answer at Last	313
References	314
Appendix	327
Summary	328
In English	328
In Danish	330

Introduction

Did you ever consider what makes a great toy? If you are a play designer, like I am, chances are that you did. Not only that, but maybe you have even taken a step back and asked yourself; what makes a good play experience? The first answer that comes to mind is likely to be that great players make great play experiences, for themselves and for each other. But where do we come in? The play designers that is. Well, that is the source of any play designer's imposter syndrome; the romantic idea that players don't need us. That they don't need our toys or our games. They can create great play from anything and from nothing. Give them a stick and they will pretend it to be a sword. Take it away and they will pretend to have a sword in hand anyway or create a clapping game or God knows what else.

We could end our story on that note if it weren't for the overwhelming evidence that even the best players crave great playthings. After all, I am sure that Santa Claus doesn't receive many wishes for sticks. In fact, there seems to be a surprising demand for LEGO, for Counter-Strike, for Rubik Cubes, Yoyo's and pinball machines and other designed playthings considering that these things are not required to have a great play experience. But play experiences do require something. Something fuels play and I have come to believe that even if players can squeeze this fuel from their imagination and from a stick alone then a great toy will have it spilling out allowing players to achieve play experiences that would otherwise not be easily accessible.

So that takes us back to the beginning. What makes a great toy? What are the common qualities of the playthings that we design that make them catalysts of play?

I believe that I have an answer to that question. Not the one and only answer, mind you, but a rather satisfying one nonetheless. This is the story of how I arrived at this answer.

Nearly three years earlier

Sensing that Something is Amiss

I was employed as a play designer at Design School Kolding when this all began. Before that I had made my living as a game designer creating virtual spaceship interiors and moon bases for a sci-fi video game where mostly adolescent males would shoot each other's virtual heads off.

At the design school I was mainly doing something resembling consulting work with companies that made all kinds of play and learning products in an EU project called Play User Lab. Except it wasn't called consulting work because that would have been considered a distortion of competition so it was called something else.

I had also been part of drawing the blueprint for the school's new Design for Play Master's programme, where I would also teach different courses on play design. That meant giving lectures and introducing design students to the wonders of play theory as well as providing supervision on their play design projects. A common question that I would hear from our students over and over would be something along the lines of *"That was a very interesting text (polite student), but how exactly should I use it in my work?"*

In the beginning I admit that I might see a question like this as an indication that the student had not fully understood the text. I mean, is it more likely that the blame lies with Huizinga's definition of play that has been cited by anyone and everyone who has ever ventured into the field of play theory, or that it lies with the student who spent the weekend partying rather than reading?

It would have been nice to put it to rest at that, but as the question kept reemerging from different students I found

myself forced to consider that maybe, just maybe, the classic texts on play theory were not doing the students too many favours when it came to the actual design of new playthings. As much as I enjoy the play theory on our curriculum and believe that these texts provide an invaluable insight into the nature of play, I must admit that I was hard pressed to recall many instances from my own play design practice where I or my colleagues had really *used* the theory as part of designing new playthings. Now that the blame for the lack of theory informed play design was to be placed not between the students and the theory but between the theory and myself it became easier to consider that the texts might not be as useful to play designers as I had thought.

As I continued to roam the halls of the school, doing my best to convince my students that Caillois' system for classifying play could be a great source of inspiration, but with a growing suspicion that maybe play designers need play design theory rather than play theory an opportunity presented itself. As a god-sent gift from Paidia and Ludus themselves, a PhD position to collaborate with the design team at LEGO House for developing new play design tools became available at Design School Kolding. Deciding that this would be my chance at reconciling play theory and play design practice I jumped at this scholarly quest.

A Brief Vocabulary Detour

So, Design School Kolding and LEGO House had a common interest in developing new tools for doing play design that would help play designers to ground their decisions and discussions theoretically and they had picked me as their champion for slaying this particular dragon. But before I let you in on the details of my story there are a few things that we should get straight.

Play design. Play designer. Up until now I have been using these terms as if we all agree what they refer to. Of course we don't, as this is currently a new emerging field within design. It puts me in a precarious position because my definition of these things in fact developed over the course of my PhD project, which means that I know by now but it seems wrong to spoil the ending of the story before we have even started telling it. So, I will let my definition of these terms be a carrot on a stick that we will bite at as we go. What I will provide for now is the basic assumptions that guided the beginning of my journey.

When using the term play designer, clever people are quick to point out that you cannot design play. That is because play is arguably an experience that players create for themselves and for each other. So even if LEGO created the bricks they can hardly claim to have created the actual play experience of someone playing with them. On the other hand, the play experience would presumably have been very different without LEGO bricks, so I would argue that play designers have a hand in shaping play experiences by the indirect agency that they attain via the playthings that they create for the players to use to create their play experiences. This was

the assumption on which I began my work: that a play designer is a designer that creates playthings for players to use to create play experiences. This makes the practice of play design the practice of creating playthings.

Plaything. This is another questionable term that I have already used carelessly multiple times and therefore the next stop of our vocabulary detour.

In using this term, plaything, I align myself with play scholars such as Fink and recently Sicart who have used the term simply to mean the things that players play with (Fink, 1957/2016, Sicart, 2021). Fink argues that:

“Human play needs playthings. Precisely in his essential, basic activities, the human being cannot remain free of things; he is dependent on them: in work on the hammer, in ruling on the sword, in love on the bed, in poetry on the lyre, in religion on the sacrificial altar—and in play on the plaything.” (Fink, 1957/2016 p.24)

As both Fink and Sicart describe playthings, these are not limited to a certain cultural form such as being for instance a toy or a game. Rather, playthings are anything that is being played with. Therefore, a plaything might as well be a stone as a board game. In my project, however, I have concerned myself with the playthings that are designed with the intention of being used to play with. I would argue that the deliberate design of playthings implies that the play designer works to create in the plaything a certain set of qualities that enables it to support players in creating particular play experiences. So when the Master’s programme at Design School Kolding is called Design for Play, the ‘for’ is an important

acknowledgement of the indirect relationship between the play designer and the play experiences of the player as being mediated via the design of the plaything.

Even if it is ultimately the players who decide how to use a designed plaything to create a certain play experience it is important to the practice of play design to consider the intentions that go into the design decisions when making playthings. Whether or not the player will follow these intentions it remains important to understand how play designers create playthings to have particular qualities that may promote certain play experiences more than others. When discussing how playthings are designed to invite a certain type of play experience I will use the term *affordance*. The concept of affordances was introduced to designers by Donald Norman in his seminal work *The Design of Everyday Things* (Norman, 2013). Here he defines affordances as follows:

“The term affordance refers to the relationship between a physical object and a person (or for that matter, any interacting agent, whether animal or human, or even machines and robots). An affordance is a relationship between the properties of an object and the capabilities of the agent that determine just how the object could possibly be used” (Norman, 2013 p.11)

The concept of affordances has been hugely popular but has also caused much debate and confusion. This has made Norman distance himself somewhat from the concept suggesting instead that designers should rather be concerned about *signifiers* which are signs of what can be done in

relation to a designed object (Norman, 2013 p.13-14). This attempt to rectify his earlier work has arguably been somewhat unsuccessful at least in the sense that it has been impossible to replace the concept of affordances after it has been so widely adopted by the design community. The debate surrounding the concept of affordances lies, however, outside of the scope of my work and I will use the term affordance to describe how play designers make specific design decisions when creating playthings with the intention of shaping the play experience to some extent.

Another term widely used in the practice of design that will become central to the core argument of this dissertation is *usability*. When I question the usefulness of play theory in relation to the practice of play design I do so from a perspective of usability that originates within human–computer interaction (HCI). Within this field, Jacob Nielsen has proposed an understanding of usefulness as being a combination of utility and usability. Here utility is concerned with whether a thing provides the features you need, whereas usability is concerned with whether these features are easy and pleasant to use. Nielsen lists five defining qualities of usability as Learnability, Efficiency, Memorability, Errors and Satisfaction (Nielsen, 2012). Interaction design researcher Shackel suggests a shortened working definition of usability to be “*the capability to be used by humans easily and effectively*” (Shackel, 2009 p.340) and identifies the defining qualities to be Effectiveness, Learnability, Flexibility and Attitude resembling and supporting Niensens work.

While such a concept of usability is clearly formulated in the context of HCI, it appears reasonable to appropriate it to the question of the usefulness of play theory to play designers. In doing so I do not question the utility of play theory, meaning whether play theory presents knowledge relevant to the practice of play design. Rather my concern is its usability in the context of play design practice - is it easy, effective and pleasant to use?

Character Creation

Wiser people than myself led me to believe that it is good practice to make an account of the methodological assumptions that follow the philosophy of science underlying one's PhD project. In an attempt to do so, I will take some time to explain my approach to the project and the type of research that I have been conducting.

If you happen to be familiar with tabletop roleplaying games such as Dungeons & Dragon, then you know that before heading out on your adventure considerable effort is made to define the character that you will be playing. In Dungeons & Dragons this will typically include building a backstory about your character, deciding whether your character is a human, an elf, a halfling etc. and maybe most importantly what class the character will belong to. The class will specify if you are a warrior, a priest, a rogue etc., and the choice of class will dictate the abilities of your character as it will determine what skills, spells and weapons you may use.

Taking on the academic adventure of my PhD I found myself in a situation not unlike this type of character creation. If we carry on the analogy of Dungeons & Dragons I will argue that I was a human designer dual-classing as a researcher. In case you have misplaced your Dungeons & Dragons Player's Handbook, dual-classing is a fancy rule that lets humans add a new class to your original class to gain access to new abilities. In other words, I created a hybrid class that we can call a design researcher. This meant that I would embark on my academic adventure having to rely on my skills as a designer to build new skills as a researcher using this hybrid collection

of skills to slay the dragon of creating a tool for doing theoretically grounded play design.

Just as in Dungeons & Dragons, where the warrior will use brute force to complete his quest, whereas the rogue will use cunning and stealth, so did my design researcher class carry important methodological implications as to how I would be able to approach my PhD project.

So what are the skills we designers use to engage with problems? – the skills that I would rely on in my effort to address the problematic usability of play theory in relation to play design practice?

This question has to do with the process of design, and it is a topic that has been thoroughly discussed by design researchers and practitioners. In the interest of getting back to telling the particular story of my quest of connecting play theory and play design practice I will not devote my writing to a comprehensive discussion of the design process but limit myself to providing a brief account of thereof. The intention is not to make a contribution to the discussion of the process of design but simply to set the stage and help you understand my approach to the PhD project as being highly dependent on me being a designer.

There is a general consensus that a designer approaches a problem by applying a process of empathising with the situation before defining the problem to be addressed. This then leads to a phase of ideation where potential solutions or interventions are proposed. Some of these ideas are then developed into prototypes that can be tested to find out if the idea solves or improves upon the identified problem (see e.g.

Dam & Siang, 2020). The process is expected to be iterative, meaning that one cycle is intended to inform the next, improving the understanding of the problem and the viability of the prototypes. Interaction designer, design educator and author, Jon Kolko, describes this process as:

“... an abductive sensemaking process of manipulating, organizing, pruning, and filtering data in the context of a design problem, in an effort to produce information and knowledge.” (Kolko 2010, p.27)

This approach and way of arriving at new knowledge, ideas and solutions is often referred to as ‘design synthesis’, where the designer arrives at insights that inform his design decisions by processing information about the user and use-context through a filter of the designer's own experience, sensibility and taste. Kolko argues that the practice of design synthesis relies on abductive reasoning as

“... the various constraints of the problem begin to act as logical premises, and the designer’s work and life experiences, and her ease and flexibility with logical leaps based on inconclusive or incomplete data, begin to shape the abduction.” (Kolko 2011, p.25)

So this is how I work: I put myself in a situation to empathise with people in order to appreciate the situation and understand what constitutes the problem of the situation and why. On this basis I produce, develop and test ideas for improving the situation.

So going from being a designer to a design researcher meant that I would attempt to apply the design process to improve the connection between play theory and play design practice and document the learning process of doing so.

By approaching the project as a designer, the research came to inherit the pragmatic underpinnings of design where problems are identified to be solved. Specifically through Dewey's pragmatic philosophy of science I found that being a designer and a researcher could be two sides of the same coin – or rather a design process and a process of scientific inquiry could be one and the same. In his recent book titled *Dewey and Design – A Pragmatist Perspective for Design Research*, Brian Dixon supports this argument as he writes:

“Looking to Dewey directly, we can see that the underlying way of working, the broad method, is presented in equivalent terms to designing within the design process. We move around and in and out of a problem. Solutions, whether in the form of a product or a theory, ‘flash’ upon us as suggestions. They build up and take shape. Their refinement improves. The designer and the designer-researchers are shown to be following the same course.” (Dixon, 2020 p.87)

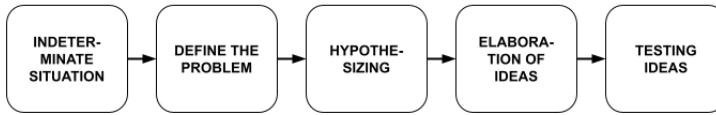
The correspondence between Dewey's pragmatism and design has also been advocated by Dalsgaard who argues that both pragmatism and design practice are concerned with the transformation of a situation by the means of intervention and experimentation. They share the principle of a *“primacy of practice”* where *“the value of theories rely on the ways they help us grasp and act in the world. In this light, theories are instruments for practice and must continuously be evaluated*

on this basis.” (Dalsgaard, 2014, p.146). This pragmatic ideal of theories as being instruments of practice was exactly at the root of my concern that much of the play theory on our curriculum appeared less than useful to the practice of play design. As per the primacy of practice, if the play theory fails to enable play design practice, then it calls for the theory to be translated into something that will better support practice. In the eyes of the designer it is a pragmatic question of usability – the empathic realization that if no one can figure out how to use our creations their theoretical benefits pale.

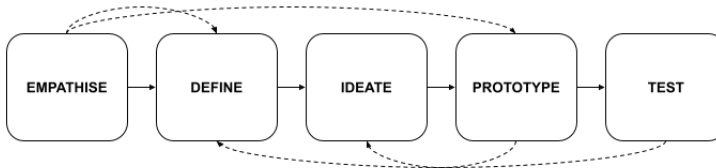
Not only does Dewey’s pragmatism and design practice both champion usability and share an ideology of problem solving, but I also found Dewey’s process of scientific inquiry to be remarkably similar to the process of design (as illustrated by Figure 1).

According to Dewey, any inquiry is initially prompted not by a problem but by a sense that something is wrong or rather an experience of a situation being uncertain or indeterminate.

This indeterminate quality of the situation quite literally makes it questionable, which evokes inquiry. In my case it was the growing realization that play theory largely fails at being a useful instrument for the practice of play design.



Dewey's Process of Inquiry (1938)



Dam & Siang's Process of Design (2020)

Figure 1. Inquiry and Design

To a designer, this sense that something is wrong implies that the designer must empathise with the situation and the users involved in order to appreciate and understand the problem better. This is why my project began first by trying to put myself in the shoes of my play design students and later in those of the play designers at LEGO House so that I would not dismiss the absence of play theory as a failure of the designers who could not be bothered to read the literature. Instead, empathising with the play designers turned my attention to the usability of play theory in the context of play design practice. In doing so I took my first steps into Dewey's second phase of inquiry where a possible cause of the indeterminate situation is defined as a problem to be solved. This is a defining quality of Dewey's process of inquiry as well as the design process, namely that the process does not begin with having a problem. Rather the problematization happens in response to the indeterminate situation to scaffold the inquiry. By thinking of the problem not as something that

is given but rather something that is formulated it is vital to the process of inquiry as it defines the direction. Dewey describes this as follows:

“The way in which the problem is conceived decides what specific suggestions are entertained and which are dismissed; what data are selected and which rejected; it is the criterion for relevancy and irrelevancy of hypotheses and conceptual structures” (Dewey, 1938 p.108).

This approach to problems as something we formulate in order to define a project is very familiar to designers. In design practice this is often referred to as formulating a How Might We-question (HMW). Recently this method of defining the problem by asking the right question before looking for the right solution has been popularised by companies such as IDEO, Google and Facebook with the rise of design thinking as a means of innovation (Dam & Siang, 2020). The method of using HMWs to frame the design process is, however, not new to design practitioners, and although the exact origin of the method is somewhat speculative it is referenced as early as 1967 by Sidney Parnes in his *Creative Behavior Guidebook* (Parnes, 1967).

The use of HMWs to frame the following ideation is a method that is widely practiced at Design School Kolding as well as other design universities. Commonly the best practice of formulating HMWs emphasizes that the question should be human-centred, ambiguous enough to allow exploration of different solutions and precise enough to address the cause of the problem (Dam & Siang, 2020).

“The goal is to create questions that provoke meaningful and relevant ideas; do so by keeping the questions insightful and nuanced” (d.school at Stanford University¹).

“We use the How Might We format because it suggests that a solution is possible and because they offer you the chance to answer them in a variety of ways. A properly framed How Might We doesn’t suggest a particular solution, but gives you the perfect frame for innovative thinking” (IDEO Design Kit²).

Moving from my initial concern about the usability of the play theory literature in relation to the play design practice of our students I spent the beginning of my time with the design team at LEGO House doing my best to appreciate the situation in order for me to formulate the HMW that would set the course of my work. After some attempts I decided on the following:

How Might We create a concept of play design that connects play theory and play design practice to help play designers ground their design decisions?

Having a defined problem formulated as an actionable question supports the ideation of possible answers to the question. The ideation corresponds to Dewey’s phase of hypothesising where, based upon observations of what Dewey describes as ‘the facts that constitute the problem’,

¹ Reference: <https://dschool.stanford.edu/resources/how-might-we-questions> (accessed 26/5/2021)

² Reference: <https://www.designkit.org/methods/3> (accessed 26/5/2021)

suggestions will develop into ideas for possible solutions. This is essentially the construction of hypotheses. In this process:

“The suggestion becomes an idea when it is examined with reference to its functional fitness; its capacity as a means of resolving the given situation” (Dewey, 1938 p.110).

The examination is in this stage still a conceptual reasoning where ideas are weighed against the perceptual fact of the problematic situation. Here, Dewey arguably builds on Peirce’s logical concept of abduction as a form of reasoning where hypothetical suggestions are formed in a reciprocal space between deduction and induction effectively rationalizing a best explanation on the basis of the available information. Peirce’s argument for abductive reasoning is that

“It is the only logical operation which introduces any new idea; for induction does nothing but determine a value, and deduction merely evolves the necessary consequences of a pure hypothesis.” (Peirce, 1965 section 5.171).

As such, Dewey is critical of a traditional division between empiricists and rationalists as he believes that empiricists have

“... ignored the function of ideas in directing observation and in ascertaining relevant facts. The rationalistic school, on the other hand, saw clearly that ‘facts’ apart from ideas are trivial, that they acquire import and significance only in relation to ideas. But at the same time it failed to attend to the

operative and functional nature of the latter” (Dewey, 1938 p.110-111).

Instead, Dewey argues that competent inquiry relies on a tight correlation between the perceptual facts of empirical observation and the conceptual ideas of rational thought.

At this point I figure that there is a good chance that many readers will be asking where this side quest into pragmatism is heading, and I don't blame them for wishing that we would soon return to the main questline of going to LEGO House. But even if it took me at least ten re-readings of Dewey's process of inquiry to unpack his abstract presentation and reach an interpretation, I believe that his argument for hypothesising as an act of abductive reasoning is exactly what lays the foundation for thinking of design as research. It speaks to the scientific validity of design synthesis, where we rely on a reciprocal dance between our observations of the situation and our own experience, taste and sensibilities to produce new ideas for reforming the situation. As Kolko would say, we designers do not do observations to *find* new insights, as if we were palaeontologists carefully brushing away the dirt to uncover the dinosaur bones that were waiting to be found. Rather the insights and ideas are produced or created by designers as they interpret and manipulate inconclusive data actively using their own experience, sensibility and imagination. So, contrary to popular belief, designers are not unicorns that use magic to spit out ideas but are practiced in the abductive reasoning of making a connection between what they see and what they know to ask “Well, what if we [insert new idea]?”

So, we empathise with users to appreciate the situation in order to be able to formulate a problem, to scaffold the hypothesizing of ideas.

Once we form an idea it needs to be developed in order to prepare it for testing so that we may learn if it is a good idea or not in relation to the problem that was formulated.

Ideas do not come fully formed, which is why Dewey argues that an elaboration on ideas follows the phase of hypothesising. This entails a careful consideration of the idea as to its assumptions, implications and specifications. Dewey emphasises that a new idea must be shaped according to other conceptual structures in order to prepare the idea for testing. Through this process the idea is matured as it attains meaning in constellation with other ideas. Dewey notes that

“In many familiar situations, the meaning that is most relevant has been settled because of the eventuations of experiments in prior cases so that it is applicable almost immediately upon its occurrence” (Dewey, 1938 p.112).

As such, it is an important part of the inquiry to relate a new idea to pre-existing ideas that have been applied to similar situations.

In my own project I would attempt to create a concept of play design to be a novel way of connecting play theory and play design practice. This would arguably be a new idea in relation to the particular situation of play design, but as I began elaborating on this idea I found that other design disciplines had tried to address similar problems of connecting theory and

practice. This meant that I would be able to develop my idea in relation to existing approaches and attempts at similar situations.

When Dewey describes the phase of elaborating on and shaping ideas the process appears to remain conceptual. In the field of design, however, the development and shaping of an idea would often use prototyping as a means of exploring and developing an idea. This moves the idea from the conceptual to the actual, as the designers must make decisions to have the idea manifest. Whether the prototype will be a physical object, a sketch, a piece of software etc. a new idea must often be materialized somehow in order for it to be introduced to the situation in question.

Finally the new idea may be introduced to the indeterminate situation where it is tested to evaluate if it resolves or improves the formulated problem. According to Dewey the testing is where the non-existential ideas meet the existential facts of the situation in the form of an experiment. This application of conceptual ideas is crucial to the inquiry as Dewey argues that

“Reasoning, as such, can provide means for effecting the change of conditions but by itself cannot effect it. Only execution of existential operations directed by an idea in which ratiocination terminates can bring about the re-ordering of envioning conditions required to produce a settled and unified situation” (Dewey, 1938 p.118).

On this basis Dewey holds that both ideas and facts are operational. Ideas are operational in the sense that they

instigate and direct the experiments that bring new facts to attention. Facts are operational as they interact with one another creating a new order of facts that may invite a modification of ideas leading to new observations.

This is to say that when we are creating new ideas and introducing them to the world they act upon the world and intervene with practice to change it. But what Dewey is pointing out is that in the application of a new idea, practice will be acting back onto the idea too. This means that the friction that is implied by the intervention is not only intended to improve practice but also to improve the idea itself or the hypothesis as it were. It is on this basis that Argyris & Schön later describe action research, of which design research is a particular variant, as follows:

“Action research takes its cues - its questions, puzzles, and problems - from the perceptions of practitioners within particular, local practice contexts. It bounds episodes of research according to the boundaries of the local context. It builds descriptions and theories within the practice context itself, and tests them there through intervention experiments - that is, through experiments that bear the double burden of testing hypotheses and effecting some (putatively) desirable change in the situation” (Argyris & Schön, 1991 p.86).

This brings us to the end of our side quest into Dewey's pragmatic process of inquiry. After all our trials and tribulations making the connection between design and scientific inquiry we have finally reached a conclusion or at least we have arrived at a defensible position. This is that when we want to transition from the practice of doing design

to the practice of doing design research we must *'bear the double burden'*. This means that the purpose is not only to improve a situation but in doing so, it is also to improve our hypothesis and our understanding of the situation that informs it. In my case that is to say that my attempt to develop a concept of play design that connects play theory and play design practice has a dual purpose of contributing to the practice of play design as well as making an academic contribution by developing our theoretical understanding of what play design is.

Now, one might think it a daunting task to make this double contribution to both play design practice and theory my goal. However, the quest reward for taking on the riddle of making the connection between Dewey's process of inquiry and the process of design is that you get to kill two birds with one stone. This is because it creates a strong argument for design and research to be considered two sides of the same coin – that the same design process may have both a practical and a theoretical outcome.

So that is it for the character creation. I was a designer and an aspiring researcher heading out on an academic adventure to connect play theory and play design practice, armed only with my ability to empathise, problematise, ideate, prototype and test. Hopefully, this will provide some valuable context to understand why I approached the project the way that I did and some of the methodological decisions that I made along the way.

I am sure that the same indeterminate situation would have been addressed differently had I had a background in psychology, pedagogy, philosophy or any other field that

shares the interest in play, but for better or for worse this remains the story of my particular approach predicated by my abilities as a designer. This is also to say that the contributions of my work, both practical and theoretical, are to the field of play design specifically, even when I draw on sources from adjacent or distant disciplines.

I will discuss the methodological implications and decisions of my position as a design researcher in more detail as we go, but for now, let us move on.

Here be Dragons

As with any PhD, my project should contribute to the sciences by exploring somewhat uncharted territory, in my case the practice of play design. In order to better understand how my quest into play design is intended to contribute to certain academic fields let us stay for a minute with the Dungeons & Dragons analogy.

You may picture me sitting at the fireside at the Scholar's Tavern hunkered over a crusty old map of the realm of Academia plotting my adventure. As the name suggests, the phenomenon of play design is to be located in the borderlands between the kingdom of Play Studies and the kingdom of Design Research (as illustrated by Figure 2). As play design is to be found in between the two, whatever knowledge about play design that my adventure produces will ideally contribute to both Play Studies and Design Research, to the former arguably because exploring the phenomenon of play design implicitly adds to the discussion of play itself and to the latter by employing methodology from design research to help understand and potentially improve the particular design practice that is play design.

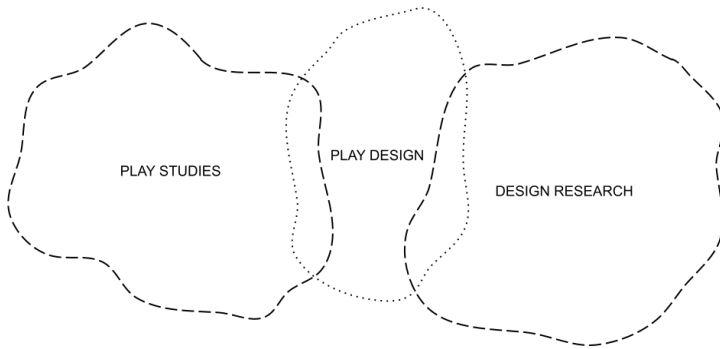


Figure 2. Field of Play Design

As my adventure was to explore the area in between Play Studies and Design Research I would be relying on established knowledge from these two fields. As such, I will spend some time specifying how my project is a continuation of the previous advances within these fields.

Design Research

Design Research is considered a relatively new field in academia, and over the past decades different approaches and definitions have been proposed and debated by design researchers. Design Research as an academic field arguably has its origin in the 1960s with an increased interest in design methods with the 1962 Conference on Design Methods in London being heralded as pioneering the formation of design methodology as its own field of study (Cross, 1993 p.15). Following the conference the Design Research Society was

founded in 1966 in an effort to promote “*the study of and research into the process of designing in all its many fields.*”³ As the field of design research developed it became necessary to distinguish different types of design research in order not to convolute the discussion. As such, Frayling’s positional paper *Research in Art and Design*, in which he notes the confusion regarding the relationship between research and design, proposes a differentiation between research *into*, research *for* and research *by* design (Frayling, 1993). This differentiation is later echoed in Archer’s 1995 paper *The Nature of Research* in which he relates design research to research practices in the Humanities and Sciences by distinguishing between research *about* practice, research *for the purpose of* practice and research *through* practice (Archer, 1995 p.11).

As I have described in the previous chapters of this thesis, my focus throughout the PhD project has been on making research *for* the practice of play design with the intent to ground the practice of play design by improving the connection to play theory through the development of a new theoretical concept of play design. But whereas my research is *for* the practice of play design I have also approached the project as a designer making research *through* design. This means that I have relied on a design methodology of formulating a problem, developing a prototype and testing it in the development of my concept of play design.

³ This is the original purpose statement of DRS as described on their official webpage. See <https://www.designresearchsociety.org/cpages/history> (accessed 4/8/2021)

Research Through Design

The notion of research through design has arguably been the most prominent of the three types of design research, as it has introduced designing as a method of scientific inquiry making it a distinguishing feature of design research as an academic field. Over the past two decades several attempts have been made at formalizing how to conduct research through design. This has not yet been settled and is very much an ongoing debate within the field of design research, but certain defining characteristics are largely agreed upon. In general, research through design has come to entail a methodology where

“... designing and making are a foundational aspect of the research process” and which considers “designing and making as central to how the research process unfolds, and thus to what constitutes the core ways of finding out new things” (Redström, 2017 p.9).

This designing and making relies on the development of prototypes/artifacts that are used in experiments/interventions for the purpose of producing new knowledge. Stappers & Giaccardi speak exactly to the purpose of making prototypes drivers of research when they argue that

“... it creates the possibility for people and products to engage in interactions that were not possible before, and these can come into existence—indeed, become observable—through the design”
(Stappers & Giaccardi, 2017 section 43.1.4).

This is to say that a defining quality of doing research through design is the creation of prototypes that allow for making interventions in the form of experiments that are centred around the prototype in an effort to make a certain situation observable that would not exist otherwise.

As Koskinen et al. note with reference to Stappers, the prototype may take the role of a physical hypothesis through which theory may be tested and explored in the context of practice (Koskinen et al., 2011 p.60). They argue, however, that the role of prototypes and experiments goes beyond testing of theory, as the designing and making prototypes become a way of *making theory through design*, which is further elaborated by Redström in his own book on the topic. Here Redström makes his argument for why the design of a thing may be appreciated as offering a definition of whatever that thing is used for. To resolve this somewhat cryptic proposal Redström uses the example of how a chair defines the act of sitting:

“Consider how a chair defines the act of sitting, and how, therefore, designing a chair in a certain sense is a matter of defining what sitting is. When we make a chair, its form will define a certain intended bodily position, a certain act of sitting. If someone asks us, ‘What is sitting?’ we can point to the chair, sit down in it, and say, ‘This is sitting.’ While the experience of sitting down in this chair is our own, it can also be shared, as when we invite the person asking us what sitting is to sit down in the chair. And we say: ‘That is sitting.’ In this way, we define a general term - ‘sitting’ - through the concrete design of a given thing, that is, this particular chair”
(Redström, 2017 p.31).

This example captures the essence of Redström's argument of how the act of designing something can be appreciated as theorizing, as the design comes to define certain aspects of the world through the use of it.

In my PhD project I have not designed a chair to define sitting, rather my intention has been to design a conceptual tool for the play designers at LEGO House, and as it developed through the iterative series of experiments it would become a definition of what doing play design is. Following Redström's argument, just as designing a chair (a tool for sitting) is making theory through design by becoming a situated definition of sitting, so does designing a tool for doing play design become a situated definition of what play design is.

Where my project came to differ from the majority of cases of research through design featured in the cited works of Stappers & Giaccardi, Koskinen et al. and Redström was by being conceptual. As evident when applying Redström's example of the chair to my project the difference is that designing a chair is giving shape to a physical object, whereas I would be giving shape to a theoretical concept. This is not to say that all the cases in the cited works are centred around the design of physical prototypes (although many are) as some cases are concerned with digital prototypes. Most, however, conform to the notion put forth by Stappers that the prototypes in research through design are: "*typically ... a prototype (or artifact) that could be mistaken for a 'product'...*" (Stappers & Giaccardi, 2017 section 43.1.4). The development of new design tools and methods, which is the objective of my PhD project, is an exception to this, as the prototypes tend to be

conceptual rather than product-like. Stappers & Giaccardi recognize the complexity that the meta process of designing tools for designers to use to design products brings, stating:

“Describing research can become very confusing when the object of design is a design method in itself. Yet it is important because, not surprisingly, those who develop design methods may want to do that in a designerly manner”

(Stappers & Giaccardi, 2017 section 43.3.17).

The cause of confusion when it comes to the design of design tools and methods is that it blurs the line between research for design and research through design. Stappers & Giaccardi suggest that in this particular case the design researcher may conceptualize the project as a hybrid where research *through* design produces tools or methods to be used in research *for* design. As described by Stappers & Hoffman and later by Stappers & Sleeswijk Visser this hybrid creates a series of meta-levels in the research project each representing different positions of abstraction from theory to practice. On each meta-level an actor creates a product that on the subsequent meta-level is used as the means to create a new product (Stappers & Hoffman 2009, Stappers & Sleeswijk Visser 2014).

Figure 3 shows how I have appropriated this model to my own project.

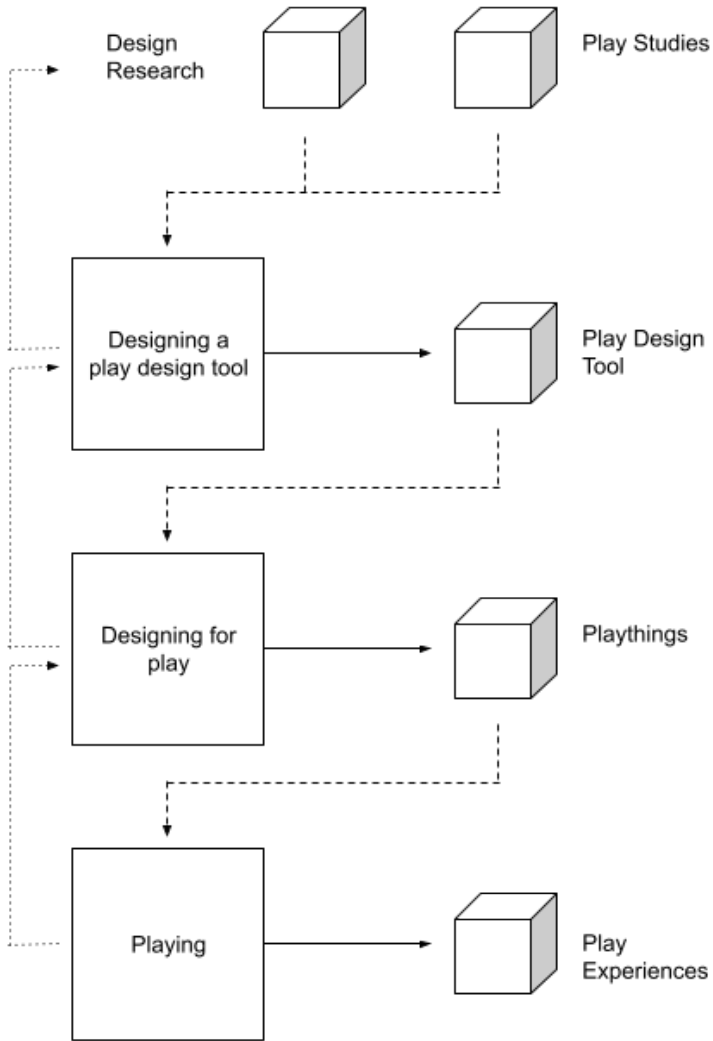


Figure 3. Meta-levels in the research project

The model illustrates how the activities on each level produce something that is then used for the activity on the level below. In my project I have been developing a new concept of play design expressed as a tool for the play designers at LEGO House who have then used this tool in their practice of designing playthings that the LEGO House guests will then use to play with, which results in a certain play experience. My design process would be informed by the products (if we are sticking to the terminology of Stappers & Giaccardi) of the field of design research in terms of design methodology and by the field of play studies, as I would use play theories as building blocks for my concept of play design. It would, however, also be informed by the play design practice at LEGO House, as indicated by the upwards arrow on the leftmost side of the model, since I would observe this practice and create experiments where I would introduce the prototype of my play design tool for the reasons already explained. My project would therefore exemplify a hybrid between research through design and research for design by developing a new concept of play design as a tool for the practice of play design. It contributes to the play design practice on the level below by offering a new tool for play design while it contributes to the academic fields above by making theory through design, as the tool makes for a situated definition of play design as per Redström's argument.

To summarize, my PhD project has applied the methodology that has been and is being established as research through design. I have approached the project as a designer using the process of problematizing the situation and developing a prototype to facilitate design experiments at LEGO House in

order to produce new knowledge for and about the practice of play design.

Play Studies

Play design is by nature and name a two-headed dragon. One head is called Play and the other is called Design and I would argue that it is impossible to understand or practice play design without knowledge of both heads.

I have already positioned my project in relation to design research and touched on how this field has informed my methodology. In the following I intend to do the same for play studies.

As mentioned previously, play studies is a multidisciplinary field that has seen contributions from psychology, biology, sociology, philosophy, pedagogy and more. As such, the field has produced a number of different perspectives on play that may be more or less compatible with one another. For a play designer looking to learn what play is in order to design better playthings this means that there are many and quite different answers coming from the field of play studies.

One of the debates within play studies that is important in relation to the positioning of my PhD project concerns the question of whether play is a means of learning or whether learning is a means to play. In today's play studies I believe that it would be difficult to find a researcher who would argue that it is only one or the other, but even if there is an understanding that both perspectives have merit they remain fundamentally in opposition to each other. This becomes important in relation to play design because it questions the

purpose of play and as such the purpose of designed playthings.

The perspective that play is a vehicle for learning originates primarily from contributions to play studies from developmental psychology and biology. These works have come to form what Sutton-Smith refers to as a rhetoric of play as progress (Sutton-Smith, 1997 p.18-34) in his seminal work *The Ambiguity of Play*, which I will return to in more detail later. Understanding play as progress promotes a perspective on play as a means of learning, where the primary purpose of play is for the child to acquire competencies needed for adulthood. Today this perspective on play is often seen when making the argument for the role of play in building the so-called 21st century skills that will allow today's children to solve the wicked problems of tomorrow by their ability to engage with ill-defined problems relying on critical thinking, flexibility, creativity etc. As these skills are observed in play it makes the argument for play as a valuable way of building these types of competencies which are being used to justify various play & learning programmes in education (Zosh et al., 2018).

The opposing perspective on play as a means of learning is the perspective that play should be understood as valuable in and of itself. This perspective is very prominent in Danish play studies and has a strong history in Denmark both academically and culturally, which is why it inadvertently has come to inform my own perspective on play.

In Danish play studies this perspective was established not least by Flemming Mouritsen, whose work in the 1970s, 80s and 90s concentrated on formulating child culture as a culture of play. Whereas Mouritsen certainly recognized that play is a

source of learning he would argue that play is to be understood as being immediately meaningful to children, not because it prepares them for the future but as a place where children can express themselves and make sense of the world as they experience it in the present. Mouritsen argues that children's play culture is

"... predicated on their acquisition of skills in terms of expressive forms, aesthetic techniques, forms of organization, mises-en-scène and performance." And further: *"For play to be initiated, the children must already have a preparedness acquired from tradition in the form of skills; a know-how which forms an available store of expressions, genres, aesthetic and organizational techniques"* (Mouritsen, 1998 p.13).

On this basis Mouritsen argues that children are concerned with getting good at playing in order to participate in child culture. This lays the foundation for the argument that children are less concerned with what they learn from playing and more concerned with what they must learn in order to play. What follows is that it is more meaningful to children to be good at being a child rather than becoming a competent adult.

This perspective has become quite prominent in Danish play studies. Carsten Jessen, who is one of the leading researchers in Danish play studies, builds on Mouritsen's argument when he argues that

"The relation between play and learning is therefore the opposite of what we normally assume. We do not play in order

to learn but we learn in order to play. Learning is thus a prerequisite for play and we are often willing to work hard and practice to get better because it grants us access to play with others. The strong motivator that play is, is closely related to the pleasurable experiences we get when playing. If we replace the pleasurable with external goals this motivation disappears and that is why it is a difficult art to apply play as a means for learning of specific skills that makes sense in a rational context”⁴ (Jessen, 2008 line 142-147).

It is clear that Jessen carries on Mouritsen’s argument that players are concerned with the learning that precedes play, whereas the learning that play produces is largely a bi-product, not the goal. The goal is to have a pleasurable play experience which requires learning and practicing the cultural forms that a given play experience relies on. Importantly, Jessen warns that designing primarily for the learning outcome of play carries the risk of devoiding play of the pleasurable element that relates it to learning in the first place. The same sentiment is found with Helle Marie Skovbjerg who in the conclusion of her book *Perspektiver på Leg* (which translates *Perspectives on Play*) argues that:

“We undermine play’s intrinsic value if we blindly follow the idea that you learn so much through play or become super healthy by engaging in lots of physical play. Ultimately this blindness can come to mean that play becomes worse. Play

⁴ Own translation from Danish

that works is play that is meaningful in itself. Meaningful play is fruitful”⁵ (Skovbjerg, 2016 p.103).

Much like Jessen, Skovbjerg stresses that an overly rational concept of play that understands the purpose of play to be learning or development outside of play will make us blind to the primary value of play – being play itself. Skovbjerg urges us to take play seriously, not by focussing on an external purpose of learning or progress but by appreciating play as being meaningful in itself and cherishing it for what it is rather than for its potential outcomes.

Having been brought up culturally and academically in this Danish tradition of understanding play as a goal in itself, my PhD project has inevitably been informed by this perspective both in terms of my motivations and the interpretations underlying the design decisions that I have made over the course of the project. Acknowledging my own biases and preconceptions regarding play I have, however, made a concerted effort to include theories from across the field of play studies in the project so that my theory development would come to be informed by seminal texts representing different understandings of play and coming from different academic disciplines within the field of play studies.

In summary, my adventure into the area of play design meant that I would draw on both the field of design research and the field of play studies. From play studies my project would be relying on play theories, and from design research it would be

⁵ Own translation from Danish

relying on the design methodology of doing research through design.

Previous Expeditions

It is important to note that my project is not the first to venture into the borderlands between play and design. Especially the field of ludology, which has been established over the past two decades, has served as an inspiration to my project, as it concerns the design and nature of the specific type of plaything that we call games. Therefore I think it relevant to mention how ludology in particular has informed the direction of my project.

Ludology was established in the early 2000s as a response to the increasing importance of computer games as a media form. The IT University in Copenhagen (where I myself was a game design student) played a primary role in defining ludology with games researchers such as Aarseth, Frasca, Juul and Sicart being affiliated with the Center for Computer Games Research at ITU. Ludology proposed that games are best to be studied not primarily as narratives but as designed systems due to the explicit interactive nature of games (Frasca, 2003, Juul, 2005). This led to research that considers games as designed artifacts consisting of certain elements. The definition of these elements became integral to educational game design programmes and to the practice of game design. In particular I would argue that the definition and analysis of game mechanics (Hunicke et al., 2004, Järvinen, 2007, Sicart, 2008) have contributed both to games studies and to the practice of game design by making the tools

that the players are given to meet the challenges of a game into a focal point for analysis and also for the practice of game design. By developing the concept of game mechanics to mean the things that players do in games it served the pragmatic purpose of separating the tools that players use in games from the rules in general. Sicart argues that the difference is that rules are normative while game mechanics are performative (Sicart, 2008). This distinction between rules and game mechanics places an emphasis on the actions of the players (that the game design affords) as a key defining element of games which is why the design of these game mechanics is central to the gameplay experience.

The development of the concept of game mechanics is but one example of ludologist research that has analyzed games as designed systems to create theoretical concepts. These would qualify the practice of game design by providing a better understanding of the elements that make up a game and their role in affording a certain gameplay experience. To underline the pragmatic purpose behind his work on game mechanics in his PhD Thesis, *Games without Frontiers*, Järvinen even suggests the term *applied ludology* to refer to

“An applied form of ludology does not see research papers with descriptive methods as sufficient end results. Applied ludology treats research papers as springboards and sets of documentation for practical applications, such as development and analysis tools, or new games” (Järvinen, 2007 p.25).

My own quest to develop a concept of play design shares this pragmatic position, and my belief that it would be possible to

develop a theoretical concept that would be useful to the practice of play design was very much informed by the success of ludology to do exactly that.

The Adventure Begins

When I began the project I decided, together with Design School Kolding and LEGO House, that I would spend approximately two days a week with the design team at LEGO House to do fieldwork and spend the remaining time studying and teaching at the design school and attend my PhD courses.

At LEGO House I was welcomed as a new member of the team being invited to participate in the daily work of the design team.

If you have never been to LEGO House it can best be described as a place where guests who are typically families with kids pay admission to spend the day exploring and enjoying many different ways of playing with LEGO. You may program LEGO robots to play a game, build a car to see if it is fit for completing a run down a racetrack with loops and ramps, use LEGO to create a stop motion movie, help build a city to see how the virtual inhabitants react to your creations, simply build from imagination using thousands of LEGO bricks and so on.

The design team is responsible for creating all these different ways of playing with LEGO making a number of different and exciting play experiences available to the guests.

Much of the daily work of the design team is spent making sure that everything is up and running. While many of the play designs are quite permanent there are also sections of the house that change regularly to make sure that returning guests will have something new to enjoy. This may for instance be seasonal changes where one section of the house may be turned into Santa's workshop during Christmas time, where

guests can build different types of presents, whereas it will change to something different during Easter or Halloween. Sometimes it may be decided that one of the more permanent play designs should be updated or replaced with something new. This is a big project where the entire design team will work together over months to investigate, ideate, prototype and test new ideas.

The design team consisted of six designers including myself, and I found that my new colleagues were highly skilled and experienced in the practice of play design – an observation which was corroborated by the reviews and evaluations of the guests who visited LEGO House.

I found that the design team relied on a few tools that they had created: one with the generative purpose of informing their play design practice and one for assessing and evaluating the resulting play experiences of the guests. Both tools were informed by the theoretical position of the LEGO Foundation who is primarily concerned with what they call '*learning through play*' meaning that their theoretical foundation heavily favours play theory coming from developmental psychology.

I will get back to these tools later, but initially I found that my early experiences with the design team at LEGO House supported my observations with the play design students at Design School Kolding that play theory, as I knew it, was hardly used in the practice of play design.

What is the Problem Really?

So why is play theory not being used by the play designers? Taking the practice of play design to be the practice of creating playthings to support play it would be reasonable to expect that play theory would be an invaluable resource for play designers. Yet they hardly use it.

The lack of theoretical grounding of play design decisions have recently been documented by Skovbjerg et al. did a meta-analysis of research papers on play design practice specifically in relation to fantasy play. They find that play theory is primarily used for contextualizing the motivation behind a project whereas it remains detached from the actual play design practice (Skovbjerg et al. 2021).

To refer back to Dewey's process of inquiry, this was the conundrum that I ruminated on – the indeterminate situation that had provoked me. Now I was trying to develop an understanding of it that would allow me to formulate an actionable problem.

It seemed to me a ridiculous act of hubris for play designers to discard centuries of play theory literature pretending that it has nothing to offer when it is devoted to the explanation of the very thing that we are designing for. If we had a better understanding of the nature of play would it not be easier to create great playthings?

Part of the problem seems to be what Sutton-Smith, in his seminal book by the same name, refers to as *the ambiguity of play*, that the difficulty of understanding the phenomenon that is being designed for constitutes a challenge when it comes to the practice of play design.

Arguably, it would be a lot easier if there was more of an agreement as to exactly what play is. At least compared to some other areas of design, the target of play design appears more obscure due to the ambiguity of the phenomenon. If for instance people want coffee, we know what coffee is and we can design a coffee machine with a clear expectation of how and why people will use it. But what if they want to play? What should we give them then?

The answer does not come easy, as play appears in a seemingly endless variation of behaviour and often with highly divergent characteristics. Play could manifest itself as a kid building a sandcastle on the beach or as thousands of players collaborating in slaying a mighty dragon in an online computer game. It could last for a minute or several hours, it could be something that you only do once or it could be something that you return to regularly throughout life.

What are the common denominators that let us recognize play as play despite this ambiguity and allow us to consider this ocean of variety the field of play design? I figured that play design as a discipline must rely on some similarity across the variance of play. If not, the concept of play design as the discipline of designing playthings erodes, since every instance of play design would be uniquely specialized with little in common with one another. Rather, play designers must be able to approach their work with some general understanding of play that is stable across the variance of play and playthings.

When looking to play theory for such an answer it is immediately being complicated by the fact that several scientific disciplines have made play their object of study

which is why play has become a multidisciplinary field of study. Different methodologies are being employed for different reasons to create a number of different theoretical expressions of play. As such, the answer to the question: what is play? depends entirely on who you are asking.

The nature and purpose of play change according to the theoretical expressions of play offered by various scientific disciplines and yet there are references across these play theories.

Sutton-Smith recognized that a phenomenon like play is constructed in the image of the theoretical concepts that are used to conceptualize it and as one changes the theoretical lens through which play is observed so play itself changes. In order to offer some formalization of the multi-disciplinary field of play study Sutton-Smith categorized the field into seven so-called play rhetorics (Sutton-Smith, 1997 p.215). The seven play rhetorics account for what Sutton-Smith sees as the different major ideologies of play each associated with e.g. a certain position on the function of play as well as contributing scientific disciplines. Sutton-Smith's seven rhetorics of play are:

Play as Progress is the understanding of play as a means of adaptation in relation to the physical or social environment. Here, play is expressed as a vehicle for learning and growth and serves a developmental and evolutionary purpose.

Play as Fate is the understanding of play as a means of engaging with the chaotic or random aspects of existence via games of chance. Here, play is about the excitement of the

uncertainty of outcomes, surrendering control and putting one's fate in destiny.

Play as Power is the understanding of play as a contest where skill and strategy are exerted in an effort to win. Here, play revolves around contest and conflict where players must strive for mastery to be victorious.

Play as Identity is the understanding of play in terms of its function of developing and maintaining social bonds and creating communities. Here, the purpose of play is to maintain and strengthen the group identity of the player community.

Play as the Imaginary is the understanding of play as imagination and creativity whereby players express and engage with their inner world of ideas and fantasy. Here, play is concerned with the personal expression of this inner world.

Play as Self is the understanding of play as an innately rewarding personal experience promoting the idea of play as being a highly satisfying, internally motivated activity that players can lose themselves in.

Play as Frivolity is the understanding of play as not being serious. Here, play is about bringing a playful, provocative or disruptive attitude to a situation.

Sutton-Smith also recognized the challenges of the multi-disciplinary field of play studies and hoped that rather than doing research on play that would be secluded within the individual scientific disciplines the field of play studies would

come to work together across disciplines and rhetorics to develop a more comprehensive understanding of play (Sutton-Smith, 1997 p.9).

The publication of the expansive anthology *The Handbook of the Study of Play* (Johnson et al., 2015) represents a recent effort to realize play studies as an interdisciplinary field of study as Sutton-Smith had proposed years earlier. In the introduction it is suggested that

“The Handbook of the Study of Play is perhaps the first printed work to examine play in general, both the study of play and its applications in society, and in a way that is interdisciplinary and scholarly” (Johnson et al., 2015 p.XI).

The book attempts to do so by presenting the historical development of play theory from the perspectives of biology, psychology, anthropology, sociology and philosophy as well as bringing these together and relating them to current applications and challenges of play studies. The interdisciplinary character of play studies as presented in the book is evident by the discussion between the entries from different disciplines and by the overlap of the literary references. As such, some works as for instance Huizinga’s *Homo Ludens* becomes part of a proto-literature that connects the field of play studies allowing the different disciplines to relate to one another despite their different scientific orientations.

When reading both *The Ambiguity of Play* and *The Handbook of the Study of Play* in the context of my project the absence of design for play in the interdisciplinary field of play studies

is striking. Design in terms of formgiving of artifacts or systems for play are next to non-existent in these works that otherwise strive to encompass the entirety of the field. Sutton-Smith briefly mentions how the general role of toys have changed over time and in *The Handbook of the Study of Play* only one text (Frost, 2015) touches on design in a critique of how playgrounds have changed over time in response to additional safety regulations. There is no theoretical interest in how the properties of designed playthings affect play either as experience or activity. When for instance the game of chess is used as an example the game itself is taken for granted and is not treated as a designed game with intentional qualities. All the attention is on the player's behaviour and none of the scientific disciplines that are included in this formation of the field of play studies are considering how the player behaviour, the chess community, the role of chess in society etc. might all change if the game had been designed to be just slightly different. To a play designer these are vital questions to be asking: how would the play experience be different if pawns can move backwards? How would it be different if pieces would level-up and gain additional abilities when they capture enemy pieces etc. This is not only the case for games. The same ignorance in terms of the design of playthings are present for instance in the observation of children playing with dolls. Again, to a play designer it is unthinkable to understand the play behaviour of the children without careful consideration of how the designed qualities of the dolls affect the play behaviour. What is the size and weight of the doll? What is the texture? What are the colours? How big are the eyes? How many eyes does it have? Does it have a gun? Or roller skates? How does the aesthetics

come together to express a character? Is the doll related to a narrative on TV or in a video game? Does the character have relations to other characters? etc. To the play designer these aesthetic and ludic qualities of the designed objects are not trivial and they are not set in stone, rather they are designed with a certain type of play experience in mind.

In the terminology of Sutton-Smith play design represents another rhetoric of play. As different as the various scientific disciplines of the interdisciplinary field of play studies presented in the works in question might be, they are all descriptive or evaluative of play, whereas play design is a generative discipline. In play design the description of play is secondary to the making of play whereas the opposite is true for play studies as presented. This does not mean that play design has nothing to gain from the other disciplines, in fact, I would argue quite the contrary. But when considering why play designers don't find much use for play theory it is worth noting that these theories are primarily developed to describe play, not to create it, and why some translation must be expected if these theories are going to serve the generative purpose of play design.

As play theory hardly does anything to relate play to the practice of play design all the translative appropriation falls on the play designers. We can appreciate that this may constitute a problem considering that play designers are engaged in the practice of play design meaning that they are arguably more interested in things that are immediately helpful rather than reading play theory anywhere between Plato and recent neuroscience studies in the hope that they

might be lucky to find something that they can appropriate to aid their own play design practice. As Kolko argues:

“... designers [...] self-characterize as being overworked and too busy to delve into the complicated literature of tangential disciplines. They require something more immediate and approachable if they are to integrate new ideas into their design process. They do not lack the intellect to understand the complexity of academic research; they simply lack the time to read it at all” (Kolko 2011, p. XIII).

This might come off as a bad excuse for not wanting to read the theory, but I believe that, in fact, it is deeply rooted in the pragmatic underpinnings of the field of design that I described previously. As such, the concept of the primacy of practice means that design practitioners are thoroughly concerned with their practice. If it is not immediately clear how some academic theory might serve their practice it goes entirely against the pragmatic maxim to abandon the design practice in favour of spending time reading through academic theory and translating it into something that is useful to their practice.

For example, we would not expect a chef to read academic papers in the field of chemistry to see if somehow a new study of acids in vegetables might improve his cooking skill. Nor would we expect him to forge his own knives, especially when he is already busy in the kitchen juggling pots and pans to meet the orders that come flying in from the hungry customers.

Following the same logic we should not expect play designers to turn play theory into tools or methods for play design

practice. Instead, I would argue that this is precisely the responsibility of design researchers – to work in between theory and practice, in my case making the play theory useful to play design practice and in turn develop play design theory from play design practice.

Now I guess that you could make the argument that these concerns are more valid when talking about the professional play designers at LEGO House compared to the play design students at Design School Kolding. After all, the students have the luxury of having the play theory carefully curated into a curriculum by their teachers, who supposedly select the most relevant material. However, the blind spot of play theory, when it comes to the creation of playthings, places the same burden on the students not only to understand what the texts are saying about play but also to somehow translate this into actionable insights that are useful in their play design projects. This is not impossible but it is arguably far from trivial.

After spending the early days of the project re-reading play theory considering relating it to the busy iterative design processes at LEGO House I came to the following conclusion about the situation:

Play theory with all its complexity, nuances and multi-disciplinary rhetoric works like the giant Hi-Fi system of the audiophile. It has been collected, assembled and refined over many years. There is the McIntosh valve amplifier that should be turned on a little in advance to be sure that the vacuum tubes are heated enough to compress and distort the signal just enough to have it sound warm and engaging. It is connected on the back with wires of gold to the 10-band

equalizer that will let you dial in the frequencies so that you can hear every glissando of the first violin on Mahler's *9th Symphony* that is spinning on the custom-made Swedish turntable. The giant speakers are carefully placed so that if you are sitting in the middle of the couch in front of the Hi-Fi system you get the perfect stereo image, and if you close your eyes, you can easily convince yourself that you are sitting in row six in La Scala in Milan.

In this scenario the play designer might be the person that says: "*Yeah, that's all well and good, but I listen to music on the bus.*"

Listening to a highly compressed mp3-file on the phone using a pair of cheap earbuds might not be superior to the Hi-Fi sound system in terms of reproducing the music in great detail, but it is superior in terms of portability. Likewise, a play designer running off to grab a copy of Gadamer's *Truth and Method* while doing a 10-minute closed brainstorm or when we have to get the prototype working before the kids come to test it tomorrow would be like trying to drag a giant Hi-Fi sound system onto the bus.

There is a famous Danish saying that exaggeration promotes understanding, and this analogy might be an exaggeration but it was useful for me to begin formulating the problem. Based on the above, I decided that what makes play theory problematic in relation to the practice of play design is:

- ❖ The multi-disciplinary field of play study with its competing rhetorics comes off as inconsistent and makes it difficult for play design practitioners to build a working concept of play, as the theory expands the phenomenon of play rather than clarifies it.

- ❖ Play theory emphasises the player and largely neglects the qualities of the playthings making the connection between play theory and play design practice vague.
- ❖ Play theory primarily comes in the format of academic papers and books that lack the immediacy and portability required to support the iterative process of play design practice.

As the problem began to take shape or rather as I began to give shape to the problem, there was one question that prevented me from storming the castle just yet.

What if play designers do not need play theory at all? The question was primarily brought about by the realization that my entire quest to connect play theory and play design practice was motivated by the core assumption that this would, in fact, improve play design practice. Also, I was working with a team of very experienced and talented play designers at LEGO House who were doing absolutely fine without the play theory that I wanted to integrate better into play design practice.

As such, I figure that we should at least consider this assumption more carefully before moving forward to clarify my argument about the need for connecting play theory and play design practice. This means that it is time for a side quest to explore the role of theory in relation to the practice of design.

Who Needs Theory Anyway?

In order to build a stronger argument for wanting to connect play theory and play design practice we need to go on a brief tour of the history of the two star-crossed lovers, i.e. theory and design. A detailed account of their relationship lies outside the scope of my project, so we will only visit a few key landmarks necessary for building an argument for why the goal of my project is worthwhile at all.

The discussion of the role of theory in relation to design is very much ongoing. For the purpose of making my argument for a play theory-informed play design practice I will distinguish between two types of theory relevant to the field of design: The theory about the process of design and the theory about what is being designed or its context of use. Although these are very much intertwined in design practice it is important to recognize when design researchers are discussing one or the other to avoid confusion.

Theory about the process of design

The debate about the process of design in the latter half of the 20th century has been hugely influential on today's design education and design practice. Some of the most notable entries in this debate have been Simon's *The Sciences of the Artificial* (1969/1996) representing a rational understanding of design, and Schön's *The Reflective Practitioner* (1983) representing a constructivist understanding of design. With *The Sciences of the Artificial* Simon reacts to the evolution of design from a pre-industrial practise of craftwork

to the modern design practice in the industrialized economy. Based on this development of design Simon calls for a design education that will

“... teach a science of design, a body of intellectually tough, analytic, partly formalizable, partly empirical, teachable doctrine about the design process” (Simon, 1969/1996 p.113).

This represents the founding of the rational argument for a science of design and the formalized design method. This line of thinking has formed the basis for teaching design as an academic discipline by bringing about the conceptualization of the design process into separate phases along with the formalization of design methods such as the brainstorm, the cultural probe, the usability test etc.

Schön's *The Reflective Practitioner* can be viewed as representing the reaction against the rationalisation and formalization of design. Schön's critique of Simon's science of design argues that it turns design practice into problem solving that assumes a well-defined problem to which the formalized design method can be applied to. Schön believes that well-defined problems are rare outside of the scientific field and that

“In real-world practice, problems do not present themselves to the practitioner as givens. They must be constructed from the materials of problematic situations which are puzzling, troubling, and uncertain” (Schön, 1983 p.40).

To Schön the practitioner is dealing with these divergent situations, and reaching a good solution under these

circumstances relies on a certain way of doing rather than already established knowledge. Schön attributes this informed doing to what he calls ‘the reflective practitioner’. The reflective practitioner derives knowledge from experiential practice by two modes of reflection: a macro-level ‘reflection on action’, where the practitioner takes a step back and evaluates his decisions, and a micro-level ‘reflection in action’ which is the considerations that go into the decisions as they are being made. In Schön’s own words:

“... an epistemology of practice implicit in the artistic, intuitive processes which some practitioners do bring to situations of uncertainty, instability, uniqueness, and value conflict” (Schön, 1983 p.49).

This is essentially what Cross refers to as *“designerly ways of knowing”* (Cross, 1982) and arguably the foundation for today’s concept of design thinking and the argument for design having its own epistemological nature different from the domains of art and science. This conceptualization of design inherits the pragmatic ideology of the primacy of practice, but compared to Dewey’s concept of inquiry it differs by being explicitly critical of the role of theory. Whereas Dewey advocates for relating an idea to existing conceptual structures, e.g. established theory, Schön instead makes the reciprocal movement between observation (action) and rationalization (reflection) a matter of the individual practitioner. By establishing this epistemology unique to design it has arguably served to relieve designers of the obligation to work on the basis of theory in favour of individual reflection and idiosyncratic decision making.

In today's post-industrial design practice the opposing rationalist and constructivist approaches have arguably settled into a compromise, where the designer is a reflective practitioner using formalized design methods to situate his reflection. One example of this type of combination is Kolko's conceptualization of design synthesis mentioned previously in relation to pragmatism. He argues that design synthesis is "*the magic of design*" that sets the field apart from other types of problem solving. Kolko's concept of design synthesis is effectively an act of abductive reasoning by which the designer navigates back and forth between the empirical situation of the design problem and the rationalization of the designer (Kolko, 2011, p.23). The complexity of the situation is filtered through the experience of the individual designer who on this basis suggests a new way forward. Kolko argues that the designer uses this approach for crossing what he considers chasms in the process of making meaning from a situation (Kolko, 2011 p.60). He argues that the designer must cross one chasm to move from data to information, a second chasm to move from information to knowledge and a third chasm to move from knowledge to wisdom. According to Kolko, the designer needs to cross these chasms in order to arrive at a level of deep understanding of the situation that will enable the designer to make a satisfactory change to the situation. Kolko's argument is that there is nothing in the empirical situation that will in itself reveal what should be changed. This only happens as the facts of the situation are processed through what he describes as

“... the unique qualities of the designer (her experience, expertise, and the complexity of her design and personal experiences) and the unique qualities of the designer’s frame of the design problem (the inherent constraints and her mental model of the problem)” (Kolko, 2011 p.3).

Just as with Schön’s description of the design process as loops of action and reflection, Kolko considers the meaning-making process of the designer as a function of individual experience rather than general theory. In accordance with Simon’s call for a formalized design process Kolko describes a number of design methods valuable for scaffolding the different stages (crossing of chasms) of the meaning-making process. These are largely different ways of visualizing the empirical situation as a means of emphasizing select elements and interpreting the situation on the basis of experience.

The modern understanding of design as relying on the personal intuition, taste and experience of the designer structured into formalized design methods as exemplified by Kolko has brought about a design practice that revolves around buzzwords and catchphrases such as; *test early - test often, rapid prototyping, fail faster* etc. As the names indicate these approaches, in line with Schön, imply that due to the messy problems there is no way for designers to know what a good solution is, and rather than trying to figure out what to do, it is better just to do something, learn from it and proceed to the next iteration until a successful solution emerges. Similarly, the increased focus on including the user in the design process in various forms of co-creation sessions, where the users are invited to explore solutions to their needs

themselves or with the designers, share the premise that the designer can only know what to do by doing and reflecting, in this case letting the user (to some extent) do the doing that informs reflection.

In summary, my interpretation of the debate between Simon and Schön is that it has been somewhat resolved into a compromise where the role of theory has been reserved for the formulation of general design methods intended to create specific types of encounters with the empiric situation that are being addressed by the designer. Depending on the method, it will give the designer access to certain information about the situation that is going to be changed. However, when it comes to making meaning from the observations, there is a distinct sanctity of the intuition of the individual designer, where the concepts that are employed to interpret the observations come from the tacit knowledge of personal experience rather than from theory – at least within the practice of play design.

Returning to the question of whether it really is a problem if play design practitioners are not utilizing play theory, we could be inclined to think that it is not a problem following Schön's argument for the reflective practitioner. Using the concept of the reflective practitioner we could argue that play designers should not be burdened with play theory but rather start doing play design and ground design decisions in reflection-in- and -on action informed by one's personal experience with play. There are, however, two important objections to this position. The first is that the concept of the reflective practitioner does not strictly rule out that theory would play a role in the reflective design practice. Both

reflection-on-action and reflection-in-action rely on the interpretation made by the designer as informed by his knowledge. While Schön favours first-hand personal experience and a transfer of knowledge via a traditional master-apprentice relationship, the knowledge that supports reflection might as well be general theoretical knowledge. Presumably, any theoretical concepts that the designer has learned would inevitably shape reflection in design practice by directing attention to certain aspects of the design. The same can be said about Kolko's description of design synthesis, where knowledge of theory could very well be part of the individual designer's expertise that is put to use in the sense-making process. So whereas these conceptualizations of the process of design do not entertain the idea of the role of theory in the designer's reflection but rather emphasises personal experience they are arguably compatible with theory being part of reflection provided we accept that theoretical knowledge may be part of this experience. Secondly, the tacit practical knowledge from first-hand experience becomes problematic if the scope is not the development of knowledge of an individual designer but rather the development of a knowledge community. Höök & Löwgren argue that it:

"... restricts the possibilities for a growing community of knowledge production, i.e., a research community in the conventional academic sense of the word. Collaborative production of knowledge requires mediated communication, which in turn requires articulation of what is in Schön's perspective essentially tacit, practical knowing" (Höök & Löwgren, 2012, p.4).

This is not only relevant for establishing play design as an academic discipline that is taught at design universities but the same argument is equally valid for the professional play design practice as the one I was part of at LEGO House that involves multiple designers who should be able to engage in a collaborative reflective practice. With this comes of course the need for consistency over time, where companies must rely on some formalization of their design processes assuming that they cannot have the quality of their products be too dependent on the tacit practical knowledge of the individual designer, as these may leave the company for one reason or another while others will join.

The concern of Höök & Löwgren that tacit practical knowledge cannot alone support a design discipline is shared by Friedman who argues that

“All knowledge, science and practice rely on rich cycles of knowledge management moving from tacit knowledge to explicit and back again. While the craft tradition of design has relied more on tacit knowledge than on explicit knowledge, it is time to consider the explicit ways in which we can build design theory. Without a body of theory-based knowledge, the design profession will not be prepared to meet the challenges that face designers in today’s complex world” (Friedman, 2008, p.158).

Both Höök & Löwgren and Friedman represent what I consider the dominant current position on design that it needs to be a reflective practice, as proposed by Schön, but one where the tacit practical knowledge is combined with

theoretical knowledge. What this is essentially asking in relation to play design is that we are able to bring play theory into the reflective play design practice to qualify the interpretation of e.g. play tests and to establish a language of play design that lets practitioners collaborate and exchange knowledge.

Theory about what is being designed

The critique of a strictly intuitive reasoning has come primarily from the discipline of interaction design. Aside from the collaborative advantages of a formalized knowledge base that has been mentioned already, the critique is also focussed on the insufficiency of tacit knowledge and personal experience in terms of meeting the challenges of increasingly complex and abstract design problems. This evolution of design in terms of complexity and abstraction has been described by Buchanan (Buchanan, 2001), whose categorization of design into four orders of design have been instrumental to the argument for a theoretically founded design practice. Buchanan argues that design has evolved from being a practice concerned with visual communication and giving shape to objects to be about experiences and systems. He divides design into four orders of practice. The 1st order of design is symbolic and is associated with the practice of graphic or visual design and giving shape to information. The 2nd order of design is things and is associated with the practice of industrial design and giving shape to objects. The 3rd order of design is action and is associated with the practice of interaction design and giving shape to an experience. The 4th order of design is thought and

is associated with environmental design and giving shape to abstract systems as for instance design of education. Each order of design relies on the knowledge of the preceding one but adds new elements to it. When Buchanan argues that modern design practice is primarily of the 3rd and 4th order it is therefore important

“... that designers know how to create visual symbols for communication and how to construct physical artifacts, but unless these become part of the living experience of human beings, sustaining them in the performance of their own actions and experiences, visual symbols and things have no value or significant meaning” (Buchanan, 2001 p.11).

This evolution of design from the 1st and 2nd order to the 3rd and 4th implies a shift in focus on form, colour and material to a focus on usefulness and desirability in relation to the context of use. This means that the designer must have a solid understanding of the design that must likely exceed personal experience or intuition and rather rely on more theoretical knowledge about the design and the use context.

Building on Buchanan's text, Meyer & Norman argue that the theoretical foundation that is focussed on the external properties of an object as established by the Bauhaus school is insufficient in the context of modern design practice. While it is certainly still relevant, the theory of form and function needs to be supplemented by theory that helps the designers understand their designs in relation to human experience and behaviour. To Meyer & Norman this modern demand of design practice means that

“Design schools need to clarify and streamline the uniquely valuable elements of studio teaching and draw more extensively on knowledge developed in other established fields, translating that understanding into a form useful to practicing designers—otherwise designers will not be able to cope with the increased demands being placed upon them” (Meyer & Norman, 2020 p.23).

Here, Meyer & Norman call for a design practice that is founded in theory that helps the designer understand the context of the design problem which is different from the design theory about the design process as discussed by Simon and Schön. This is an argument for theory about the experience that is being designed for. Whereas theory about design method strives to be generally applicable and independent of the subject of a given design project, the theory that Meyer & Norman is asking for is contextual. As such, a designer who is designing a chair and a designer who is designing a software interface for a car may share design methods as for instance creating a mood board, doing a brainstorm etc., but they rely on different context-specific theory in terms of what makes a chair and a car interface useful and desirable respectively. In terms of use this might suggest that the designer’s personal experience of finding a certain type of chair comfortable is related to ergonomics or that finding a certain interface easy to navigate is related to cognitive psychology. In terms of the desirability it might mean that the designer is required to have an analytical understanding of the meaning of furniture or the driving experience that goes beyond the designer’s own personal experience. On the same premise, a play designer is not only

required to be able to give shape to a new toy or make a beautiful board game while relying on his own intuition as to the play qualities. Rather there must be a need for a theoretical understanding of play in order to design for a certain play experience.

It is important to note that when arguing for importing contextual theories into a design discipline Meyer & Norman emphasize that a transformation of the theory is required so that it will be useful to design practice. I have already addressed how this is also the case with play studies that are largely created for descriptive purposes and not generative ones. Buchanan was also very aware of this type of issue, noting that while imported theories might build a better understanding of the context of a design problem, it will not directly specify the design itself.

“What is perhaps most important to remember as designers move deeper into the human sciences is that the universal propositions of the behavioral and social sciences do not lead directly to the specific, particular features of successful products. There is a profound, irreducible gap between scientific understanding in this area and the task of the designer. This does not mean that designers may escape their responsibility of understanding the contributions of the human sciences to their work. Instead, it focuses one of the problems of design research: how do designers employ knowledge from the human sciences to discover specific features of products” (Buchanan, 2001, p.16).

It means that the call for theory about what is being designed is not an effort to replace the abductive, iterative design

practice of action and reflection as proposed by Schön, rather it asks that theoretical knowledge becomes a central part of the reflection and meaning-making process of design practitioners. As both Meyer & Norman as well as Buchanan recognize, bringing scientific theories from other fields into design practice is not a trivial matter but one that requires translation or transformation for these theories to serve design practice. As I have discussed this seems exactly to be the challenge in terms of establishing play design as a discipline. Firstly, there is a tradition for reserving theory for design methods and relying heavily on the designer's personal experience and intuition for reflecting on the action, to use Schön's terms. At the same time the interdisciplinary scientific field of play studies has not concerned itself much with the making of play but more so with the description thereof. This arguably makes for a situation where play theory is not particularly suited for play design practice and where the play design practitioners are not looking for theory to assist them in making design decisions.

Hopefully, this side quest into the role of theory in relation to design practice has helped develop the argument for why I find it important for play theory to be integrated better into the practice of play design. I am not looking to replace reflection that is informed by the personal experience of the play designer but rather to supplement it by making theoretical reflection more available as well. On this basis it is clear that I align myself with the design research in the field of interaction design that has been particularly concerned with this type of problem. This proved to be very useful in developing my methodology for connecting play theory and

play design practice since I would be able to build upon the findings from the field of interaction design.

Design Theory as Intermediate Level Knowledge

With problematizing the relationship between play design practice and play theory as a problem of usability and identifying its call for a transformation or translation of the play theory in order for it to serve practice came the question of how to approach this transformation of play theory. Fortunately, play design being a new design discipline in an academic sense, it is not the first to try to bridge the gap between theory and design practice. As mentioned, it is an issue that has been debated for some time within interaction design, and as such it was possible to build upon existing approaches from this field. Specifically I decided to adopt the concept of ‘intermediate level knowledge’ that has been developed and discussed in the field of Human-Computer Interaction (HCI) and interaction design in an effort to bridge the gap between play theory and play design practice.

Höök & Löwgren introduce the concept of ‘intermediate level knowledge’ motivated by their argument that general theoretical knowledge is difficult to apply in the design process given the gap between the general theory and the specific instance of the design in question (Höök & Löwgren, 2012). Especially in the case of reflection-in-action, bridging this gap might impair the moment-to-moment cycle of design decision and reflection altogether. As an example it is not feasible that a graphic designer would study human cognition and perception when deciding whether the gutters between columns on a page layout should be two or three cm wide even if the theory might offer a foundation for this decision.

This implies that theory is likely to be reserved for evaluation but less so for creation. In an effort to appropriate general theory to be used in a reflective design practice it needs to be translated or transformed into heuristic design principles or models that strive to make the implications of the theory actionable for designers. In the case of play design, this transformation of play theory is arguably lacking and the reason why it is up to the play designers to figure out how e.g. Huizinga's definition of play is to inform their design decisions. Transforming in this example Huizinga's writings to have not only evaluative but also generative value is by no means a trivial matter and as such one can hardly fault play designers if they fail to do so. Höök & Löwgren propose instead that design practice use a suite of middleground theoretical concepts that enable designers to connect general theory and design practice. They refer to these as instances of 'intermediate level knowledge' that are

“constructing knowledge that is more abstracted than particular instances, without aspiring to be at the scope of generalized theories” (Höök & Löwgren, 2012 p.1).

Höök & Löwgren note that there are a number of different forms of 'intermediate level knowledge' including Patterns, Guidelines, Methods and Tools, Concepts, and Annotated Portfolios. They have different qualities but share the purpose of representing a more general knowledge than that of the individual instance of design while being less abstract and more applicable to design practice than general theory. Figure 4 appropriates Höök & Löwgren's illustration of 'intermediate

level knowledge’ occupying the gap between theory and practice (the latter labelled “instances” of design).

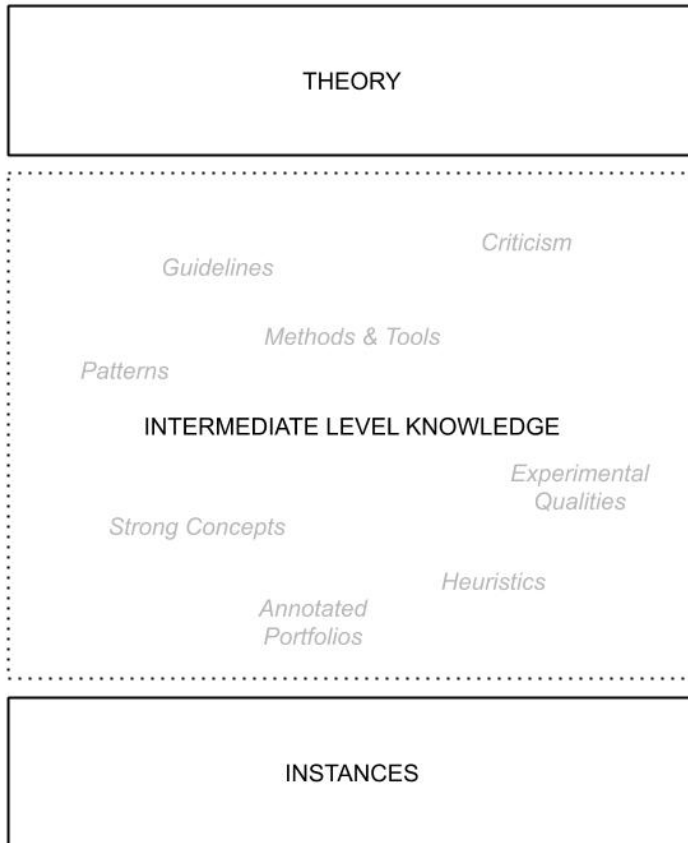


Figure 4. Intermediate level knowledge

Even if it is not an exhaustive list, Höök & Löwgren’s model illustrates that there are a number of different types of ‘intermediate level knowledge’.

In response to Höök & Löwgren's concept of 'intermediate level knowledge', Dalsgaard & Dindler note that different instances of 'intermediate level knowledge' might differ in terms of whether they originate from theory or from practice. They argue that the Strong Concepts developed by Höök & Löwgren employ an empirical or inductive bottom-up approach where concepts that have proven useful in practice are elevated to 'intermediate level knowledge' as they are acknowledged for their archetypal qualities that make them useful beyond a given instance of design (Höök & Löwgren, 2012). This can be described as a practice-driven development of 'intermediate level knowledge'. Dalsgaard & Dindler, on the other hand, find that Stolterman & Wiberg's development of Conceptual Constructs applies a top-down approach of operationalizing general theory through the design of artifacts that expresses the qualities of the theory in practice (Stolterman & Wiberg, 2010). This observation of instances of 'intermediate level knowledge' being developed and informed by either theory or practice motivates Dalsgaard & Dindler to propose Bridging Concepts as a hybrid form of 'intermediate level knowledge' that distinguishes itself by being informed by both theory and practice (Dalsgaard & Dindler, 2014). This type of 'intermediate level knowledge' specifically aims at facilitating an exchange between theory and practice. As the name suggests, the purpose of bridging concepts is not only to sit in between theory and practice but precisely to bridge the gap and facilitate an exchange of knowledge between the two. With the goal of my PhD project being to connect play theory and play design practice I decided that I would attempt to do so by developing a play design theory specifically as a

bridging concept. This allowed me to use Dalsgaard & Dindler's three qualities of bridging concepts as design principles for developing a new concept of play design:

- ❖ *It inhabits the middle ground between theory and practice*
- ❖ *It is accountable to practical exemplars, the parameters that shape the concept (articulations) and theoretical grounding*
- ❖ *Its purpose is to bridge and span the gap between theory and practice and thereby unveiling and articulating untried design opportunities and potential theoretical advancements*

(Dalsgaard & Dindler, 2014 p.1637).

This approach would naturally carry important methodological implications as the development of a bridging concept per definition entails that the building blocks come from both literature and empirical findings. As such, the following chapters of my thesis are intended to demonstrate how I would develop a concept of play design informed by play theory on one hand and empirical findings from my fieldwork at LEGO House on the other.

Learning (from) the Tools of the Trade

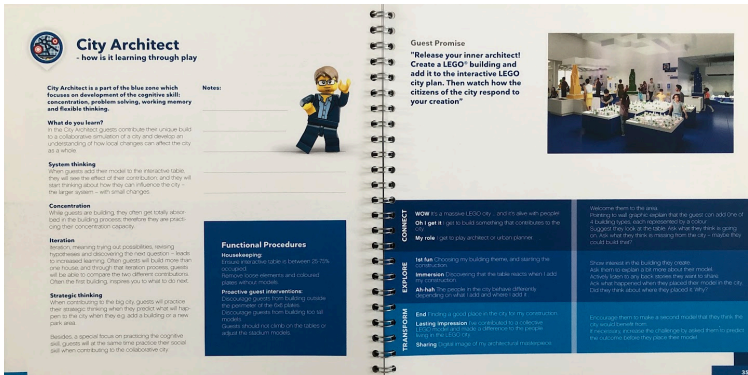
As mentioned previously, the design team at LEGO House were already using two tools of their own invention when I started working with them. With my newfound interest in instances of ‘intermediate level knowledge’ I found these tools to be examples of exactly that.

Both these tools would have an immense influence on my own attempt at developing a concept of play design, and that is why I believe that an account of these tools as influences is relevant. This means that it is time for the first episode of *Tales from the Fieldwork*, where I describe experiences at LEGO House that were instrumental in my development of a new concept of play design.

Tales from the Fieldwork: Episode I - The DNA of my journey

When I became part of the LEGO House design team I was given a copy of The 9-step Journey Tool, and working with the design team I found that this tool would be used frequently.

The 9-step Journey Tool presents a concept of play design as designing for play experiences as journeys that unfold over nine steps. I know, who would have guessed? In any case, it scaffolds the play design practice by suggesting that playthings should support these steps. Over 57 pages the small book documents how each of the play designs at LEGO House are intended to achieve this.



The 9-step Journey Tool

Theoretically the tool is informed by the LEGO Foundation’s concept of Learning through Play (LTP) and proposes that a LTP experience progresses over three phases: Connecting, Exploring and Transforming. The play designers should facilitate this progression by making playthings that help guests connect to the experience by being attractive, motivating and accessible; they should allow for exploration by letting guests find their own path through the experience, and the exploration should lead to some transformation by having the guests learn something on the way. In order to make this actionable for the play designers, the 9-Step Journey Tool breaks each of the three phases down into three steps that the play designs should support. Figure 5 shows these steps.

C O N N E C T	<p>WOW The guest's first impression on entering the experience space – ideally, one that motivates them to dive in.</p> <p>Oh I get it The guest's broad understanding of the activity and how to participate.</p> <p>My role The guest's understanding of how they can engage with the activity using their existing knowledge, interests and skills. It may be a broad framing in which they can set their own goals.</p>
E X P L O R E	<p>1st fun The first thing the guest does to engage with the experience. It should be easy to engage with, and ideally give guests an early success.</p> <p>Immersion What the guest is doing when they “lose themselves” in the experience. This forms the core of the guest's iteration and feedback loop.</p> <p>Ah-hah The emotional high of the experience in which the guest has a breakthrough of understanding and / or achieves their goal.</p>
T R A N S F O R M	<p>End The final step that gives the guest a sense of completion and an invitation to move on.</p> <p>Lasting Impression Positive feelings about their experiences, and especially their creations. Often these should be tied to the overall goals of the experience zone.</p> <p>Sharing Documentation of the guest's ‘joy of building’ or ‘pride of creation’ that they can share with friends and family, both in and outside of LEGO House. The shared artifact should inspire reflection and conversation about their creative experience.</p>

Figure 5. Play phases and steps

This tool would be used frequently both when the design team would discuss existing play designs and when we would be developing new concepts. A few times I experienced that the tool would be used explicitly going over all the steps in relation to a play design to discuss how the given design would support each step of the play journey. Although, more often my colleagues would make a quick reference to one of the phases or steps of the tool when discussing a new idea or concept.

When developing new ideas for future play designs we would have a design brief on the basis of which we would do a ten-minute closed brainstorm, where each of us would produce as many ideas as possible individually before taking turns to share the ideas with the rest of the team. While sharing we would build on each other's ideas adding to them and relating them with other ideas with overlapping qualities. This process of sharing would gradually move into selection of the most promising ideas as the team would gravitate towards certain ideas. It was in the discussions of the strengths and weaknesses of the ideas that my colleagues would make many references to the phases and steps in the 9-Step Journey Tool:

“I really like the open-endedness and exploration in this concept but we really have to nail the connect phase so that people get it instantly.”

“So, I see that this one has a big wow, but where is our 1st fun?”

I would frequently hear these types of references to the 9-Step Journey Tool which suggested that the team had adopted the terms of the tool to a point where they did not even need to bring out the tool. As such, the tool was not only useful for doing a reflection-on-action but the individual terms were clearly a part of the team's reflection-in-action as well. I considered this to be a strength of the tool. Not only did the terms seem to help the individual play designer to emphasize certain aspects of their play designs but they also provided a common vocabulary to support team discussion.

I would argue that the tool manages to be useful by having relatively few components that provide the play designers with specific points of actions in relation to the given play design that is being developed. It conceptualizes the play experience as something straightforward, and hence it becomes straightforward to use the tool. The basic assumption of causality is vital to the usability of the tool, as it allows the play designer to think of play as a three-act narrative of beginning, middle and end. This is arguably well suited to the play design practice at LEGO House, where guests are moving through the house having many different play experiences. It is a tool made to support this particular type of play design practice. There are, however, many designed playthings outside the context of LEGO House where the 9-Step Journey Tool would arguably be less useful in informing their design. A doll. The game of bridge etc. In terms of its connection to theory the 9-Step Journey Tool is quite specific, as it promotes an understanding of play as a vehicle for learning since the journey ends with a learning outcome. This position is a consequence of the LEGO

Foundation's strong interest in learning through play exemplified by the play experiences at LEGO House . Referring back to Sutton-Smith's seven rhetorics of play, the 9-Step Journey Tool is founded on the rhetoric of play as progression also implied by the metaphor of it being a journey. This is of course intentional and can be viewed as a strength of the tool if this is the understanding of play that you intend to promote, but in turn the tool can be criticised for being too limited for the same reason.

Whereas the 9-Step Journey Tool was already an established tool when I joined the design team at LEGO House, the Learning through Play DNA Tool (which I will refer to as the LtP DNA Tool) was still under development. The tool had been developed as a means for assessing play experiences in terms of their quality as learning through play experiences, and during my first six months at LEGO House I got the opportunity to sit in on a series of workshops that would test an early version of this tool.

In these workshops LEGO House play facilitators, who are working on the floor to assist the guests, would use this tool to evaluate video recordings of guests having different play experiences at LEGO House. The tool would assess these play experiences in terms of their quality as LtP experiences by having the workshop participants observe the video recordings and score the play experiences from 1-7 across the LEGO Foundation's five Learning through Play qualities: *meaningful*, *actively engaging*, *iterative*, *socially interactive* and *joyful*. The tool would inform the scoring by attributing each level of each of the five categories with certain observation indicators. The workshop participants would

score a video as homework before the workshop, and when we met they would compare their individual scores, in groups of 3 or 4, discuss their reasoning with reference to the video footage and try to reach an agreement on the group's final score. Finally all the groups (usually 3 or 4) would meet and compare their results, which would inspire more discussion especially in case of disagreement.

The Learning Through Play Experience DNA Tool

To the right you can see the Learning Through Play Experience DNA tool.

A series of the five key experiences, each of which has seven levels, that have been described in order from 1 to 7.

The following pages contain background information for each level that are used to identify a thing level or what is observed during the play experience.

Levels 3 and 4 are where deeper learning happens. Level 5 involves things that clearly happen over the span of a LTP session.

The Goal is Not High Levels at the Time

The goal is not to get high levels during the session and to have a high level of play. The goal is to have a high level of play over the span of a LTP session.

The goal is to get high levels during the session and to have a high level of play over the span of a LTP session.

An understanding of each element's understanding about the progress of a LTP session, the relationship, and the relationship between the five key experiences, will make it possible to have a better understanding about the relationship between the five key experiences.

By creating a shared language, the Learning Through Play tool can help the design team design and evaluate the quality of play, the quality of the play experience, and the quality of the play experience.

Stage of Agency	Level	Meaningful	Actively Engaging	Inclusive	Socially Interactive	Joyful
Responding The goal is to have a high level of play over the span of a LTP session.	1	Child is present	Child is present	Child is present	Child is present	Child is present
	2	Child is engaged	Child is engaged	Child is engaged	Child is engaged	Child is engaged
Exploring The goal is to have a high level of play over the span of a LTP session.	3	Child is exploring	Child is exploring	Child is exploring	Child is exploring	Child is exploring
	4	Child is exploring	Child is exploring	Child is exploring	Child is exploring	Child is exploring
	5	Child is exploring	Child is exploring	Child is exploring	Child is exploring	Child is exploring
Owning The goal is to have a high level of play over the span of a LTP session.	6	Child is exploring	Child is exploring	Child is exploring	Child is exploring	Child is exploring
	7	Child is exploring	Child is exploring	Child is exploring	Child is exploring	Child is exploring

The Learning through Play DNA Tool

From my first encounter with the LtP DNA Tool I was somewhat hesitant. I was sceptical whether it would be possible to quantify a complex phenomenon such as play meaningfully by scoring it using the tool or at least that the result would be able to inform play design decisions. Nevertheless I was intrigued to try it myself and I decided that it would be my privilege as a researcher to question the approach in order to improve it or provide an alternative. In my field notes from my first introduction to the tool I ask myself: *“Why a step by step perspective on the quality of play?”* This question led me to wonder about the limitations

of a cumulative understanding of quality in relation to play. In my field notes I called the cumulative approach a *staircase approach* as it reinforces an understanding of quality as something that goes from low to high and something that can be raised. I recognized this as a conventional approach to quality but I decided that it would be appropriate to question this concept of quality in relation to the phenomenon of play. I hypothesized in my field notes that the cumulative understanding might lead to methodical problems such as:

- ❖ *Skipping steps*: Should you observe all the indicators of level 1-5 to rate it as a 5? Or does the case that observing the indicators of level 5 imply that all previous levels are present too?
- ❖ *A tiny diamond or a ton of gold*: If we compare two play sessions, where one shows mild indication of level 5 and the other shows overwhelming indication of level 4, is the former really of higher quality?
- ❖ *Temporality*: If a play session unfolds over the course of 15 minutes it should be expected that the indicators will change over time. When rating the session, is it rated by the peak performance or must the reviewer somehow arrive at a mean value for the session?

Over the course of the workshops, where the LEGO House play facilitators were trained to use the LtP DNA Tool, these issues proved to be consistent. In addition it became clear that the participants had different interpretations of both the observation indicators of the tool and of the video recordings.

Also, their interpretation of the video recordings were strongly affected by their extensive previous experiences with other guests engaging with the same play designs.

In general, these types of challenges in the usability of the tool meant that it became very difficult to compare the scores of the different groups of reviewers. Rather it appeared that the value of the tool lay not in the quantitative scores that are assigned to the play experiences but in the qualitative reasoning behind the scores as these were discussed by the play facilitators with great enthusiasm. The instructor even expressed that it is the resulting discussion that is important more so than the scores themselves. This led me to wonder why they would create a quantitative tool if they recognize that the real value is in the qualitative discussion. Given the considerable difficulty of the play facilitators to try to understand and use the tool it seemed to me that the discussions about the play experiences could have been framed more appropriately.

Compared to the 9-Step Journey Tool, the LtP DNA Tool seemed to me more problematic. In terms of usability it was very complicated to use, and as its flaws as a measurement tool became more apparent during the tests it appeared counterintuitive for people to spend so much quantitative effort to produce more or less meaningless data as a means of facilitating a qualitative discussion.

For me, however, the primary problem was not related to the technical problems of sound measurement but to the ideological sentiment behind wanting to do this type of measuring in the first place.

The LtP DNA Tool appeared to me as a rather extreme expression of the play as progress rhetoric. I suppose the intention behind wanting to measure the learning potential of different play experiences is noble, as it might persuade for instance policy makers with a financial perspective that play is actually worth something. The learning through play discourse, however, makes play a subsidiary to learning – a means to an end. This becomes all too clear when using the LtP DNA Tool to measure the learning potential of play experiences as it inadvertently comes to suggest that play designers should strive to maximize this potential. It promotes a very utilitarian understanding of play that comes with its theoretical foundation⁶ that heavily prioritizes developmental psychology which tends to reduce the value of play to learning. This seemed to me to be at odds with the perspective on play that I encountered both with the play designers and play facilitators at LEGO House who I thought had a delicate sensibility about the value of the play experiences of the guests – a more humanistic and holistic approach to play that values not only the extrinsic value of learning and developmental outcome but also the intrinsic value of play as being worthwhile in and of itself. Whereas the LtP DNA Tool was not reflective of the Danish perspective of play promoted by e.g. Jessen and Skovbjerg (as I have outlined previously) I

⁶ The theoretical foundation for the Learning through Play DNA Tool is described in the three white papers: *Learning through play: a review of the evidence* (Zosh et al. 2018), *Neuroscience and learning through play: a review of the evidence* (Liu et al. 2017) and *The role of play in children's development: a review of the evidence* (Whitebread et al. 2017). These white papers were credited to the same group of authors all with a background in cognitive or developmental psychology.

thought that the play design practice at LEGO House was. As such, it was my interpretation that the LtP DNA Tool was being appropriated to this practice by reframing its purpose from being a measurement tool to being a tool for discussion. It is important to keep in mind that the LtP DNA Tool that I encountered was an early unpublished prototype and that the test sessions that I was part of were intended to inform the further development of the tool. At the time of writing the LEGO Foundation has published version 2.8 of the tool and renamed it *The Learning Through Play Experience Tool*. This tool addresses the issues that were identified during the test sessions. Most notably the numeric scoring has been removed, the levels have been reduced from seven to five, the behavioural indicators are more general and its stated purpose is explicitly as a framework for discussion and for developing language concerning learning through play.⁷

On my quest to connect play theory and play design practice many things would come to inform my work. But looking back, I will argue that nothing was as detrimental as my experiences with the 9-Step Journey Tool and the LtP DNA Tool. It were the insights from working with these tools early in the project that set me off in the direction that would come to guide me throughout.

In summary of the above, I found that in terms of usability the 9-Step Journey Tool was superior compared to the LtP DNA Tool by having a simpler structure and fewer elements. This allowed for an internalisation of the tool making it useful not

⁷ The new tool and guidelines for its use is available at <https://www.legofoundation.com/en/learning-through-play-experience-tool/> (accessed 1/9/2021)

only for reflection-on-action but for reflection-in-action as well. This inspired me to pursue the minimalist design maxim of *less is more* in my own efforts to create a concept of play design in order to serve the actuality of play design as a practice. But more than anything it was the provocation of the monolithic play as progress rhetoric represented by the LtP DNA Tool that informed the direction of my project. I decided that I would use the hesitation that I felt regarding this approach as a creative opportunity to explore what would happen if I attempted to develop a tool that would contrast the LtP DNA Tool by introducing a different approach to the quality of play – a tool that would better reflect the aforementioned Danish perspective on play and contrast the focus on learning outcome, causality and accumulative quality and rather pursue a more elegant and poetic expression of play and play design that would emphasize the qualities of the playthings in relation to the play experience. You can argue that this approach of opposition is not only rooted in my own Danish perspective on play but also my position as a design researcher in as much as design is a practice “*aimed at changing existing situations into preferred ones*” (Simon, 1969/1996 p.111) by questioning the underlying assumptions of the current situation. Following the pragmatic philosophy of the design intervention as being the catalyst for new knowledge I worked on the assumption that I needed to intervene with the current practice and create some friction in order to support my knowledge production. As such, I found that identifying play as progress rhetoric, as something that I could challenge and contrast was both productive and helped inform the direction of my project.

These considerations early in the project were instrumental in defining what would become a pursuit of the idea of play as a paradoxical phenomenon. I had already taken an interest in the paradoxical nature of play when writing my proposal in response to the call for the PhD, but it was primarily on the basis of my experiences with the LtP DNA Tool that I decided on this direction as nothing seemed to contrast progress better than a paradox.

Building the Bridge from Both Sides

As described previously, I had made the decision to approach the development of a concept of play design that was meant to connect play theory and play design practice as a bridging concept. This carried the methodological implication that my theory development should be informed by both play theory and play design practice. Figure 6 illustrates this methodology whereby my concept of play design would develop in the conversation between play theory and play design practice.

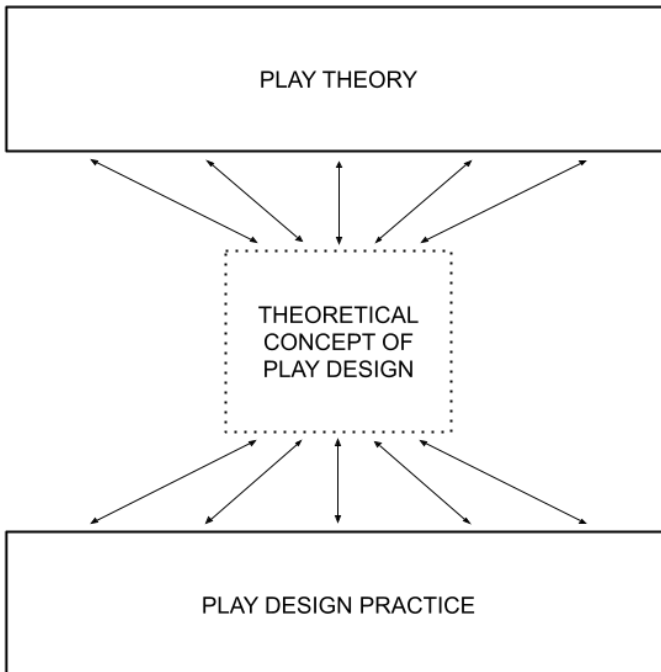


Figure 6. Methodology of the Bridging Concept

Using the bridging concept as a way to develop design theory as ‘intermediate level knowledge’ relates strongly to Dalsgaard’s argument for the relationship between pragmatism and design where

“Theory and practice exist in a reciprocal relationship and theoretical conceptualizations have consequences in practice. On the one hand, theories spring from and must be judged on the basis of practice; on the other hand, the theories and conceptual frameworks that designers bring with them explicitly and implicitly shape practice” (Dalsgaard, 2014 p.148).

Following this line of argument I would develop my concept of play design moving back and forth between the deductive reasoning of theory and the inductive reasoning made on the basis of empirical observations of practice – building the metaphorical bridge to connect play theory and play design practice from both sides simultaneously (see Figure 7). As such, my concept of play design developed as a continually evolving hypothesis informed by an ongoing iterative fluctuation between play theory and play design practice. In this abductive design research practice, knowledge about play design would therefore develop top-down from play theory literature on the basis of text analysis and bottom-up from play design practice on the basis of observation in an iterative manner.

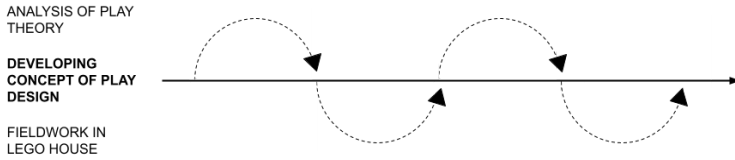


Figure 7. Moving between literature and fieldwork

I have argued how this abductive approach to theory was informed by the concept of ‘intermediate level knowledge’ and the bridging concept specifically. As such, I have aligned myself with the discussion of the relationship between theory and practice within the field of interaction design. I found, however, that the text that most concretely describes this type of theory development, where I would move back and forth between the literature and the fieldwork, is Shepherd & Suddaby’s paper *Theory Building: A Review and Integration*. This might cause some confusion as this work belongs not to the field of design research but to management and organizational theory. I have decided, nonetheless, that this text in particular encapsulates my process of theory development in such a straightforward language that it would be wrong not to introduce the text to the discussion of how to develop bridging concepts in design research.

While from a different academic field, Shepherd & Suddaby, like the bridging concept, have roots in a pragmatic philosophy of science, but whereas Dalsgaard & Dindler build on Dewey, Shepherd & Suddaby trace their scientific lineage back to Pierce whose abductive reasoning is also the foundation for Kolko’s notion of design synthesis as a process of abductive sense-making, as I have discussed previously.

That is to say that, despite the text not belonging to design research, there is some argument why it is not unreasonable to introduce the text in relation to my project.

Shepherd & Suddaby address the gap between theory and practice as follows:

“However, the pragmatic consensus—supported by a long procession of writers beginning with Peirce (1934), extending to Merton (1967), and advancing today with Weick (2014)—is that effective theorizing is a process in which the researcher moves iteratively between the gaps observed in the phenomenal world and those observed in the extant literature. Indeed, it is often the tension created by a gap between the literature and the phenomenal world that ultimately triggers the need for new theory.

Having triggered the theorizing process by discovering or generating a conflict—a paradox, problem, or challenge—the theorist conceives of a research idea, perhaps first as a simple construct or guess, that is then constructed into a theory”
(Shepherd & Suddaby, 2016 p.7).

Relating the quote directly to my PhD project it means that I observed a gap between play design practice and play theory which triggers the need for developing a new theoretical concept of play design. This concept becomes an instance of ‘intermediate level knowledge’ that is located in between play theory and play design practice, and I would develop this concept of play design, as Shepherd & Suddaby propose, by an iterative process of moving between the literature on play and the phenomenal world of LEGO House.

While my experiences at LEGO House were already beginning to inform the theory development, I had to determine exactly how to make play theory literature an active part of the process as well in order to achieve what Shepherd & Suddaby describe as:

“... powerful theorizing involves skillfully weaving together prior knowledge (i.e., existing literature) and emerging knowledge (i.e., new empirical observations)” (Shepherd & Suddaby, 2016 p.7).

This argument for the need for combining existing literature (in my case play theory) and new empirical observations (in my case fieldwork at LEGO House) in the development of new theory (in my case a new concept of play design) corresponds exactly with Dewey’s argument that scientific inquiry relies equally on perceptual facts of empirical observation and the conceptual ideas of rational thought that I discussed previously. It was this pragmatic argument in particular that led me to follow the bridging concept for the development of a concept of play design as an instance of ‘intermediate level knowledge’. By taking this approach my project came to contrast the inductive types of research through design where prototypes are developed first and used to stage the design experiments that then inform theory development. Rather my project would pursue a tight coupling between literature and empirical design experiments, whereby the play theory would not be reserved for the analysis of the design experiments but be a driver of these. As such, I needed my prototype of the concept of play design to

be created from both play theory and fieldwork observations at LEGO House.

In the following I will describe how I would approach the play theory literature in an effort to '*generate a conflict*' in relation to the play as progress rhetoric and begin to '*conceive of a research idea*' that would slowly develop into a concept of play design.

Reduction of Complexity in Search of Usability

At this point I was convinced that the eclectic field of play studies along with a considerable disinterest in the role of play design was central to the problem of integrating play theory and play design practice. I have already described this problem, but, to reiterate, the centuries of play studies across multiple academic fields have produced a body of knowledge that is so diverse that arriving at an operational understanding of play in relation to play design becomes very difficult. In terms of usability the situation of having so many different descriptions of the same phenomenon creates a problem of inconsistency.

Inspired by the superior usability of the 9-Step Journey Tool compared to the LtP DNA Tool I decided to pursue a similar minimalist maxim of ‘less is more’ to the transformation of play theory.

The relationship between minimalism and usability is well documented in the field of interaction design (Carroll, 1998, Obendorf, 2009), but it originated in the arts as an attempt at conveying the essence of things which, in design and architecture, came to influence the Bauhaus movement of reducing things according to their function. In his 1926 description of the Bauhaus principles of production, Walter Gropius, founder of the Bauhaus school states:

“An object is defined by its nature. In order, then, to design it to function correctly – a container, a chair, or a house – one must first of all study its nature; for it must serve its purpose

perfectly, that is, it must fulfil its function usefully, be durable, economical and 'beautiful'" (Gropius, 1926 p.95).

The minimalist sentiment to reduce form to follow function has arguably become a grounding principle in today's understanding of usability. As evident by John Carroll's foreword for Hartmut Obendorf's book *Minimalism – Designing for Simplicity*:

"We called these designs "minimalist" to emphasize that user interface and online information presentations should be simplified to their essence. Instead of the scientific and engineering design virtues of systematicity and comprehensiveness, we promoted the virtue of enabling self-directed exploration and sense-making through simplicity" (Obendorf, 2009 p.viii).

I decided that if I were to develop a concept of play design that would make play theory usable for play designers this would be my strategy – to forgo some of the complex comprehensiveness of play theory and make it available to play designers by transforming it into an essence of play or rather into a function essential to play that play designers can strive to support through the design of playthings.

This strategy of minimalist reduction became the primary principle for achieving the development of 'intermediate level knowledge' in the form of the bridging concept. Transforming sources of play theory into an essence of play would allow me to create a concept of play design that would be accountable to its theoretical foundations while being accessible to play design practice.

To make a call back to the analogy of play theory as the Hi-Fi sound system and play design practice as happening on the fly, the minimalist reduction of play theory into an essence of play would represent an iPodification⁸ of the play theory, an attempt to reduce the theoretical understanding of play to an essence in order to increase its usability in the context of play design practice at the expense of comprehensiveness.

To reference (again) Cross's notion of a designerly way of knowing, I would argue that my approach to the play theory came to represent a 'designerly way of reading'. I take this to mean approaching the literature from the paradigm of change – using the literature as building blocks by picking from it the particular concepts that we need for creating something new to serve the needs of practice. It means considering and approaching the text as if it was a physical material for us to shape and transform not using scissors or saws but an interpretation to mold it into something of our own. It is a repurposing of the play theory where I strip the texts for useful parts while leaving the rest.

Using this approach I would attempt to reduce the texts to an essence of play and mold it into a concept of play design that, in the words of Deleuze

“... crosscuts the chaotic variability [of play theory in this case] and gives it consistency (reality). A concept is therefore

⁸ I refer to the design of the Apple iPod that famously changed music listening by applying a minimalist approach to compress the music and reduce the player to the most essential functions. For a detailed description of this case see Obendorf, 2009 p.8-12 & p.185-188

a chaotic state par excellence; it refers back to a chaos rendered consistent ...” (Deleuze & Guattari, 1994 p.208).

The concept that I decided to focus on was the concept of play as a paradox. The discussion of play as a paradoxical phenomenon is not new to play studies. Henricks in particular asks that play scholars study how seemingly contradictory elements of play come together to form a certain play experience (Henricks, 2009 p.13). I decided to follow Henricks’ advice and in doing so use the concept of play as a paradox as a means to unify play theory as represented by the selected literature. I have already mentioned how this choice of the paradox as a unifying quality of play of concept was informed largely by wanting to create friction to support an interventive practice of design research in relation to the play as progress rhetoric that I encountered in the form of the LtP DNA Tool. As such, I would use this concept of play as a paradox to cut across the variety of play theory with all its different ontological and epistemological positions in order to reduce play theory to a minimal concept of play.

In deciding on play as a paradox as a lens for unifying different play theories I would follow Shepherd & Suddaby who emphasise the importance of establishing a focus in relation to the process of abductive theory development:

“The act of naming a core construct early in the process of theorizing is a critically important step because even though the theoretical narrative is not yet clear and the construct itself is still somewhat fuzzy, the act of putting a formal name to the phenomenon of interest is an essential step in conceptually separating one’s phenomenon from the mass

“noise” of our everyday empirical experience and/or separating one’s core construct from the mass “noise” of prior research” (Shepherd & Suddaby, 2016 p.7).

This was my strategy for making the play theory literature an active part of the theory development: To use the concept of play as a paradox as a key for making a minimalist reduction of play theory in order to arrive at a consistent concept of play design. As Shepherd & Suddaby suggest, this gave me a clear direction in my project and it helped me to keep a focus on the things that were related to the notion of play as a paradox in both my literature study and in fieldwork.

Before moving onto the description of how I developed a concept of play design I believe that it serves both myself and the reader to summarize the arguments that I have made so far:

- ❖ I have argued why the eclectic body of play theory may be problematic in relation to play design practice.
- ❖ I have argued why play design practice would nevertheless benefit from a theoretical understanding of playthings.
- ❖ I have argued why I decided to develop a new concept of play design as an instance of ‘intermediate level knowledge’ and more specifically as a bridging concept by iterating between play theory and empirical observations.

- ❖ I have argued why theory development, in the service of design practice, implies a careful consideration of usability, and why I decided to apply a minimalist design principle in an attempt to arrive at an essential understanding of playthings and play design useful to play design practitioners.

In doing so, I have tried to set the stage and provide context for understanding my design process for developing a new concept of play design. From here, the text will therefore be concerned with describing this process and discussing the results.

At the Library

While I was working with the play design team at LEGO House I began my analysis of play theory literature to learn if I would be able to use the paradox of play as a key for reducing a collection of play theory to a minimalist concept of play design.

I would dedicate a few days a week to reading and doing the analysis of the selected play theory literature in between the fieldwork at LEGO House. It may not do this iterative movement between the literature analysis and fieldwork justice, but I have decided that I will present the two modes of research separately. The reason is that I believe that this will allow me to present the most coherent description of the development of my concept of play design by utilizing the privilege of looking back at the project to structure the text thematically into a section that describes the analysis of play theory literature followed by a section that describes the fieldwork exploration. As such, I am breaking the chronological structure of the iterative movement between the two modes of research to promote my central argument and contribution to play design – the concept of playful tension. I hope that this thematic structuring of my writings will not cause you to think that all the literature analysis preceded the fieldwork. It most certainly did not.

Selection of Texts

Before presenting my analysis of the texts that I decided to include in the project I will briefly outline my reasoning for selecting these texts in particular.

My selection of texts was informed both by time constraints and their representational qualities. Beginning with the first, it is obvious but important nonetheless that I had limited time to complete the project. Teaching requirements, dissemination of knowledge and PhD courses aside, I also had to split my time between doing the literature study and the fieldwork at LEGO House, which was the reason why I was forced to limit the number of texts in order to make time for the fieldwork as well. There were several texts from the play studies that were relevant and could have been included, but due to time constraints they were not.

Secondly, it was important that the selection of texts would represent the multidisciplinary field of play studies by including several perspectives on play. Attempting to reduce the complexity of play theory in favour of usability should not be achieved simply by ignoring important areas of play study. Rather it was of key importance to arrive at some essence of play theory that would be accountable to the field of play studies in general. Keeping the time constraints in mind I decided to create a selection of texts that would represent the field of play studies by focussing on seminal texts and authors who have been foundational to the field of play studies. To do so, I have looked to other works that have outlined the history of ideas of the phenomenon of play. Therefore my selection of texts have significant overlap with the texts that are emphasized in *Tekster om leg* (Karoff & Jessen, 2014), *Dionysus Reborn* (Spariosu, 1989), *The Ambiguity of Play* (Sutton-Smith, 1997) and *The Handbook of the Study of Play* (Johnson et al., 2015). In their mapping of the field of play studies these works ascribe the texts that I selected (although some more than others and with some variance across the

books) a certain importance in relation to the field of play studies and our understanding of the phenomenon of play. Hence most of the selected texts enjoy a canonical status in the field of play studies and are being referenced by many different disciplines.

A Designerly Way of Reading

I have already discussed the role of the literature in the project and I have also mentioned my approach to the analysis of the texts, but I will mention it again, as this is an important context for understanding the text analysis that follows.

As I employed the methodology of doing research through design I would develop a new concept of play design to function as a tool for play design practitioners by making an evolving prototype that would go through iterations of creation, experimentation and adjustments. In this process of making theory through design the play theory literature would play a key role by providing material for the development of the prototype. In my case, where the prototype is a concept, the materials that are used are therefore not physical materials but conceptual ones. This status of the text as a source of conceptual building materials is very much related to Dewey's pragmatic perspective on the construction of knowledge as explained by educational researchers Biesta & Burbules:

“They [objects of knowledge] are not fantasies, things made up only in our minds. Just as we can only make effective instruments out of raw materials, the objects of knowledge have to be constructed out of available ‘materials’”

(Biesta & Burbules, 2003 p.95).

In my case the materials for constructing a concept of play design came from the analysis of play theory and from empirical observations at LEGO House. Regarding the former, the status of the text as a source of building blocks means that the pragmatic maxim of the primacy of practice would also pertain to the analysis of the selected texts. In this context the purpose of the text becomes to supply useful building blocks. When I refer to this as a ‘designerly way of reading’ I am doing so to emphasize that the text is being used for making something else. It makes the original intentions behind the text less relevant. What matters is the usefulness of the building materials that the designer can extract from the text via the intentional analysis. It also means that even if a text presents several arguments only the materials that are considered relevant to the current making are used while the rest is left behind. To use the obvious analogy of LEGO, the source text may be likened to a complete and beautiful LEGO model that we take apart only to retrieve a few special bricks that we need for something new that we want to build. In my ‘designerly way of reading’ I was therefore *using* the selected texts in a most exploiting fashion to strip them of useful materials.

With this context in mind let’s move on to the analysis of the selected texts to learn how I made use of them.

Reading Schiller - On the Aesthetic Education of Man

I decided to read Schiller’s *On the Aesthetic Education of Man* because it is the first introduction of the idea of play as a paradox in Western philosophy. Also, Schiller’s romantic

philosophy of play seemed to me to be the perfect starting point for contrasting the rhetoric of play as progress.

The idea of the paradoxical double-sided nature of play is described by Schiller as a union of opposite states in the form of his concept of the ‘play drive’ (Schiller, 1793/1985). The concept of the ‘play drive’ appears in a collection of letters titled *On the Aesthetic Education of Man* in which Schiller challenges the Kantian perspective on play as being ultimately a harmful divergence of reason. Instead Schiller’s “*return to play as a useful philosophical concept occurs in relation to Plato, who, after purging it of irrationality and violence, acknowledges it as the “noblest” activity of Reason*” (Spariosu, 1989 p.54). Schiller continues Kant’s dichotomy between reason and materiality and describes man as being torn between these opposite drives. Schiller presents his argument of what it means to be human by addressing the tension between the ‘formal drive’, our moral reason, and the ‘material drive’, our biological needs. Living according to reason and morality is contrasted to submitting to the material biological needs and urges, and this split is a fundamental paradox that man must resolve. The ‘play drive’⁹ is introduced as the concept that enables harmony between the opposite forces of the moral and the sensuous allowing man to live in beauty and freedom. Unlike the formal and the sensuous drives, the ‘play drive’ is a mediating drive the function of which is to reconcile the other two. As described by Schiller:

⁹ In the various translations of Schiller the same concept is referred to either as ‘drive’, ‘impulse’ or ‘instinct’. Ryall, Russell & MacLean 2013 uses the term play drive which seems to be the translation that is most popular among play theorists today.

“There shall be a communion between the formal instinct and the material instinct, i.e., a play instinct, because only the unity of reality with the form, of contingency with necessity, of passivity with freedom completes the conception of humanity” (Schiller, 1793/1985 p.257).

Schiller’s argument is that we cannot live in harmony or beauty if we are governed fully by our ‘formal drive’, and we cannot be governed fully by our ‘material drive’ either. To live in beauty, one needs to transcend both into harmony via the ‘play drive’. Rather than seeing play as a frivolous diversion of reason, the mediating role of play in Schiller’s writing ascribes to it a primary function in the pursuit of a life and ultimately a society of beauty. Schiller goes on to argue that

“Man plays only, where he in the full meaning of the word is man, and he is only there fully man, where he plays” (Schiller, 1793/1985 p.259).

This is arguably the most prominent quote by Schiller, and seemingly this reads as a support of the idea of play as a vehicle for holistic learning. However, it is important to recognize that Schiller did not refer to the phenomenon of play in all its manifestations. Rather Schiller speaks of a particular type of transcendental play of the mind rather than concrete material play as it would manifest itself in the physical world (Ryall, Russell & MacLean, 2013 p.4). Play is to Schiller an exercise of reason intended for the aesthetic education of the sensuous emotions so that the material

transcends to achieve harmony with reason (Wertz Jr, 2005 p.81). Whereas Schiller argues against a Kantian suppression of the material he upholds a rationalist position by subordinating the material as the object of reason even if their union is the ultimate goal.

This is an important detail when addressing the historical development of play as a union of opposite states, since it is easy to misinterpret this concept of play as being fully formed in Schiller's writings by taking single quotes out of context. Whereas one should be careful not simply to read a modern understanding of play into Schiller's writing, his work does lay the theoretical foundation for the conceptualization of play as being a union of opposites states as his concept of the 'play drive' not only suggests that play has to do with the paradox of reason and materiality but that the nature of play is that it makes the paradoxical union possible.

In the interest of developing a concept of play design, what I took from Schiller's writings on the 'play drive' is the idea of play as a phenomenon that reconciles a paradox by enabling a union of opposite states. Although Schiller speaks only of the paradox between reason and materiality it leads to the hypothesis that the ability of play to reconcile opposite states extends beyond this particular dichotomy. As such, the primary contribution of Schiller's concept of the 'play drive' in relation to my development of a concept of play design is as grounds for the hypothesis that enabling a union of opposite states is a general and fundamental property of play as a phenomenon. If considering this as a fundamental property of play the question becomes whether a paradoxical union of opposite states is not only a property of play but also

a condition for play to function. Schiller never addresses whether play is reliant on a union of opposite states only that it enables it. Outside of the argument that the ‘play drive’ as a concept must be reliant on what gives it purpose there is no answer to this question in Schiller’s *On the Aesthetic Education of Man*. The question is, however, crucial in relation to my efforts to develop a concept of play design, as play designers need to design for the conditions that play may be reliant on.

Reading Nietzsche – The Birth of Tragedy or Hellenism and Pessimism

I was initially inspired to include Nietzsche’s *The Birth of Tragedy or Hellenism and Pessimism* from reading Sicart’s book *Play Matters*. In the first chapter Sicart references Nietzsche as he describes play as being “*between the rational pleasures of order and creation and the sweeping euphoria of destruction and rebirth, between the Apollonian and the Dionysiac*” (Sicart, 2014 p.9). In addition I found that this particular aspect of Nietzsche’s writings was also emphasized strongly in relation to play by both Spariosu (Spariosu, 1989) and Karoff (Karoff, 2014 p.51). As it appeared to be strongly related to the tension between Schiller’s formal and material instincts I decided to include the text to see whether it would bring a different perspective on the understanding of play as a union of opposites.

The relationship between reason and materiality that features in Schiller’s writings on the ‘play drive’ corresponds to some extent to Nietzsche’s philosophy expressed as a tension

between the Apollonian and the Dionysian. Unlike Schiller, Nietzsche writes not about play explicitly but about art. However, his discussion of the relationship between the Apollonian and the Dionysian has widely been extended to the phenomenon of play (Hinman 1975, Spariosu 1989, Sicart 2014, Karoff 2014).

In Nietzsche's writings, the Apollonian represents a "*will to order, symmetry and beauty...*" (Spariosu, 1989 p.76). It is the creative will that lets the player create from his imagination. Nietzsche refers to this imaginative power as:

"The beautiful appearance of the dream-worlds, in the production of which every man is a perfect artist, is the presupposition of all plastic art..." (Nietzsche, 1910/2016 p.23).

Hence the ability to suspend and exceed reality using imagination is the precursor of creative endeavour. The Apollonian force thus represents a position where the player is in control, acting out his intent onto the world by giving shape to his "*inner world of fantasies*" (Nietzsche, 1910/2016 p.24), thereby making the Apollonian a position of the player as subject with reality as object.

The Dionysian represents an opposing loss of control over reality through intoxication. This position reversitly puts the player as object and the reality or nature as subject. It is a sensuous surrender to nature where

"Man is no longer an artist, he has become a work of art: the artistic power of all nature here reveals itself in the tremors of

drunkenness to the highest gratification of the Primordial Unity” (Nietzsche, 1910/2016 p.27-28).

Whereas the Apollonian represents the world as a canvas for the player, the Dionysian represents the player as a canvas for the world. Nietzsche frames a dichotomy between the Apollonian order, structure and beauty on one hand and the Dionysian chaos, intoxication and ecstasy on the other.

While Schiller argues for the ‘play drive’ as a mediating concept that reconciles reason and materiality in harmony, the relationship between Nietzsche’s Apollonian and Dionysian constructs are about tension, and a union of the two is a collision of opposing forces (Spuriou, 1989 p.77).

This is not to say that the relationship between the Apollonian and the Dionysian is not harmonious, only that this harmony in Nietzsche’s writings is different from the rational image of harmony presented by Schiller. Rather than being reconciled and elevated into harmony, the harmonious relationship between the Apollonian and the Dionysian forces rises from their interdependence. As Fink describes it:

“The Apollonian struggles with the Dionysian and vice versa. There is a hostility between these opposing powers: they displace and battle each other, but (and this is Nietzsche’s profound insight) neither can exist without the other. Their contest, their dispute, is also a peculiar harmony” (Fink, 2003 p.17).

While Schiller’s argument is that a union of opposites are made possible by play, Nietzsche essentially reverses the

argument proposing that play is made possible by a union of opposites as he concludes that

“... the intricate relation of the Apollonian and the Dionysian in tragedy must really be symbolised by a fraternal union of the two deities: Dionysus speaks the language of Apollo; Apollo, however, finally speaks the language of Dionysus; and so the highest goal of tragedy and of art in general is attained” (Nietzsche, 1910/2016 p.167).

Nietzsche thus emphasizes that it is the union of these opposite forces that enables art rather than art enabling the union of the opposites.

Both sides of the argument are central in developing an understanding of play design, as it establishes that play is not only able to unite opposite states, it is also reliant on the tension created by this paradoxical union. It is clear that Schiller’s foundational work regarding the union of opposite states is carried on by Nietzsche, but whereas Schiller argued for the aesthetic education of the material impulse for it to achieve harmony with reason Nietzsche argues that the creative force comes from the collision of the opposed impulses, and subordinating one to the other to achieve harmony would essentially devoid their union of the creative quality as it originates from their struggle.

In relation to the field of play design Nietzsche’s discussion of the Apollonian and the Dionysian forces thus serves to evolve the understanding of play initiated by Schiller. Schiller is arguably more associated with play as he establishes the concept of play as a union of opposite states and because he, unlike Nietzsche, explicitly uses the word play. Nietzsche,

however, creates the argument for the union of opposites as a condition for play that is necessary to operationalise this understanding of play. As such, there are two primary elements from Nietzsche that advance the concept of play as a union of opposite states that serves as a foundation for play design.

The first element is the argument that supports an understanding of play as not only enabling this union of opposites but being in fact also reliant upon it. This is pivotal for play design, as the union of opposites can be considered not only a property of play but a condition for play. Therefore it becomes a basic goal of play design in general to support such a union of opposites.

As a simplified analogy Schiller establishes that the hen (symbolising play) creates the egg (symbolising the paradoxical union of opposites) but Nietzsche adds that the egg also creates the hen.

The second element that Nietzsche brings to the concept of play design is the development of the understanding of the nature of the union itself. As described, Nietzsche also differs from Schiller in this respect. Schiller describes the 'play drive's' mediation of reason and materiality as a pursuit of a state of beauty – a harmony that is to be achieved. In Schiller's description of the union of opposites, the union is seemingly a destination, whereas the union of opposites in Nietzsche's description is an endless process. The former is a union of achieved rational harmony and the latter is a union in eternal conflict. This adds to the concept of play as a paradoxical union of opposites that this union is characterised not by static harmony but by dynamic tension. This makes it the job

of the play designer to enable players to create and uphold such a dynamic tension of opposites.

From this point and onwards I would begin to develop this idea of play as being reliant on a playful tension between opposites. I would begin questioning how the play design practice at LEGO House might support playful tension, and I would also continue to explore this notion of play in the literature.

Reading Huizinga – Homo Ludens

Huizinga's *Homo Ludens* is one of if not the most cited text about play¹⁰. In my experience Huizinga's definition of play is inescapable in play studies. It seems to be copy/pasted into most presentations on play. I encountered it myself as a student of game design a decade ago and I find myself citing it to my own students on a yearly basis. I decided to include it, not only because of its status as a classic within play studies, but also because I had never found it very useful outside of academic discussion of play.

Homo Ludens is largely a continuation of Schiller's sentiment that man is only fully man when he plays. This is quite evident by the title that promotes an understanding of humans not as the biological homo sapiens but as the cultural homo ludens. The central argument of the book is that play is a primary foundation for culture.

¹⁰ As per 9/6/2021 Google Scholar had registered 23268 citations

Huizinga's rich definition of play has become an imperative part of play theory and is a general basis for discussion of the nature of play. As such, it has also been the object of much critique predominantly with regard to his romantic rationalist perspective on the role of play in culture and because he is primarily concerned with play as a contest while largely ignoring other types of play (Sutton-Smith, 1997 p.79-80). Reading the text in relation to the concept of playful tension I have concentrated on the parts of the book that relate specifically to the notion of play as a paradoxical union of opposites. In doing so it stands out that while Huizinga's description of play primarily argues for play as something orderly and governed by rules it also acknowledges the importance of a disorderly component in the form of uncertainty. Play as a paradoxical union of opposites appears when Huizinga is describing the primary characteristics of play. While these characteristics are not entirely consistent over the course of the book or are at least expressed with some variance to support a given argument they do support the understanding of play as a paradoxical union of opposites. The first instance of this is the seeming contradiction between play as freedom and play as order. The contradiction itself is not addressed explicitly in the text, but it appears unmistakable when reading through the lens of the notion of playful tension. Huizinga introduces freedom as a primary component of play when stating:

"Here, then, we have the first main characteristic of play: that it is free, is in fact freedom" (Huizinga, 1949 p.8).

But only a few pages later he adds:

“Inside the play-ground an absolute and peculiar order reigns. Here we come across another, very positive feature of play: it creates order, is order. Into an imperfect world and into the confusion of life it brings a temporary, a limited perfection. Play demands order absolute and supreme” (Huizinga, 1949 p.10).

This playful tension of rule-bound freedom where both are held as a primary characteristic of play while arguably standing in fundamental contradiction are core to Huizinga’s definition of play.

In addition to the playful tension between order and freedom Huizinga also outlines another expression of playful tension, one between order and uncertainty. There is clearly an overlap between *order – freedom* and *order – certainty* but there are also notable differences. In the instance of playful tension between order and freedom this has to do with a tension of possibility, where freedom grants possibility for the player to decide for himself what to do, whereas the order or rules restrict the player’s possibility space. The playful tension between order and uncertainty, on the other hand, has to do with a tension of predictability, where the order and structure of play increases predictability by limiting possible events, while uncertainty, caused by randomness or complexity, decreases predictability.

The playful tension between order and uncertainty becomes evident as Huizinga argues that

“The profound affinity between play and order is perhaps the reason why play, as we noted in passing, seems to lie to such a large extent in the field of aesthetics” (Huizinga, 1949 p.10).

With reference back to Nietzsche’s aesthetics and his argument for art as a battle between order and chaos it is apparent that the chaotic also has a place in Huizinga’s description of play as opposed to order, namely as a tension of uncertainty. Huizinga explains the tension of play as:

“The element of tension in play to which we have just referred plays a particularly important part. Tension means uncertainty, chanciness; a striving to decide the issue and so end it. The player wants something to ‘go’, to ‘come off’; he wants to ‘succeed’ by his own exertions. Baby reaching for a toy, pussy patting a bobbin, a little girl playing ball—all want to achieve something difficult, to succeed, to end a tension. Play is “tense”, as we say. It is this element of tension and solution that governs all solitary games of skill and application such as puzzles, jig-saws, mosaic making, patience, target-shooting, and the more play bears the character of competition the more fervent it will be. In gambling and athletics it is at its height. Though play as such is outside the range of good and bad, the element of tension imparts to it a certain ethical value in so far as it means a testing of the player’s prowess: his courage, tenacity, resources and, last but not least, his spiritual powers – his ‘fairness’; because, despite his ardent desire to win, he must still stick to the rules of the game“ (Huizinga, 1949 p.10-11).

As evident in the above argument Huizinga considers the tension as the uncertainty of the unknown, a finding out what will happen and a striving to meet a challenge and succeed. Tension is being built in play when a problem challenges the player and resolves as players use their agency to solve these problems or challenges. This means that play relies on building and resolving a state of uncertainty where

“A feeling of exaltation and tension accompanies the action, mirth and relaxation follow” (Huizinga, 1949 p.132).

This can be interpreted as a playful tension between the known and the unknown, between the predictable and the unpredictable and also between success and failure. As such, it relates both to the player's ability to know what will happen and his desire for a certain outcome – meeting the uncertainty of the situation and striving for control over it.

Huizinga further argues that the tension of uncertainty affords a playful tension between the ordinary and the extraordinary when he states that

“To dare, to take risks, to bear uncertainty, to endure tension – these are the essence of the play spirit. Tension adds to the importance of the game and, as it increases, enables the player to forget that he is only playing” (Huizinga, 1949 p.51).

This echoes to some extent the concept of *willing suspension of disbelief* that poet and philosopher Samuel Taylor Coleridge introduced in his argument for a reader's ability to

willingly suspend his disbelief in relation to phantastical characters and narratives (Coleridge, 1817 ch. XIV). With Huizinga's description of play it comes to mean that the player may become emotionally invested in the play experience and lose himself in it by forgetting *'that he is only playing'*. Huizinga's description of this quality of play arguably goes to suggest a certain playful tension between frivolity and seriousness:

"... the consciousness of play being 'only a pretend' does not by any means prevent it from proceeding with the utmost seriousness, with an absorption, a devotion that passes into rapture and, temporarily at least, completely abolishes that troublesome 'only' feeling. Any game can at any time wholly run away with the players. The contrast between play and seriousness is always fluid. The inferiority of play is continually being offset by the corresponding superiority of its seriousness. Play turns to seriousness and seriousness to play" (Huizinga, 1949 p.8).

Unfortunately this paradox of play being both frivolous and serious is not articulated fully in the often quoted definition of play where it simply states that play is

"... standing quite consciously outside 'ordinary' life as being 'not serious', but at the same time absorbing the player intensely and utterly" (Huizinga, 1949 p.13).

This only states that play is not serious but absorbing, which is not entirely the same in the context of play as a union of opposites.

A notable point of departure from Nietzsche's concept of a union of opposites as an eternal struggle comes with Huizinga's concept of play being something out of the ordinary and as such limited in time and space. He explains:

"This is the third main characteristic of play: its secludedness, its limitedness. It is "played out" within certain limits of time and place. It contains its own course and meaning" (Huizinga, 1949 p.9).

This implies for instance that play has a beginning and an end, and following the hypothesis of the concept of playful tension suggesting that play is reliant upon a tension between opposites then it follows that play begins once this tension is achieved and ends once it is broken. As suggested by Huizinga the playful tension may well fluctuate between order and freedom or between uncertainty and resolve but only up to a point where one of the opposing forces would overwhelm the other and thereby end the tension that play feeds off. This means that

"The play-mood is labile in its very nature. At any moment "ordinary life" may reassert its rights either by an impact from without, which interrupts the game, or by an offence against the rules, or else from within, by a collapse of the play spirit, a sobering, a disenchantment" (Huizinga, 1949 p.21).

This goes to emphasize that playful tension is volatile or delicate. It can be broken by the ordinary reasserting itself when the necessities of reality call for play to end. More interestingly from a play design perspective is the argument

that it may also be broken from within by a collapse of the play spirit. This stresses that while play may fluctuate between the opposite forces there is a limit to this fluctuation where, if at one point the play goes too far in one direction or the other, then the tension is broken.

In summary the reading of Huizinga underscores the concept of playful tension in that it supports an understanding of play as a tension between opposites. It extends the concept of playful tension by arguing for the importance of different types of tensions namely a tension between order and freedom, a tension between certainty and uncertainty, and a tension between seriousness and frivolity. Finally it evolves the understanding of playful tension as being something temporary and fragile rather than Nietzsche's idea of the eternal struggle and Schiller's idea of a harmonious destination.

Reading Piaget – Play, Dreams and Imitation

I wanted to include Piaget in the literature study for several reasons. I already knew about the basic concept of learning as a movement between assimilation and accommodation which appeared to conform to the notion of play as a union of opposites. As mentioned earlier, I wanted to develop a concept of play design that would challenge the play as progress rhetoric represented at LEGO House by the emphasis on learning through play. However, I also wanted to accommodate the intervention by making sure that there would be at least some theoretical points of connection between the current practice and my own work.

Relating Piaget's work on play to the concept of playful tension is problematic yet interesting. The reason is that Piaget's general theory of adaptive intelligence arguably adheres to the fundamental premise of a union of opposite states, in this case an equilibrium established through assimilation and accommodation (Piaget, 1952). However, when he addresses play specifically in *Play, Dreams and Imitation* he only considers it a function of assimilation, which has been the grounds for much criticism. Beginning with Piaget's general theory of intelligence, it represents a constructivist position whereby an intelligent organism not merely responds to external stimuli but is active in constructing schemata for interpreting and interacting with the world. To Piaget the purpose of intelligence is to strive for

“... equilibrium between the universe and the body itself, an equilibrium which consists in an assimilation of the universe

to the organism as much as in an accommodation of the latter to the former” (Piaget, 1952 p.409).

This is then a cyclical relationship, where equilibrium is maintained as long as external stimuli correspond to the existing schemata and can thus be assimilated. If the external stimuli do not correspond to the existing schemata then it causes a disequilibrium that prompts an accommodation by which existing schemata are adapted or new ones are constructed to correspond to the external stimuli. By way of this accommodation equilibrium can be reestablished, as the adaptation of schemata enables the new external stimuli to be assimilated.

This understanding of intelligence forms the basis for constructivist learning which arguably corresponds to the notion of a union of opposites where

“... reason simultaneously manifests a formal organization of the ideas it utilizes and an adaptation of those ideas to reality - an organization and adaptation which are inseparable” (Piaget, 1952 p.409).

In as much as we would consider learning as a function of play it is not surprising that learning relies on the same type of tension, a tension between disequilibrium and equilibrium and an interdependency between accommodation and assimilation. Piaget inherits Nietzsche’s continuous reversal of the subject/object discussed previously. To Nietzsche the Apollonian position is man as subject making nature his object, whereas the Dionysian position is nature as subject making man his object. The same is present in Piaget’s theory

of intelligence, where the process of assimilation, on one hand, is making the outer world the object by adapting it to existing schemata, while accommodation, on the other hand, is making the organism the object by adapting its schemata to the outer world.

Since Piaget's theory of intelligence corresponds so well to the structure of play by also relying on a union of opposites to create a tension that drives learning, the more surprising it is that Piaget ultimately does not recognize that play is both about assimilating and accommodating the world. Rather, Piaget argues that play is merely a process of assimilation for its own sake. In this view play is not about encountering the unknown and accommodating it but solely about a self-centred pleasure seeking one's mastery of the known. As such, the player

"... repeats his behaviour not in any further effort to learn or to investigate, but for the mere joy of mastering it and of showing off to himself his own power of subduing reality"
(Piaget, 1951 p.162).

Since Piaget fails to recognize both sides of the union of opposites he has received substantial criticism of his description of play. Most notably Sutton-Smith has devoted several papers over the course of his monumental contribution to the field of play theory to formulate his critique of Piaget's play theory. His critique centres precisely on Piaget's (in Sutton-Smith's view) failure to recognize accommodation as part of play. Identifying this inconsistency between Piaget's theory of intelligence and his theory of play Sutton-Smith notes that

“Piaget's thesis, to the effect that play may be interpreted functionally as an activity subordinated to adaptive intelligence, leads to contradictions within his own system” (Sutton-Smith, 1966 p.104).

This critique is also supported by Spariosu, who aligns himself with Sutton-Smith and also underlines the discrepancy between Piaget's theory of intelligence and his theory of play in saying that

“... despite their apparent equipotentiality in his theory of intelligence, Piaget had contrived an asymmetry or imbalance between the contributions to be made to cognition by imitation and play - imitation was the star performer and play was its aborted partner” (Spariosu, 1989 p.200).

Here the distinction between imitation and play is Piaget's own, as he describes imitation as an expression of a predominance of accommodation and play as a predominance of assimilation. Both Sutton-Smith and Spariosu attribute Piaget's failure to recognize both assimilation and accommodation in the phenomenon of play to his belief that play is only a rational behaviour in the development of young children. Sutton-Smith argues that Piaget

“... is not concerned with those less directed aspects of adult thought usually referred to by such terms as reverie, creative imagination, or divergent thinking. Yet in the opinion of some, the latter have a great deal to do with novel forms of adaptation. It would not be farfetched to speculate, in fact,

that if there is an intrinsic relationship between play and thought, it is more likely to be with these latter forms of divergent intellectual operations than with the directed forms which concern Piaget” (Sutton-Smith, 1966 p.107).

Again Spariosu agrees that the problem is founded in

“Piaget’s focus on directed or rational or convergent, rather than undirected or imaginative or divergent cognitive operations [...] a result of presupposing play to be a predominantly infantile state of development” (Spariosu, 1989 p.200).

Whatever the reason for the inconsistency between Piaget’s theory of intelligence and his theory of play, it makes for a treacherous theoretical pitfall in terms of the relationship between play and learning. Today play often gains political and economic validity as a vehicle for learning as exemplified by the LEGO Foundation’s focus on Learning through Play. As Piaget’s theory of intelligence and the concept of assimilation and accommodation is fundamental to the underlying constructivist learning theory it is cause for confusion when he himself arguably fails to successfully apply this theory to play. I conclude, however, that my reading of Piaget with the inclusion of his critics regarding play indicates that his understanding of the interdependence between assimilation and accommodation supports my concept of playful tension, even if Piaget did not agree.

Piaget’s concept of assimilation and accommodation adds to my concept of playful tension by providing a strong

theoretical argument for the affinity between play and learning. Given that play stems from a union of opposites such as the tension between certainty and uncertainty, rules and freedom, it would naturally afford learning that relies on resolving the unknown into the known via accommodation and assimilation. As such, this tension between accommodation and assimilation adds a new type of tension to the concept of playful tension, a tension between the known and the unknown as well as the related tension of adapting ourselves to suit the world and adapting the world to suit ourselves.

Reading Bateson – A Theory of Play and Fantasy

I wanted to include Bateson's *A Theory of Play and Fantasy* because it discusses play specifically as a paradox of communication. This relates directly to the notion of play as a paradoxical union of opposites, but Bateson also approaches play from the perspectives of evolutionary biology, semiotics and communication. This is a different approach than the other entries in the literature study, hence I was interested to learn how it would question and evolve my understanding of playful tension.

Bateson discusses play as being reliant on a certain kind of metacommunication. He distinguishes between three levels of abstraction in relation to communication. The first is the denotative level, which is communication that refers to a subject outside language itself. Bateson uses the example of the message "*the cat is on the mat*" that refers to an actual subject outside the statement itself. The second level is the

metalinguistic level, which is a class of messages that refers to the language itself as exemplified by the statement “*the word cat has no fur and cannot scratch.*” The third level is the metacommunicative level exemplified by the message “*my telling you where to find the cat was friendly.*” These metacommunicative messages give context to statements and actions by giving them meaning as to the relationship between the actors engaged in communication (Bateson, 1955/1972). Bateson argues that play relies on the metacommunicative level, because the players need to be able to communicate and interpret each other’s statements and actions as being expressed in the context of play. Bateson makes his argument using his own observation of monkeys engaged in play-fighting, where their actions were referencing fighting but without having the same meaning. It resembles a fight, but we recognize it as play. On the basis of this observation Bateson argues that

“Paradox is doubly present in the signals which are exchanged within the context of play, fantasy, threat, etc. Not only does the playful nip not denote what would be denoted by the bite for which it stands, but, in addition, the bite itself is fictional” (Bateson, 1955/1972 p.188).

What Bateson describes here as a double paradox is 1. That the playful nip imitates a bite but not the meaning of a bite and 2. That it stands for not an actual bite but is in fact a fictional story of a bite. As such, the paradox of the playful nip is arguably that it both is and is not a bite. It sits in between reality and fantasy.

This means that real physical things, be that actions or artifacts, may hold unreal or fictional meanings as for instance the doll that in play is not only a collection of physical properties but also inhabits fictional properties such as certain personality traits, goals, relationships to other characters etc. On the other hand it also means that things of fantasy may have real meaning in the sense that players may feel genuinely emotionally attached to the fantasy worlds of play. As Bateson explains:

“Within the dream the dreamer is usually unaware that he is dreaming, and within ‘play’ he must often be reminded that ‘This is play’” (Bateson, 1955/1972 p.190).

On these grounds we may argue that Bateson’s work describes play as a paradoxical union of reality and fantasy, where the real extends into fantasy and vice versa. This reading of Bateson supports the concept of playful tension by arguing for play as a tension between reality and fantasy, where the real feels fantastical and the fantastical feels real. It is consistent especially with Huizinga’s types of tension as the real associates with order, certainty and seriousness, whereas the fantastical associates with their antithetical counterparts of freedom, uncertainty and frivolity.

Reading Fink – The Oasis of Happiness: Toward an Ontology of Play

I wanted to include Fink’s text in the analysis of play theory primarily because it addresses the concerns of play design

most concretely of all the selected works with the introduction of the concept of the plaything.

In *The Oasis of Happiness: Toward an Ontology of Play*, Fink criticizes the popular dichotomy between play and work that only recognizes the frivolousness and purposelessness of play and promotes an understanding of play as an unproductive and silly temporary escape from reality. Fink holds this to be a naïve conception of play that prevents us from appreciating play as a complex phenomenon that exists not in contrast to other fundamental existential phenomena such as work, but rather

“... stands over and against them, as it were, in order to assimilate them to itself by portraying them. We play seriousness, play genuineness, play actuality, we play work and struggle, play love and death. And we even play play” (Fink, 1957/2016 p.21).

With the purpose of providing a more comprehensive understanding of play than simply contrasting it to work, Fink proposes an ontology of play that understands play as a structure that emerges from a set of play elements working in concert. The present text focuses primarily on the elements that Fink identifies as the plaything and the player and how these elements work to constitute the play world. As we shall see, it is in Fink’s description of the double-sided nature of these elements that his ontology of play comes to support the concept of playful tension.

Fink presents the double-sided nature of playthings and follows the player using the example of a doll:

“The doll is considered to be a product of the toy industry. It is a piece of material and wire or a mass of plastic, and can be acquired for purchase at a determined price; it is a commodity. But, seen from the perspective of a playing girl, a doll is a child, and the girl is its mother. At the same time it is in no way the case that the little girl actually believes that the doll is a living child. She does not deceive herself about this. She does not confuse something on the basis of a deceptive appearance. Rather, she simultaneously knows about the doll-figure and its significance in play. The playing child lives in two dimensions. The plaything’s character of being a plaything, that is, its essence, lies in its magical character: it is a thing within simple actuality and at the same time has another, mysterious ‘reality’” (Fink, 1957 p.24).

It is evident that Fink’s understanding of the double-sided nature of playthings and players carries a strong resemblance to Bateson’s example of the playful nip that imitates a bite but does not have the meaning of a bite, whereby it stands not for an actual bite but is a fictional story thereof. As with Bateson’s playful nip, Fink’s doll sits in between reality and fantasy. It is a real physical object, but by virtue of the player’s imagination and its representational quality it can also be appreciated as being a child (or even something else) in the context of the play experience.

To Fink the double-sided nature of playthings comes to imply a double-sided nature of the player,

as it is the player who performs real physical operations onto the plaything while making interpretations that extend reality into fantasy. On this basis, Fink argues that

“It exists in two spheres—but not from forgetfulness or from a lack of concentration. This doubling belongs to the essence of playing” (Fink, 1957 p.25).

By virtue of a suspension of disbelief the player can exist both in the mundane physical world and in the imaginary world of play. In Fink’s example of the doll, the child is both a child with a doll and simultaneously the mother of a child.

As the play world emerges from the double-sidedness of the playthings and the player, Fink argues that it comes to share the same type of double-sidedness. The play world is not solely imaginary, as it relies on physical objects, actors and actions, but these elements take on another appearance in the context of play exactly because they are being extended into the realm of the imaginary.

In relation to the concept of playful tension, Fink’s text proposes play as a tension between the actuality of the physical tangible world, where a toy is a mundane object but also has the potentiality of the world of fantasy and imagination, where the toy can transcend its physical properties and come alive to the player. This playful tension is created not as players move from one perspective to another on a spectrum but exactly by virtue of the paradoxical co-existence of the physical world and the world of fantasy. Fink argues in favour of the player’s ability to exist in both realms simultaneously by performing real actions that are interpreted to have extended fantastical meanings. This

suggests that the players are capable of abstracting over mundane actions and objects to impose imaginary attributes and conjure a play world that is both real and fantastical. From the perspective of play design, the question that remains is how the actual design of playthings supports the players' ability to achieve such a play world. It may be the player who is essentially responsible for creating the paradox, but somehow this achievement is, if not reliant, then at least highly affected by the specific qualities of the playthings. Arguably, playthings support the playful tension between the real and the fantastical by anchoring the endless possibilities of imagination making certain types of narratives more readily available to the player and thereby providing some direction for what play world to create.

Reading Caillois – Man, Play and Games

The reason to include Caillois' *Man, Play and Games* was that he directly continues the work of Huizinga, and whereas Huizinga's work is arguably difficult to apply directly to play design practice, Caillois' system for classification of play has spawned a rich tradition of categorizing play into play types, which arguably has proven seminal to play design practice. Being apparently a theory useful to practitioners it also seemed to fundamentally contradict the notion of play as a union of opposites by being about separation into categories rather than about union. As such, I was interested to learn how the text would challenge the concept of playful tension.

Caillois builds on and critiques the work of Huizinga by addressing the issues of Huizinga's general definition of play

that is to Caillois “*at the same time too broad and too narrow*” (Caillois, 1961 p.4) in the sense that it fails to discriminate between different types of play, but it also excludes all the play and games from which something can be gained. With this as the primary motivation Caillois develops a system for classification of games. This system separates games into four categories according to their dominant orientation. These are respectively:

- ❖ *Agôn (competition)*, which is a competition between adversaries, where players exert effort and use skill whether physical or mental to achieve victory.
- ❖ *Alea (chance)*, where players rely on luck to achieve victory.
- ❖ *Mimicry (simulation)*, which is play of make-believe and pretence.
- ❖ *Ilinx (vertigo)*, which is playing that pursues the sense of vertigo by playing with the senses to distort the perception of reality.

In addition to these categories of play there is a global continuum between *Paidia* (free play) and *Ludus* (formally structured games). This continuum exists across the four categories further separating the games within each category by their respective degree of formal structure or rules (Caillois, 1961 p.36).

Caillois’ argument is that this system of classification is an improvement of the work begun by Huizinga, as it allows for

a better understanding of different types of play and their functions. Being one of the first scholars to think of play in terms of play types, Caillois and his work has arguably been hugely influential on the entire field of play theory, where analytical classification of play into types has become very common and still is. Reading Caillois through the lens of playful tension, it is apparent that his system of classification has several instances of opposite states. By virtue of being a system for classification employing categories of different types of play it carries the danger, however, of implying a binary either-or (or at least a more-or-less) approach that would completely ignore the concept of playful tension – the notion that play relies precisely on the union of opposites and the fluctuation between them, not the predominance of one over the other. It is easy to adopt a binary view of play from reading Caillois due to the persuasiveness of the schematic approach to classification. Such a reading would naturally work counter to the concept of playful tension, but whereas Caillois never explicitly constructs the argument for playful tension, he is, in fact, quite aware that the combination of his categories of play and the relationship between them is of great importance to play.

Caillois addresses the tension between the different categories in the later chapters of the book. Beginning in Chapter 6, aptly titled *An Expanded Theory of Games*, Caillois recognizes that the nature of play is more complex than one would initially believe based on his system of classification. Caillois expands on his theory by discussing the relationship or tension that exist between his four categories of play:

“In play and games, agôn and alea are regulated. Without rules, there can be no competitions or games of chance. At the other extreme, mimicry and ilinx equally presume a world without rules in which the player constantly improvises, trusting in a guiding fantasy or a supreme inspiration, neither of which is subject to regulation. In agôn, the player relies directly on his will, while in alea he renounces it. In mimicry the awareness of simulation and make-believe is presupposed while the gist of vertigo and ecstasy is to erase such awareness” (Caillois, 1961 p. 75).

This means that in terms of the tension between rules and freedom that was also present in Huizinga’s work, agôn and alea rely on the structure of rules as opposed to mimicry and ilinx which rely on freedom. However, in terms of the tension between creation and destruction, which relates to Nietzsche’s concept of the tension between the Apollonian and the Dionysian, the categories pair reversitly, as agôn and mimicry rely on the player as an active subject, whereas alea and ilinx rely on a passive surrender, thus becoming an object to the play experience.

For clarity of the argument these relationships can be expressed visually as exemplified by Figure 8.

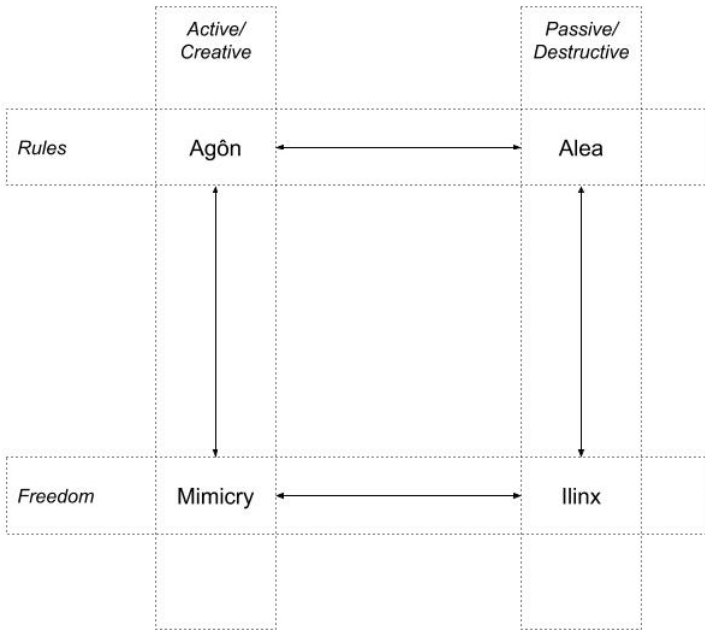


Figure 8. Tensions between Caillois categories of play

The tension between the active/creative and the passive/destructive pairs is to Caillois a tension of will or what we might commonly think of as a tension of agency by today's terms. As such, he describes that the tension between agôn and alea

“... express[es] attitudes diametrically opposed with regard to the will. Agôn, the desire and effort to win a victory, implies that the champion relies upon his own resources. He wants to triumph, to prove his supremacy. Nothing is more creative than such an ambition. Alea, on the contrary, seems to be a

foregone acceptance of the verdict of destiny. This compliance signifies that the player submits to a roll of the dice, that he will do nothing but throw them and read the number that comes up” (Caillois, 1961 p. 77).

While noting that agôn and alea are opposites Caillois also points out that many games rely on a combination using the example of card games where

“... winning sanctions a superiority composed of the cards dealt the player plus his knowledge. Alea and agon are therefore contradictory but complementary. They are opposed in permanent conflict, but united in a basic alliance” (Caillois, 1961 p. 113-114).

Likewise Caillois attributes the same tension to mimicry and ilinx describing how

“In the chaotic universe of simulation and vertigo an identical polarity is confirmable. Mimicry consists in deliberate impersonation, which may readily become a work of art, contrivance, or cunning. The actor must work out his role and create a dramatic illusion. He is compelled to concentrate and always have his wits about him, just like the athlete in competition. Conversely in ilinx, in this regard comparable to alea, there is submission not only of the will but of the mind. The person lets himself drift and becomes intoxicated through feeling directed, dominated, and possessed by strange powers. To attain them, he need only abandon himself, since the exercise of no special aptitude is required” (Caillois, 1961 p. 77-78).

With his four categories of play there must be six possible pairs of combinations of which four have been addressed:

- ❖ *Agôn - Alea*: A tension between active/creative and passive/destructive
- ❖ *Mimicry - Ilinx*: A tension between active/creative and passive/destructive
- ❖ *Agôn - Mimicry*: A tension between rules and freedom
- ❖ *Alea - Ilinx*: A tension between rules and freedom

The remaining two pairs (diagonal pairs in Figure 8), *agôn – ilinx* and *alea – mimicry* are in Caillois' own words forbidden. By this he means that they are incompatible and would negate one another. Caillois assumes that *ilinx*

“destroys the conditions that define agon, i.e. the efficacious resort to skill” and in the case of *alea - mimicry* that *“It makes no sense to try to deceive chance”* (Caillois, 1961 p. 72-73).

This is an instance where the schematic approach to classification of play and games demonstrates the difficulty of encapsulating the paradox of playful tension. It is arguably easy to suggest play experiences that would question Caillois' assumption that these pairs are not possible. If we imagine, for example, the *ilinx* play of a boy that spins around until he gets

dizzy and falls over. What happens when another boy joins him in this play? It is hardly unthinkable that the boys would combine their ilinx with agôn to see who can spin the longest before falling. Another group of games that successfully combines agôn and ilinx might be the entire genre of drinking games. The same can be said about the combination of alea and mimicry that seems no less unlikely. For instance this combination is at the heart of all role playing games in the tradition of Dungeons & Dragons.

In general the rhetoric form of Caillois' argument is arguably somewhat at odds with his own awareness of the importance of the combinations of his categories and the paradoxes they entail. Whereas his system of classification initially goes against the concept of playful tension by emphasizing the separation of opposites rather than their union, Caillois evolves his argument over the course of the book. His discussion of the combinations of his four categories reveals certain relations or tensions that support the concept of playful tension and presents several instances hereof. As such, this discussion suggests playful tension expressed as a tension between activity and passivity, a tension between creation and destruction and a tension between rules and freedom.

Reading Csikszentmihalyi – Beyond boredom and anxiety: the experience of play in work and games

I wanted to include Csikszentmihalyi's flow theory in the literature study because it relates to the fields of play, learning and creativity, which are all focal points of the play design practice at LEGO House. It deals with the intersection of the

doable and the undoable, which relates to the notion of play as a union of opposites. Also, flow theory appeared to be in and of itself a prime example of the expression of a visual model that functions as an instance of ‘intermediate level knowledge’.

While building upon the foundation of the work of Caillois to a large extent, Csikszentmihalyi criticises that:

“His [Caillois’] use of the four categories is elegant and thought-provoking; but, like any neat typology, such a system might close off investigation instead of stimulating it”
(Csikszentmihalyi, 1975 p. 26).

Rather than categorisation, the investigation that Csikszentmihalyi undertakes is framed by the question:

“For centuries men have found enjoyment in chess, in tennis, in singing, and in hundreds of other activities. Is there a common experience of "fun" that all these activities produce?” (Csikszentmihalyi, 1975 p. 24)

Csikszentmihalyi has devoted the majority of his lifework to flow theory being his answer to this question. While nuances have been added over the years the core of flow theory has not changed since it was first conceived. Csikszentmihalyi’s argument is as follows:

“Poised between boredom and worry, the autotelic experience is one of complete involvement of the actor with his activity.

The activity presents constant challenges” (Csikszentmihalyi, 1975 p.35-36).

This is the general observation that he finds to be consistent across enjoyable experiences. Figure 9 is an adaptation of the model by which Csikszentmihalyi expresses this relationship between challenge and skill that balances boredom and worry.

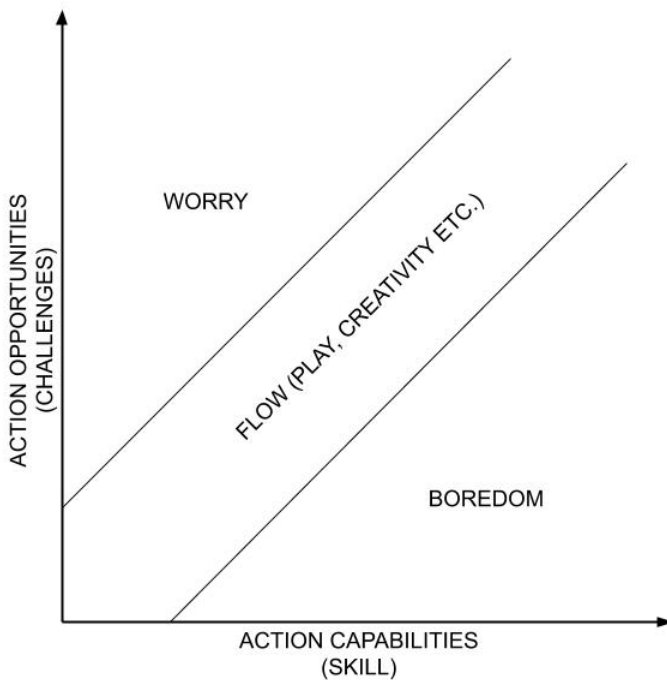


Figure 9. Csikszentmihalyi's flow model

According to Csikszentmihalyi, some activities are specifically designed with the aim of providing flow and while

“... one can enter flow while engaged in any activity, some situations (such as games, art, and rituals) appear to be designed almost exclusively to provide the experience of flow” (Csikszentmihalyi, 1975 p.49).

Csikszentmihalyi finds that despite the variety of flow activities such as play and games, they are alike in the sense that

“they provide opportunities for action which a person can act upon without being bored or worried” (Csikszentmihalyi, 1975 p.49).

So whereas many types of experience hold the potential for entering the flow state of intense engagement, motivation and enjoyment, Csikszentmihalyi proposes that *“play is the flow experience par excellence”* (Csikszentmihalyi, 1975 p.37). Following this notion, play must have the exact capacity to successfully match challenge and skill when Csikszentmihalyi also argues that:

“Flow is experienced when people perceive opportunities for action as being evenly matched by their capabilities” (Csikszentmihalyi, 1975 p.50).

Reading flow theory through the lens of the concept of playful tension it is clear that the two are directly compatible. Flow

theory thus expresses play as a tension between boredom and worry, which translates to a play tension between what is easy and what is hard or between the doable and the undoable.

Flow theory raises several considerations in relation to the concept of playful tension. It brings up the question of temporality by emphasizing that the skill level of the player may increase over time, and as it does the difficulty of the challenges must also increase in order to sustain the tension and afford flow. This supports the notion that playful tension is in flux, that tension builds and is being resolved. In this case a new challenge builds tension, and as the player exercises his skill to meet the challenge tension is resolved by building mastery inviting more difficult challenges to maintain tension. This flux of tension is captured in the model of the flow theory by the central area that marks the flow state as an area or a zone rather than a line. This illustrates exactly that, whereas flow requires a certain tension, there is some room for imbalance. The diagonal lines that mark the flow zone in the model are thus the breaking point where the imbalance becomes too pronounced and the flow state breaks. This is very important to the understanding of the concept of playful tension, as it rejects an understanding of playful tension as being a perfect sweet spot where the opposites align in perfect balance. Rather, the flow theory supports the argument for playful tension as an imperfect balance, a union of opposites that struggles back and forth to echo Nietzsche. Playful tension must be in flux but, as flow theory also illustrates, this fluctuation has a breaking point when either side of the union of opposites becomes too dominant to maintain the tension.

On a meta-level the model that Csikszentmihalyi uses to illustrate flow theory is arguably a highly successful instance of ‘intermediate level knowledge’ and as such an example to follow in developing the concept of playful tension. It visually captures the essence of the flow theory, and while being the tip of the iceberg in the sense that nuances in terms of the conditions for flow remain below the surface in the text itself, it makes it possible for practitioners within the field of play and learning to utilize the basic principle of flow theory from the model alone.

If we hold theory to be an image of (an aspect of) reality, being able to express the theory also as a literal image is arguably valuable in relation to the aspiration of successfully creating ‘intermediate level knowledge’ as exemplified by flow theory.

Reading Gadamer – Truth and Method

I included Gadamer’s discussion of play from *Truth and Method* at the suggestion of my supervisor who identified a relationship between my concept of playful tension and Gadamer’s discussion of play as a paradox of agency. It appeared to me that it related specifically to play design by questioning how the player and the designer, respectively, shape the play experience.

As a seemingly subsidiary element towards the goal of developing the concept of philosophical hermeneutics, Gadamer addresses the phenomenon of play in order to lay the foundation for his discussion of art and aesthetics. Although

his treatment of play is relatively brief it is nonetheless valuable to the development of the concept of playful tension. Gadamer objects to the notion of play as being purely subjective, that play is merely something that is being done. Rather, Gadamer argues, play has its own internal structure and by this structure play itself is also doing. Central to this argument is the observation that players must submit to this structure in order to play at all. Gadamer builds upon the work of Huizinga, who, as mentioned previously, was also concerned with the paradox that play is not serious but is taken seriously by players by way of the suspension of disbelief. Gadamer notes that:

“Play fulfills its purpose only if the player loses himself in play. Seriousness is not merely something that calls us away from play; rather, seriousness in playing is necessary to make the play wholly play” (Gadamer, 1975 p.103).

So, even if play, viewed from the outside, seems not to be serious, stepping into play and becoming a player means submitting to the structure of play being serious in one’s engagement in play. Gadamer is less concerned with the subjectivity of the player and its potential for shaping play, because any player has to submit to the same structure, a structure that Gadamer identifies as *“the to-and-fro movement of play”* (Gadamer, 1975 p.104), a play movement that has no end goal but is intended to continually renew itself through repetition. Gadamer argues that

“The movement backward and forward is obviously so central to the definition of play that it makes no difference who or what performs this movement” (Gadamer, 1975 p.104).

This to-and-fro movement central to play compares directly to what game theory would later term ‘a feedback loop’, where the player forms an intention, performs an action according to this intention and receives a reaction from the game system leading to the next iteration of the loop (Fullerton et al., 2008 p.132-133). What follows this observation is that

“The movement to-and-fro obviously belongs so essentially to the game that there is an ultimate sense in which you cannot have a game by yourself. In order for there to be a game, there always has to be, not necessarily literally another player, but something else with which the player plays and which automatically responds to his move with a countermove” (Gadamer, 1975 p. 106).

This essentially forms the basis for the argument that play is as much about being acted upon as it is about acting out, echoing the tension between activity and passivity as introduced by Caillois, as well as the underlying tension between the Apollonian shaping of nature and the Dionysian submission to nature introduced by Nietzsche. Gadamer concludes that the to-and-fro movement of play

“... suggests a general characteristic of the nature of play that is reflected in playing: all playing is a being-played. The attraction of a game, the fascination it exerts, consists

precisely in the fact that the game masters the players”
(Gadamer, 1975 p. 106).

This is a reminder of the importance of the passive side of play, where the player enjoys the freedom of play only in submission to the order of play. This carries implications for play design in the sense that the (designed) structure of a play experience shapes what Gadamer calls ‘the spirit’ of that play experience, maybe more so than the subjectivity of the players themselves. This would imply that play designers are not merely facilitating play by helping players along but that the play designs are also acting upon the players giving shape to the experience through the design of playthings.

In Summary

My analysis of the selected play theory literature contributed to the development of the concept of playful tension by identifying the paradoxical union of opposites as being essential to the phenomenon of play. In the analysis I traced this concept across a varied selection of prominent play theory literature and found it to be highly consistent even if it is described or emphasized differently. As such, the literature analysis promotes an understanding of play as a fragile meetingplace of tension between reason and the sensuous, structure and chaos, order and freedom, resolve and uncertainty, seriousness and frivolity, the known and the unknown, reality and fantasy, creation and destruction, boredom and anxiety and being the subject and the object. As I found that the selected play theory all in some form or another would describe the phenomenon of play as a tension

between opposites I would take this as the theoretical support for the idea of playful tension as being essential to play and hence the object for the practice of play design.

Playful Tension Taking Shape

I have tried to describe how I used the play theory literature in the development of the concept of playful tension by identifying a paradoxical union of opposites as being a fundamental condition of play present in all the analysed texts in some form or another.

My goal was to follow a minimalist maxim of reduction in pursuit of formulating an essence of play in order to develop a useful theoretical concept of play design, so I decided, on the basis of my analysis of the selected play theory, that the playful tension between opposites would aptly serve as such an essence.

In an effort to reduce the many different expressions of playful tension identified in the analysis into a single unified concept of playful tension I would attempt to formulate a general parent category of opposites that could account for the variance across the literature. This general formulation of playful tension developed throughout the project as the fieldwork would challenge the terminology of the concept. Figure 10 illustrates an early attempt at a minimalist reduction of the play theory where the various expressions of opposites are compiled into a parent category of a playful tension of being in control and out of control.

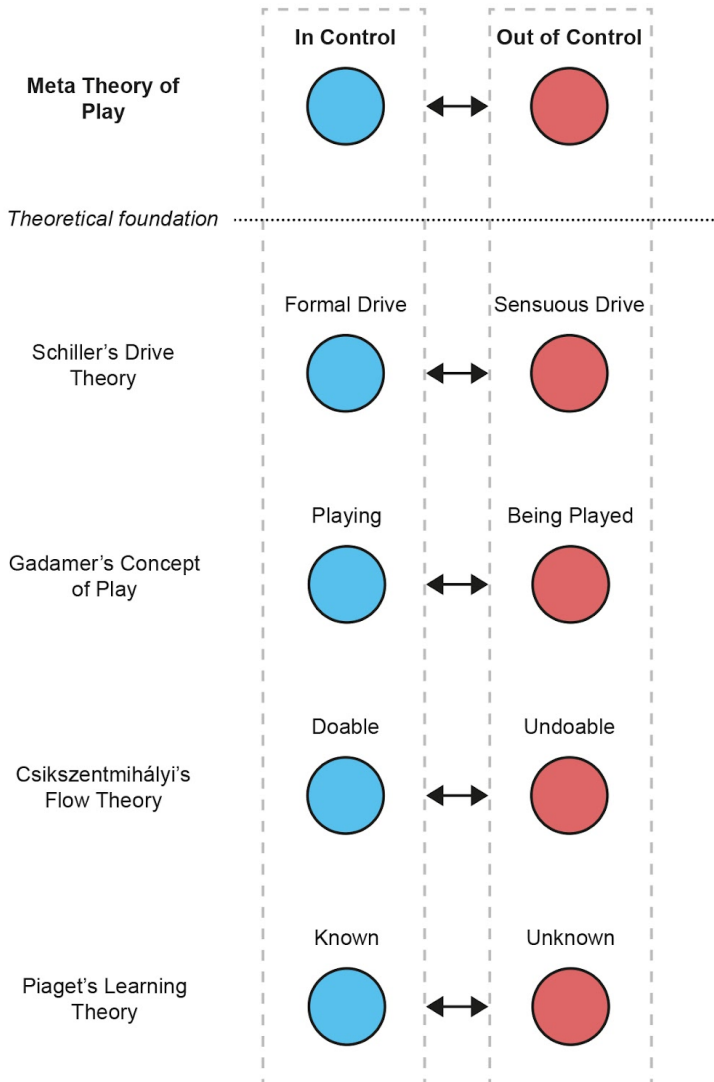


Figure 10. Early attempt at reduction of play theory

This first attempt at reduction even preceded the term ‘playful tension’ as an expression of the paradoxical union of opposites. However, when I explored ‘playful tension’ as a term for being between in control and out of control more closely in relation to the practice at LEGO House it appeared to be flawed. Whereas the concept of ‘playful tension’ in and of itself seemed very promising the terminology of control caused some problems.

The intended meaning was to conceptualize play as a situation or phenomenon, where the player experiences a tension between being on one hand in control of the situation by knowing what to do, what will happen, being capable etc. and on the other hand feeling that he is not in control of the situation by way of the unknown, uncertainty, difficulty etc. As such, it was supposed to be an expression of how the player experiences the situation in terms of agency. It turned out, however, that the term ‘control’ would sometimes mislead the practitioners at LEGO House to take it as an expression of the behaviour of the player rather than his appreciation of the situation. This meant that sometimes they would use the terms ‘in control’ and ‘out of control’ to refer not to the agency of the player but rather using ‘in control’ to mean that the player is well behaved and calm whereas ‘out of control’ would come to mean that the player is misbehaving or acting out. While the player’s experience of the situation will inadvertently affect his behaviour, I saw this as a mixup of very different perspectives that was both unintended and problematic. As such, I perceived this to be a usability problem with my concept of ‘playful tension’ and I decided to abandon the control terminology.

The promise of the concept of playful tension as a lens for reflection in practice as well as the problem of the control terminology in the first iteration of the concept became apparent through a small intervention experiment that I initiated early in the fieldwork.

Tales from the Fieldwork: Episode II – Losing Control

I had decided that I would do a little experiment to see if the concept of play as a union of opposites could be of use at LEGO House. The idea had begun building after reading Schiller's letters on aesthetics after which I had begun conceptualizing the playthings at LEGO House as a means to upholding a paradox of feeling in control while also feeling out of control or at least lacking it – fighting for it.

At the time the design team had seemed quite busy, and I didn't feel like bothering them with a less than half-baked idea just yet. I needed to ponder the thought a little longer to determine if this concept of play would be promising enough to warrant further development. So I decided that I would begin by doing some experiments myself using my concept of play as a union of opposites as a lens for understanding the playthings at LEGO House. I simply wanted to see for myself if it had any explanatory potential or ability to support reflection of design decisions in relation to playthings.

As I was beginning to do some brief analysis of the playthings at LEGO House (I will get back to those later) I happened to have a conversation about my work with some of the senior

play facilitators¹¹ after one of our LtP DNA Tool workshops. They were really interested in my work and eager to discuss it from their perspective, so I decided to do a little experiment after all.

I met with three play facilitators and gave them a brief introduction to my notion of play as a union of opposites as being in control and out of control. I asked them whether we could meet again a week later and whether they would spend some of this time to explore and reflect on this concept of play in relation to their own work.

Once a week had passed we met again to discuss their thoughts about my concept of play.

I was supposed to meet with all three play facilitators for a joint conversation, but it proved difficult to schedule so I met with two of them first and with the third one later the same day.

In these conversations it became clear that the play facilitators were both engaged and excited about the concept of playful tension, but they would also expose the confusion related to the initial terminology of ‘control’. This was evident, for instance, when one play facilitator described a situation where a visiting school class was given a task to build animals from different types of yellow and black bricks. The difficulties around the terminology of control would surface for example when describing how one group would hold back and not begin building, whereas another group would quickly build a simple duck from five bricks and keep replicating it without much effort.

¹¹ LEGO House employs play facilitators that are assisting the guests and helping them enjoy the play experiences in the house.

PE: "If I am looking at where to place them in the model at the beginning, then I had some girls who absolutely were so much in control, in their bodies, as I would see it, that they just built one duck and then kept building those. They lacked a challenge. They did not break out of their shell."

This first statement illustrates that the play facilitator is clearly aware that the players have a problem achieving playful tension, as they are somewhat indifferent and decide to solve the task with a minimum of effort and with no risk of any potential difficulties, surprises etc. They remain too much in control of the situation, so to speak, to elevate it from solving an assignment to having a play experience. He identifies it as a problem of not being challenged enough, but this insight, however, gets convoluted when talking about being shy and keeping up appearances. This diverts the discussion away from whether the players have too much or too little control of the situation and into a discussion of how much control they have of their appearance.

The conversation continued to illustrate how the terminology of control would sometimes work as intended only to cause confusion moments later:

JE: "So the task did not really push them out of the one solution?"

PE: "Not really. On the other hand there were others who got totally stuck and didn't know where to begin. You can say that I looked at them as being out of control, in that they somehow could not find themselves in the situation and needed a little more structure, needed some thoughtful questions."

JE: “So you had participants who were on both ends of the spectrum?”

PE: “Yes, and the funny thing was that the reason that I picked this situation to begin with was that I thought: ‘Well this is surely a prime example of someone who is all in control.’ ... So I thought that they were all so much in control of themselves that they held back because they were afraid to get started. Then it was after a talk with MO [one of the other play facilitators] where he said: ‘Well PE, if they are so nervous to get started that they don't dare to show themselves then they are not in control of themselves. Then they are actually in a situation where they need more structure or a frame in order to be able to internalize this.’ That was sort of a peculiar perspective that it is difficult to wrap your head around, I think.”

As the example illustrates, the understanding of the meaning of control in relation to playful tension drifts between the intended and the unintended. It is clear that it is very difficult for the play facilitators to distinguish between the intended meaning of control as a matter of describing a relationship between the player and the play design and the unintended meaning of ‘control’ as a matter of the players’ ability to regulate their behaviour and emotions. Seemingly the confusion has to do with the play facilitators’ pre-existing notion and use of the term ‘control’ in relation to children coming in conflict with my attempt to introduce a new meaning of the term. It is evident in the above example that this creates a problem in terms of usability as it is experienced as *‘a peculiar perspective that it is difficult to wrap your head around,’* as the play facilitator put it.

The Orderly and the Unruly

After my initial explorations of using the concept of ‘playful tension’ at LEGO House I decided that the core concept of play as a tension between opposites was very promising as a practical way of reflecting on the function of designed playthings. However, it did appear that the reduction of the opposite states in play to the parent categories of *in control* and *out of control* was in need of improvement. Informed by the inclusion of more text in the literature analysis of play theory I decided to change the parent categories to a playful tension between *the orderly* and *the unruly* as illustrated by Figure 11.

	ORDERLY	UNRULY
Schiller	Formal Reason	Material Sensuous
Nietzsche	Apollonian	Dionysian
Huizinga	Order Resolve Seriousness	Freedom Uncertainty Frivolity
Piaget	Known Assimilation	Unknown Accomodation
Bateson	Reality	Fantasy
Fink	Actuality	Imagination
Caillois	Rules Creative	Freedom Destructive
Csikszentmihalyi	Boredom Easy	Anxiety Difficult
Gadamer	Playing	Being Played

Figure 11. Play as a tension between the orderly and the unruly

I would use these updated parent categories to create the model of playful tension that would be used for my experiments at LEGO House for the remaining fieldwork. Before introducing the model of playful tension we need to go on another side quest to briefly explore the methodological role of this model in developing the concept of playful tension.

Models as Epistemic Objects

Up until this point I have talked at length about theory (about play) and the concept of play design.

To understand exactly why I would put such emphasis on creating a visual model of playful tension I want to briefly address how my use of modelling served a particular methodological purpose in the development of the concept of playful tension.

As I have stressed continuously, the movement back and forth between the literature and the fieldwork was crucial to the abductive development of the concept of playful tension. I found, however, that one thing is to say it, quite another thing is to do it. The implicit methodological problem of creating ‘intermediate level knowledge’ using the bridging concept is the very practical problem of how exactly to facilitate a fruitful conversation between the two modes of research. In addressing the relationship between theory and empirical findings in design research Beck & Stolterman argue for the importance of having one’s empirical findings *talk back* to theory.

“... we use the notion of “talkback” to refer to the influence that the findings may have on other core elements. For instance, the findings may talk back to the initial question with an answer of some kind. Or they may talk back to a particular theory by suggesting changes to it” (Beck & Stolterman, 2016 p.130).

They hold that this is central to research especially when, as in my case, theory is not only used externally as a method for

analysing or contextualising empirical findings but rather is an internal component of the research that shapes and informs the questions and empirical inquiries themselves. In this case the dialog between theory and empirical findings is essential to the research (Beck & Stolterman, 2016 p.132). The notion of talkback corresponds perfectly with Dewey's pragmatic inquiry, where questions prompt ideas that are explored and tested for their practical fitness. In relation to Beck & Stolterman's metaphor of talking, the iterative pragmatic inquiry could very well be understood as a conversation between what Dewey calls 'the conceptual' and 'the actual'.

It figures that the notion of talkback from empirical findings to theory implies a previous talking from theory to practice given the responsive character of the term 'talkback'. No matter if it is theory or practice that initiates the conversation, the practical problem, I found, is how to facilitate the conversation at all. In other words what is the medium that allows for this type of conversation to happen?

I guess that I could have written a ten-page essay on play as a paradoxical union of opposites and emailed it to the play designers at LEGO House, but that seemed to me like bringing an LP on the bus, to reference my earlier analogy of the gap between play theory and play design. Instead I would attempt to extend the same minimalist maxim that I used to reduce the play theory literature to the concept of playful tension to the format of this idea by making a model. I had already, without much thought behind it, made use of sketching as a way of developing my own understanding of playful tension, so it seemed only fitting that I would use the same type of visualization of the concept to introduce it to the

practice at LEGO House. Also, I was supposed to create a tool for play design practitioners, and expressing the concept of playful tension as a visual model I thought would make the concept all the more actionable.

Creating this visual model as a literal image of the concept of playful tension became central to establishing the iterative movement between theory and practice that would inform the development of the concept of playful tension. Even in my case, where I was not designing a physical thing but rather giving shape to a theoretical concept of play design, I found that it still needed some reification to support the interventive purpose. The creation of a visual model to express the concept of playful tension provided a certain tangibility that would allow the play designers at LEGO House to gather around the theoretical concept, draw on it, put sticky notes on it etc. As such, creating a model of playful tension came to serve the dual purpose: It would enable play designers to make use of the concept of playful tension, and it would also be the interface that would enable the play design practice to talk back to the theory and inform its development. As such, expressing the developed theory visually made it applicable to the actualities of the play design practice at LEGO House, which would in turn feed new complexity back to the theory as new details arose from the application of the model.

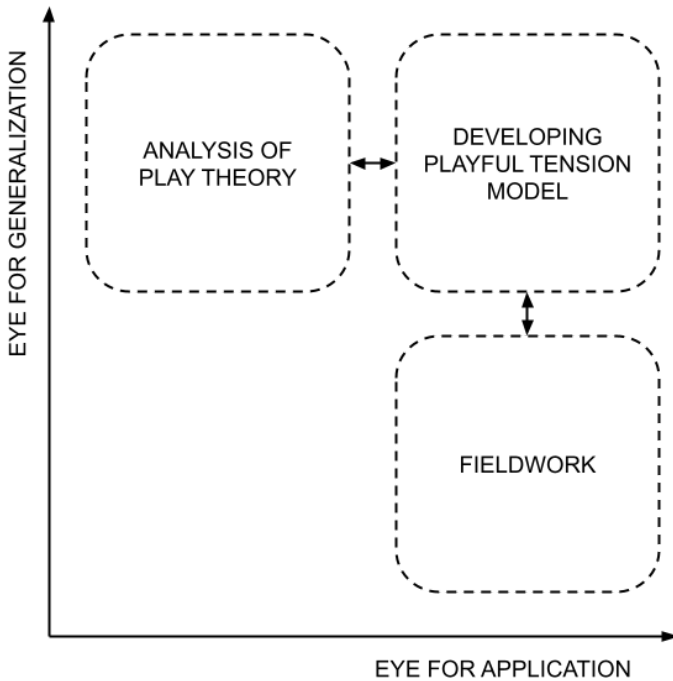


Figure 12. Mediating between generalization and application

Figure 12 is my own appropriation of Stapper's model of Pasteur's quadrant by Stokes (Stappers, 2007). Stappers uses this model to argue that research through design can inhabit a space between generalization and application essentially contributing to both dimensions.

I have appropriated this model to illustrate how I created the model of playful tension to function as a vehicle for the conversation between play theory and play design practice by being a visual expression of the concept of playful tension that I was developing. It shows that the model of playful tension

became a particular epistemic object that was developed through the iterative cycle of formulation and application. As such, the creation of the playful tension model was an attempt to make the conversation between play theory and play design practice possible by having theory talk to practice in a form that is applicable and actionable so that the play designers could talk back to theory through the use of the model. In this way the creation of the playful tension model was also my attempt at doing design research that would strive for Stapper's notion that good design research should be

"... research that is both strongly fundamental and strongly aiming for applicability. That is where the best of design research can be located. In its aim for applicability, it can take on the phenomena head-on; in its aim for innovation and quality, its findings can be used beyond the product aim in a current project" (Strappers, 2007b p.17).

My goal was for the concept of playful tension to be relevant for the theoretical understanding of all types of designed playthings while expressing the concept as a visual model would allow practitioners to utilize the concept of playful tension as a tool for doing play design.

Mediating Metaphors

In searching for specific information about models as epistemic objects that mediate between theory and practice to facilitate theory development I looked specifically to the philosophy of science of models. Much of this literature relies on examples of models from e.g. physics, biology and

economics, but in their discussion of the function of models in science the core arguments would extend remarkably well to my own work.

Most influential to my work was the notion that models allow for a mediation between theory and practice by having a partial independence of both that enables reflection (Morrison & Morgan, 1999). In his chapter in the anthology Suárez explains:

“... it is a presupposition of the notion of models as mediators that there are three distinct objects (theories, models, and the world) and that they are ordered with the theory at the most abstract end, the world at the opposite end, and the model as the interface between the two” (Suárez, 1999 p.171-172).

This means that the understanding of models as mediators corresponds perfectly with the definition of the bridging concept as being informed by both theory and practice. When Morrison & Morgan argue that models are not a direct expression of neither theory nor empiric reality but attain autonomy by the quality of their partial independence to both, they are extending Hesse’s argument that models relate to theory and empiric reality by way of analogy (Hesse, 1966). On the basis of physics Hesse’s primary contribution to the philosophy of science is her discussion of the epistemic function of models in science. Hesse argues that all models function via analogy, meaning that there is

“... some relation of similarity and/or difference between a model and the world, or (less question begging) between a

model and some theoretical description of the world, or between one model and another” (Hesse, 2017 p.299).

This is to say that the epistemic value of models is that they tell us something about the world and our theories about the world by drawing a comparison between the model and its target. Hesse notes that the explanatory quality of models is not unlike that of the use of metaphor in language.

To understand this delicate point I looked to a classic example of the metaphor where Shakespeare likens life to a theatre play in a famous monologue from his comedy *As You Like It*:

*“All the world's a stage,
And all the men and women merely players:
They have their exits and their entrances;
And one man in his time plays many parts”*
(Shakespeare, 1623/1903 p.64).

It is clear to us that the saying ‘the world's a stage’ is not to be taken literally. In Hesse’s terminology the analogous relationship between the world and the stage is not material; it is formal meaning that the metaphor draws a structural comparison between the two. As such, the metaphor is used to reflect on life by pointing to its formal analogous relation to a theatre play. To the same effect the analogous understanding of models argues that the model expresses specific qualities about the world and the theory by standing in analogous relation to these.

Just as the stage and the world, the model and its target are not identical, but there is a partial connection between them, as

Morrison & Morgan would say. This is what invites or creates an opportunity for exploration and reflection and why a model can introduce assumptions and questions independently of the theory or empirical observations. This autonomous quality of models, according to Morrison & Morgan, is what enables models to serve not only as explanations but also as scientific tools. They argue that

“... the autonomy of models allows us to characterise them as instruments. And, just as there are many different kinds of instruments, models can function as instruments in a variety of ways” (Morrison & Morgan, 1999 p.18).

In the development of the concept of playful tension I would thus use modelling as a primary tool for theory development. It would become the central epistemic object that would propel the development of the concept of playful tension by connecting the analysis of play theory literature and the observations of play design practice at LEGO House. It was to become the central hypothesis about play design that I would explore by using the model to facilitate the conversation between theory and practice.

At this point I would imagine that most readers are saying: *Enough with the academic warmup. Just show me the [profanity of choice] model!* So, let's get onto the main course.

Making the Playful Tension Model

After reducing the selected play theory literature to the idea of play as relying on a tension between the orderly and the unruly I would put more consideration into the modelling of this concept of playful tension. As described, the model was the essential epistemic object that allowed me to introduce the concept of playful tension to the play design practice at LEGO House to achieve talkback from the empirical observations to the theory.

As such, the model needed to make the concept of playful tension applicable at LEGO House to enable exploration of how designed playthings might support a playful tension between the orderly and the unruly. In order to do so I decided that I would apply my minimalist strategy of reduction to the visual design of the model as well.

Figure 13 shows the model of playful tension that I would come to use throughout the fieldwork at LEGO House.

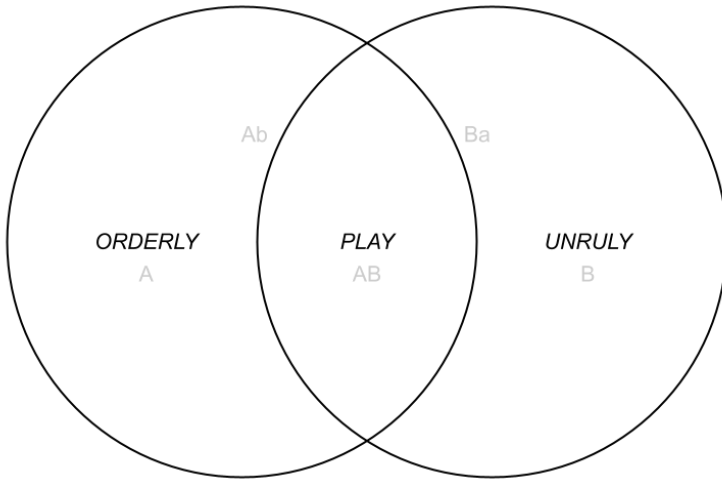


Figure 13. Playful Tension Model dissected

The concept of playful tension proposes play as a tension between the orderly and the unruly; hence I thought it fit to visualize it using Venn's Eulerian circles or what we have commonly come to know as a Venn diagram (Venn, 1880). The model illustrates play as the space AB where both of the opposite states A and B are true¹². The paradox of play is that A and B being opposites do not have any shared elements as AB would suggest, yet they come to form a shared space in play. This then was my attempt at illustrating play as a fragile tension between the orderly and the unruly that makes the practice of play design the creation of playthings that aid players in establishing and maintaining such a playful tension.

¹² I have added letters to label elements of the model. These were never part of my own visualization of the concept of playful tension nor any model used at LEGO House but merely added here to be able to reference the specific elements in my writings.

Reflecting on the autonomous relationship between the theoretical concept of playful tension and the playful tension model, the model arguably adds a spatial quality that is not inherent in the theoretical concept itself. The model attempts to alleviate the difficulty of understanding the playful tension between the orderly and the unruly by providing a spatial analogy of their intersection. When Venn claims that the intention behind this type of model is to afford an intuitive and sensible illustration I believe that it should be understood quite literally as something that allows us to apply our sensory experience to interpreting the concept of playful tension. By representing the two opposites as two circular shapes it affords a physical interpretation of their intersection. By virtue of this spatial representation of the intersection between opposites the model, independently of its theoretical foundation, introduces a notion of play as a space. Playful tension creates this space that then collapses as playful tension breaks. The breaking point of playful tension as constituted by player preference or tolerance regarding the orderly and the unruly becomes a border that players cross as they move in and out of play. In Figure 11 the line Ab marks the tolerance where play fails as A takes precedence and play becomes too orderly. The line Ba marks the opposite tolerance where play fails as B takes precedence and play becomes too unruly. By introducing this spatial quality to the concept of playful tension, the model affords a conceptual mapping of play experiences, where they can be plotted onto the model as a journey that begins as a player enters the play space, fluctuates within the play space as exploration resolves and

builds tension and concludes as the player leaves the play space.

This reduces the practice of play design to a question of how a given plaything is designed to assist players in establishing and maintaining playful tension by affording both order and unruliness. It marks a temporary conclusion of what I referred to earlier as an iPodification of play theory in order for it to serve the practice of play design. I arrived at this visual model of the concept of playful tension by what Weisberg, in his account of the different types of strategies for developing scientific models, describes as *minimalist idealization*:

“Minimalist idealizers are not interested in generating the most truthful or accurate model. Rather, they are concerned with finding minimal models, discovering the core factors responsible for the target phenomenon. Minimalist idealizers thus adopt the representational ideal I-CAUSAL, the ideal that says the best model is the one that includes the primary causal factors that account for the phenomenon of interest, up to a suitable level of fidelity chosen by the theorist”
(Weisberg, 2013 p.111).

The formulation of playful tension that conceptualizes play as a tension between the orderly and the unruly was precisely an effort to find a minimal model that reduces play to a primary factor on which play relies. In reducing play to this particular essence the intention was to make a concept that would be actionable and portable enough to be included in the reflective practice of play design. Weisberg further adds:

“... minimalist idealization's ideal also demands the construction of a single model for a particular target or class of target phenomena. One typically engages in minimalist idealization in order to generate explanatory models. Such models tend to be ones that simultaneously unify many target phenomena into a class and identify the causal factors which really make a difference. For the class of phenomena of interest, this will mean finding a single model, despite the fact that it will leave out quite a lot of detail which accounts for the uniqueness of each target”

(Weisberg, 2013 p.111).

This again corresponds with the development of the concept of playful tension that reduces play to an essential factor in order for play designers to reflect on the qualities of the playthings they are designing by asking how they support playful tension regardless of the particular type of plaything. No matter if the plaything is a computer game or a wooden doll the designer should be able to ask what element of the design affords order or unruliness and what kind of order and unruliness is at play.

How different playthings are designed to support playful tension would become the central question in the exploration of the concept through the play design practice at LEGO House. Before we get to this I will briefly address the practical considerations of the visual design of the playful tension model and how I would attempt to make the concept of playful tension visually accessible and comprehensible to play design practitioners.

Going for Visual Minimalism

My reasons for choosing to illustrate the concept of playful tension in this particular manner are all concerned with the minimalist maxim of reduction in relation to the usability of the model.

Arguably, the immediate illustrative quality of a Venn diagram deteriorates dramatically as the number of sets increases.

Venn proposes theoretical illustrative solutions for up to six sets but admits in doing so that

“... for all practical purposes, however, any outline which is not very simple and easy to follow with the eye, fails entirely in its main purpose of affording intuitive and sensible illustration” (Venn, 1880 p.7).

Since, however, the concept of playful tension only deals with the intersection between two sets – the orderly and the unruly – the illustrative limitations of more complex Venn diagrams were not of primary concern. Rather the use of this type of diagram was intended for the practical purpose of affording an intuitive and sensible illustration of the playful tension between the orderly and the unruly. This ideal is reflected in Arnheim’s *Visual Thinking* when he discusses the use of visualization in science and the creation of models:

“Unless an image is organized in forms so simple and so clearly related to each other that the mind can grasp them, it remains an incomprehensible, particular case. Only through the generalities in its appearance is the imaged thing seen as

a kind of thing, and thus made understandable” (Arnheim, 1969 p.274).

This was exactly my intention with creating the model of playful tension – to make the concept of playful tension operational in relation to the practice of play design by reducing play to a concept that is visually comprehensible and understandable. To the same effect I would also strive to follow Tufte’s *Principles of Graphical Excellence* which, based on political science and statistics, made a major contribution to communication design and information graphics in his argument for minimalism, clarity and efficiency in graphic representation of data (Cairo, 2013 p.43).

Tufte’s Principles of Graphical Excellence

- ❖ Graphical excellence is the well-designed presentation of interesting data – a matter of substance, of statistics, and of design.
- ❖ Graphical excellence consists of complex ideas communicated with clarity, precision, and efficiency.
- ❖ Graphical excellence is that which gives to the viewer the greatest number of ideas in the shortest time with the least ink in the smallest space.

(Tufte, 2001 p.51)

As the model of playful tension is less about representation of empirical data I would primarily focus on the second and third principle in my work. I therefore found the Venn diagram to be well-suited for illustrating the concept of playful tension,

as it allowed me to illustrate it using as few shapes as possible. Since two-set Venn diagrams have been widely adopted as a method for visualizing an intersection between two categories I assumed that it would also allow me to rely on this established tradition of illustrating intersections to help my colleagues at LEGO House interpret the model correctly.

As the model was taking shape I would begin more deliberate design experiments at LEGO House in order for the play design practice to talk back to the theory and develop an understanding of the concept of playful tension in relation to practice. From here on the text will be concerned with describing these design experiments and the talkback they produced.

Exploring Playful Tension

Based on my initial fieldwork and the analysis of play theory I created the playful tension model (see Figure 14) to propose that play designers would benefit from conceptualizing play as a tension between the orderly and the unruly. The concept of playful tension suggests that all play is reliant on a tension between the orderly and the unruly. It further suggests that this tension is fragile and the play will dissolve if it becomes either too orderly or too unruly. That is to say that play is a delicate act of players exerting effort in order to achieve and maintain playful tension meaning that playing is a non-trivial act and that play is always in danger of collapsing. Following the concept of playful tension the practice of play design is essentially to create playthings that aid players in their efforts to establish and maintain playful tension.

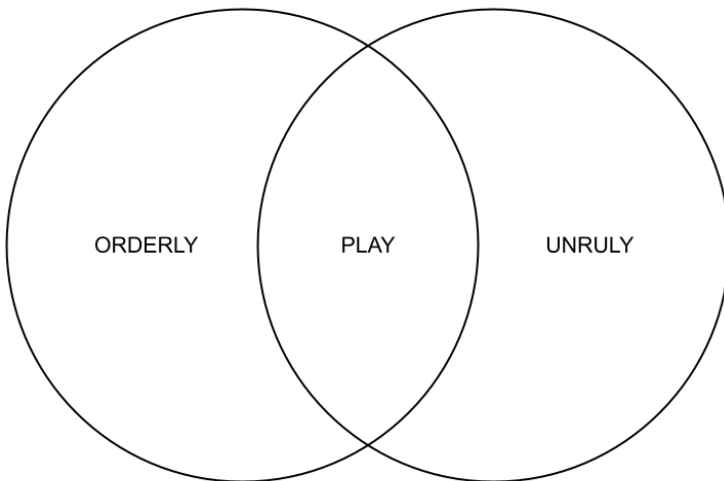


Figure 14. Playful Tension Model

As the concept of playful tension continued to develop I would begin to focus specifically on how the play design practice and the playthings at LEGO House would support a playful tension between the orderly and the unruly.

Doing Reasonable Fieldwork

While I was doing my best to read through and understand the selected play theory literature the concept of playful tension was also being informed by my fieldwork at LEGO House as prescribed by my attempt to develop it as a bridging concept. I have already briefly described the importance of encountering the existing design tools at LEGO House as being pivotal to the direction of my project, but as I will now go into more detail in terms of the nature and findings of my fieldwork, we will take a small side quest into the field of design anthropology to provide an overview of the fieldwork methods that were used and why.

Going into the fieldwork I had what quickly proved to be a rather naïve idea about how I would be able to have the play design practice at LEGO House talk back to the theory. I thought that I would be able to accomplish this solely by creating design experiments – a central element in doing research through design – where the prototype is used to stage a design experiment or intervention in the field of practice in order to produce new knowledge about the prototype and/or the context of use.

Blinded by my own motivation and eagerness to create a new concept of play design I had not fully considered that helping me achieve this goal was not the only item on the daily to-do

list of the LEGO House design team. This might not come as a surprise to the more experienced design researcher, but I had to learn that busy people don't have much need for having their work disrupted and interfered with – or at least that it requires a certain time and place for doing so. You could say that, whereas my project was concerned with the development of a new concept of play design, their job was primarily concerned with the execution of play design.

I realized that my colleagues at LEGO House could not simply stop everything they were doing at the drop of a hat to follow me into whatever experiment I would dream up. So, rather than relying on design intervention alone in terms of having the fieldwork inform the development of the concept of playful tension, I found that I would have to use a combination of fieldwork methods to achieve my goal. This meant that I would work along a spectrum of design anthropology on one hand creating design intervention by inviting the team to workshops where we would explore the concept of playful tension together, while otherwise relying on observation and participant observation to relate the existing play design practice to the concept of playful tension.

On one hand design anthropology has emerged as a result of an increased orientation towards making change to the social situation within anthropology. Whereas traditionally anthropology has primarily been concerned with building an understanding of present practices, design anthropology seeks to use this to explore potential future practices (Otto & Smith, 2013, Kjærsgaard et al., 2016). This shift within anthropology arguably reaches out to design by adopting the pragmatic ideal of making change in order to improve the current situation.

On the other hand, as mentioned previously with reference to Buchanan's orders of design, design has evolved from a focus primarily on giving shape to visuals and material objects to concern itself with giving shape to human experiences and social systems. The increased focus on user experience has introduced a need for developing an understanding and building empathy with the user. For this design they have adopted the ethnographic methods of anthropology. As noted by Bichard & Gheerawo, the growing interest of design in human-centred design including user needs, context of use and the user experience has inspired design studios and design educations to appropriate ethnographic methods into design methods such as the IDEO design method cards for human-centred design (Bichard & Gheerawo, 2011 p.46). The 6C method cards, developed and used at Design School Kolding, are another example of this approach (Friis, 2015). As such, design arguably reaches out to anthropology by adopting ethnographic methods and a sensibility towards the context of use.

The resulting hybrid discipline, design anthropology, is concerned with *ethnographies of the possible*, meaning a fieldwork methodology that is focussed on creating encounters between the actual and the potential by engaging in explorative and interventive practices that extend the present practices into potential future ones (Halse, 2013 p.194, Kjærsgaard et al. 2016, p.4-6).

My own work was concerned with exploring the emerging concept of playful tension as a potentially new perspective on the practice of play design. Since the fieldwork at LEGO House was instrumental in informing the development of the

concept of playful tension as an example of ‘intermediate level knowledge’ I would have to devise an ethnography of the possible that could accommodate the practical limitations of my collaboration with the LEGO House design team. I found that I would have to complement the more interventive explorations (that would require the design team to suspend their current practice to explore the concept of playful tension as a tool for a possible future practice) with methods that would allow me to explore the concept of playful tension on my own by examining existing playthings and taking part in the current play design practice. Figure 15 illustrates how I would combine fieldwork methods to achieve an ethnography of the possible.

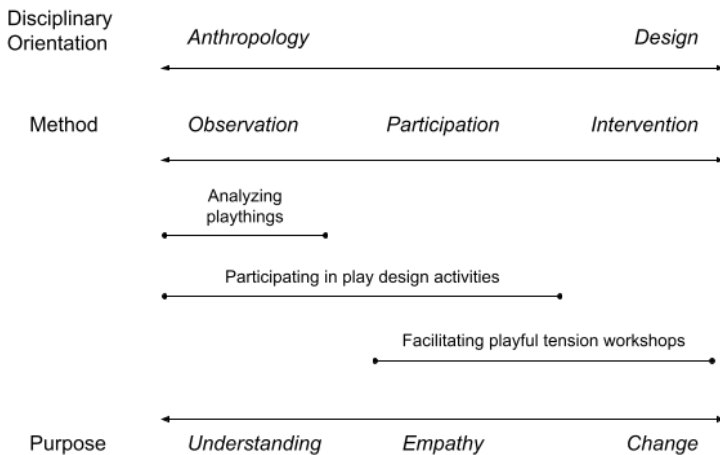


Figure 15. Fieldwork methods

This combination of fieldwork methods gave me three options in terms of my dependency on the rest of the LEGO House design team: (1) If my team members were doing work that did not relate to my project I would explore the existing playthings at LEGO House in order to study the explanatory qualities of the concept of playful tension as a lens for understanding play design decisions. (2) If the team was doing work that was related to my project I would participate to learn about their existing tools and methods and (3), if the team was fully available I would invite them to participate in workshops that would be dedicated to exploring the concept of playful tension as a potential tool for the future practice of play design.

This collection of fieldwork methods would allow me to accommodate my research to fit the schedule of the LEGO House design team by providing three levels of dependency in relation to the other members of the design team. I employed these methods in concert to make sure that I would be able to have consistent talkback from the fieldwork at LEGO House regardless of how busy the design team was with regard to their primary job of keeping the play experiences at LEGO House up and running for the guests to enjoy.

While the collection of methods was initially born out of this necessity to be able to conduct the fieldwork more independently of the general organisation of the work at LEGO House, I found that the different methods would (unsurprisingly) lead to different types of talkback, which ultimately enabled me to develop a more nuanced understanding of the concept of playful tension.

In one way or another the fieldwork methods would involve myself as a user of the playful tension model, making for a

somewhat debatable shifting perspective between being the designer and being the user of the playful tension model. As mentioned previously, I had to become a legitimate member of the LEGO House design team in order to develop a more comprehensive understanding of their play design practice but also in order for me to engage the team in my project. Hence it was a given from the beginning that I would not be doing my observation as a fly on the wall. Rather I had to immerse myself in the field of practice to make the design experiments possible.

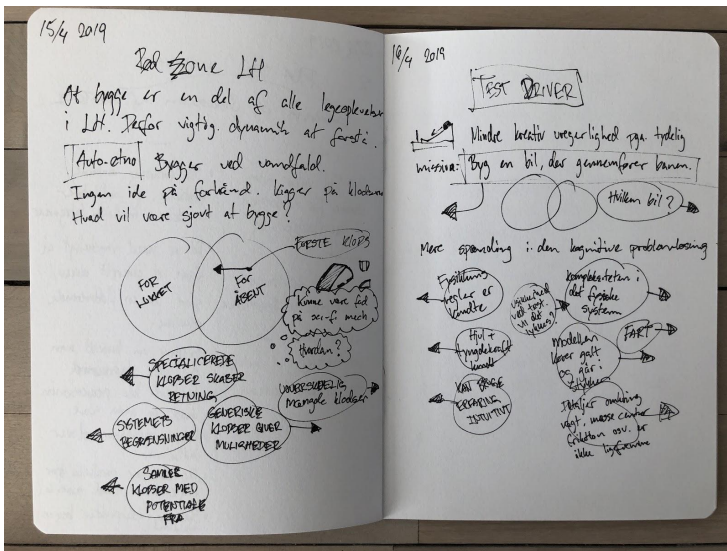
There are several frameworks for categorizing the researcher's position when doing participant observation. In general they are a spectrum where the observer is more or less part of the practice that is being studied (Gold 1958, Adler & Adler, 1987, DeWalt & DeWalt, 2002). At one end of the spectrum the researcher seeks minimal involvement in order to affect the situation being studied as little as possible. At the other end of the spectrum the researcher involves him- or herself and accepts the implied impact on the situation, seeking rather the deeper understanding and appreciation of the situation that comes with firsthand experience. Both due to practical concerns in establishing the collaboration with the LEGO House design team and as a result of the inherent interventive nature of design I decided to work at the extreme end of full membership and participation in the LEGO House play design practice. I will return to discuss the consequence of this position in my closing critique of the project.

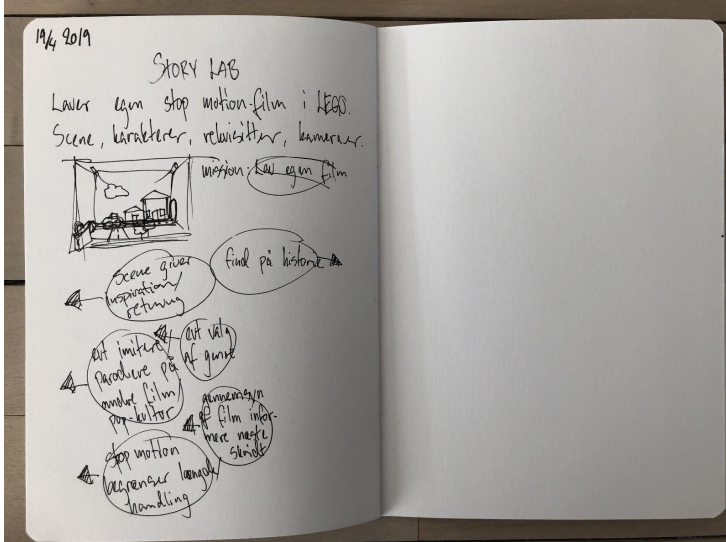
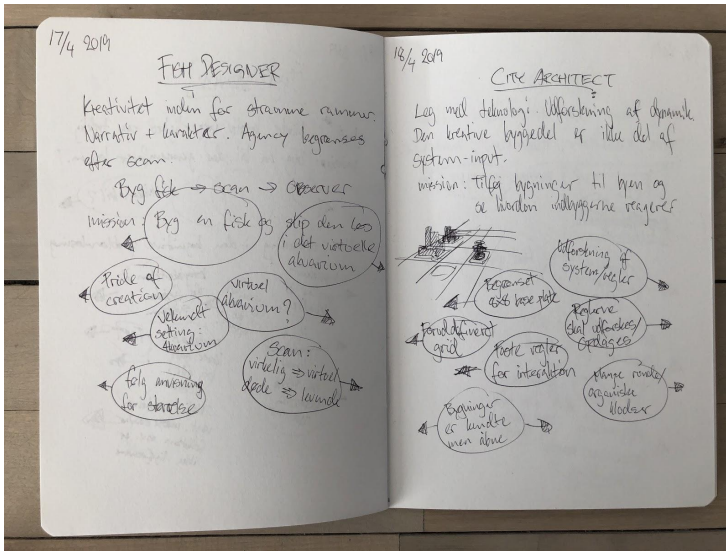
In the following I will provide a description and reflection of selected experiences from my fieldwork that all came to play a pivotal role in the development of the concept of playful

tension by having the concept meet the play design practice at LEGO House in different ways.

Playful Tension Analysis of LEGO House Play Experiences

In an effort to explore what the concept of playful tension would reveal about the design of the LEGO House play experiences and vice versa I would try a selection of different play experiences using playful tension as a lens for understanding the play design. I would take notes during my play experience to reflect and collect the data.





Reflections over playful tension in LEGO House

While all were helpful in exploring how different play designs afford different types of playful tension, one of these experiences had an immediate impact on my understanding of playful tension and of play design at LEGO House in general. This was the experience of free building in the red zone at the waterfall. The play experiences in the red zone are arguably less designed than the ones in the other zones as they are about free building with LEGO bricks without proposing a theme, direction or a specific goal for the experience. Rather the red zone features different troughs each with a certain composition of LEGO bricks. This composition is referred to by the design team as a *brick mix*. The free building in the red zone, where guests are invited to build from their imagination, appeared especially significant to understand, since this is arguably the fundamental LEGO play (apart from building from instructions) and all the other play experiences are variations or extensions of this basic LEGO building experience. Therefore my experiment of using the concept of playful tension to reflect on my own building experience in the red zone offered a deep insight into the fundamentals of LEGO play as well as the development of the concept of playful tension itself. The following is a detailed account of this experience and my process of reflection.

Tales from the Fieldwork: Episode III – The MECHANICS of LEGO building

One day I decided that I wanted to try building something in the red zone. It was a Monday afternoon and the house was not very busy. On my way to the red zone I passed through the Masterpiece Gallery and walked by the impressive builds that

were exhibited. The models in the Masterpiece Gallery are made by AFOL's (Adult Fans Of LEGO) from all over the world, and I had found them to be both beautiful and creative examples of how expressive a medium LEGO can be in the hands of master builders. The models feature advanced building techniques and as I looked at them I tried to figure out some of the tricks that were used to achieve these advanced models. I found it inspiring. It raised the bar for what is possible to build, and I was motivated and determined to create something awesome, too.

I walked down the stairs from the Masterpiece Gallery into the red zone and I made my way to the big trough at the LEGO waterfall. This features a varied brick mix with countless different shapes, sizes and colours.

The first question that came to mind was: What should I build? I knew that it should be something really cool but what should it be exactly? I found this to be the first unruly quality of the situation. The openness of it all. It seemed that I could build anything, so what would be the best? I let my hands run through the bricks in the trough looking at the overwhelming variance of bricks that revealed themselves as I dug through the mix bringing new bricks to the surface that lay hidden at the bottom. It was hard to focus due to the huge number of different bricks that passed through my fingers, and it made me think of how a shoal of fish protects its members from predators by making it difficult to pick a target, as I have seen on some nature documentaries.



Brick mix in the red zone of LEGO House

Suddenly a certain brick caught my eye. It was a grey piece, triangular in shape with a smooth, sloped surface. It looked like it mostly wanted to be the tip of a fighter jet or the like, but as I turned it in my fingers it came to suggest something else. It appeared to me at that moment that it might also be part of the foot of a big robot. Since I am an avid consumer of sci-fi media the piece connected with my memories of robots and mechs from movies and computer games. This was what I wanted to build – a mech robot.



Gray triangular sloped brick

I found that the decision to build a mech robot introduced some order and resolved some of the initial unruliness by setting a goal that would structure the experience by providing direction. Even if I now knew what I wanted to build, my idea of a mech robot was fairly vague. I didn't have a clear image of what it should look like either in terms of shape, size or colours. It felt like I had decided on a type of object or a genre and that all my previous impressions of mech robots were competing for attention as they proposed what such a thing might look like. The decision to build a mech robot seemed to help me establish playful tension where I had a goal and a direction while it still felt open and left me excited to see how I would pull it off.

After I had decided that the initial grey piece should somehow be used to build the foot of the robot a certain quality of order, without any noticeable deliberation, ensued, as I presumed that the robot should be a biped structure. In the short voice memos that I would record during the play experience I noted:

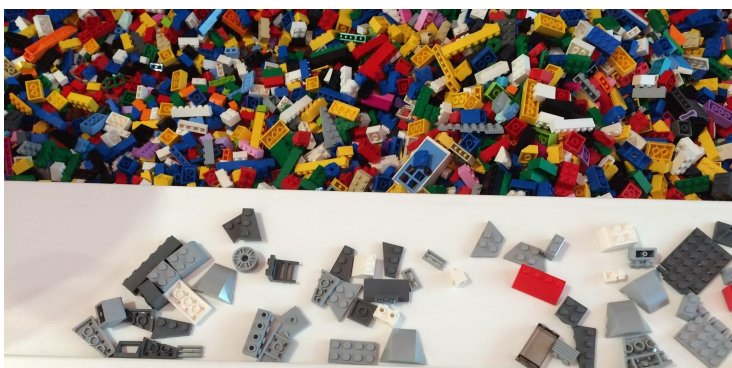
“Ultimately it becomes a question of looking for very specific bricks that solves a problem or where you have already found one brick for one side and then need a similar one for the other side to complete the symmetry.”

So, I began going through all the bricks in search of an identical grey piece so that I would have one for each foot, as this assumed need for symmetry meant that any brick that was used to build the legs was needed twice.

The search for the second grey piece felt quite different compared to the previous relatively aimless running my hands through the bricks in search of an idea of what to build. This search had a clear target in that I needed to find an identical piece for the other foot. This meant that many of the bricks now seem irrelevant by being different from the one I was looking for. Interestingly, while I was searching for the second grey brick I found that some of the other bricks looked promising, as they would somehow relate to my understanding of a robot. In the voice memos I noticed this, saying:

“When I am looking for a specific brick then I find other bricks that I will put aside based on the idea that these might be able to fit in. They have certain qualities.”

I picked up these promising pieces and placed them in a small pile on the side of the trough in front of me. Compared to the unruliness of the entire body of bricks in the trough this growing selection of bricks, deemed relevant in relation to robots, was more orderly by being of a more manageable size and because the pieces related to one another in terms of colour and shape.



Beginning pile of promising bricks

When I did find the second grey piece I started building the legs using some of the other pieces from my little pile of promising bricks. Because I wanted the grey pieces to sit upright I could not build conventionally by stacking the bricks on top of each other. Rather I had to use some of the techniques that I had seen on the models in the Masterpiece Gallery using certain bricks to turn the direction of the build and be able to construct the legs in many directions and angles. I had learned that this technique is referred to as SNOT (Studs Not On Top) building technique. I contemplated the need for this technique in my voice memos:

“I start with the legs and find a gray curved brick that I would like to use somehow. Maybe it means that you have to turn the direction of the build, a so-called SNOT-build, in order to make it sit as the feet of this robot.”

Figuring out how to achieve an acceptable shape that was stable enough proved difficult, and I found it to be as much a cognitive challenge as a creative one, as I was trying to solve the problem of connecting the bricks to create these advanced shapes. There was a certain unruliness to the cognitive difficulty of building using the SNOT technique, but once I found a good solution, orderliness followed as I would replicate it on the other leg.



Mech legs completed

While building the legs of the robot I often had to search through the trough for a certain piece that was needed and, as mentioned, these searches provided many happy accidental encounters with other relevant bricks. As a result the little pile in front of me kept growing with bricks that seemed to relate to my robot.

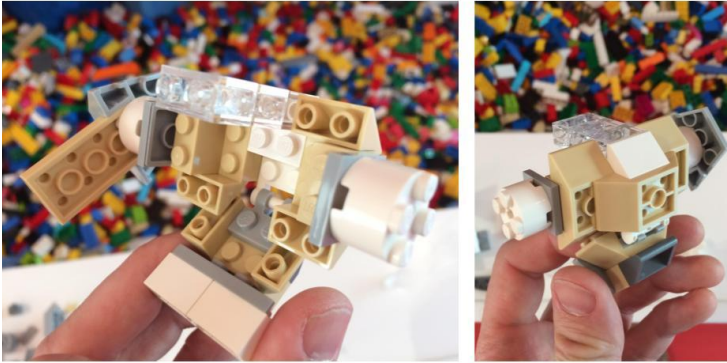
While I had already decided to use grey and white bricks the inclusion of the sand-coloured bricks came as a necessity more than a choice. The grey bricks were the starting point and I thought that they looked a bit like metal. They also made me think of the robot ED from the Robocop movie. I associated the white bricks with sci-fi and a certain high-tech cleanliness. It made me think of the robots from Björk's music video for the song *All is Full of Love*. To solve the issue of the upright grey pieces I needed a certain type of brick that I could only find in a sand-coloured version. While this colour would not have been my first choice I decided to compromise and settled on this for my accent colour. Once this decision was made other sand-coloured pieces would suddenly appear relevant and they started making their way to my pile. Thus the colour scheme of grey, white and sand-colour made for a particular order, where bricks of these colours became relevant, while bricks of other colours became irrelevant. Bricks of these colours thus became valuable and attracted attention in the unruly mess of the brick mix.

Within the colour scheme that I had settled on, some shapes also appeared more relevant to my build than others and I found myself favouring wedged pieces, greeble details such as little vents and handles and the pieces that would allow for changing the direction of the build.



Later pile of promising bricks

As I completed both legs and moved on to the construction of the body I found that I had enough pieces in my pile to create it almost entirely from these. Therefore the build came together quicker now as the options were more readily available. I thought that the body should be able to seat a minifigure, as having a human pilot is a defining property of a mech robot, so I used several sand-coloured, shell-shaped bricks to create the cockpit. Cognitively the biggest problem presented itself once I had to figure out how to attach the arms and legs to the newly created body. As a result I spent quite some time going back into the trough in search of different types of hinges that might help me with this challenge.



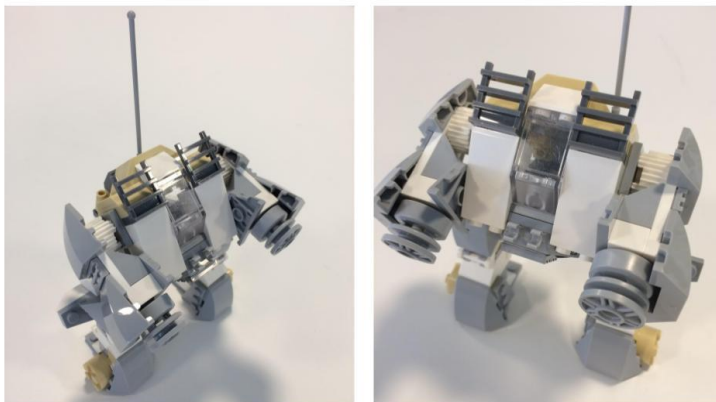
Building the mech body

At this point my wife called me wondering why I had not called yet to say that I am on my way home. I realized that I had been immersed in the building of my mech robot for nearly two hours. Even though I was now late, I did not want to stop now. I remarked on this in the voice memos:

“Now I am actually so far that even if I am in a bit of a hurry and actually haven’t really got the time to continue I have a clear feeling that I must finish it. I am somehow committed to it. I spent so much time and I think that the idea works and I am only missing the last parts.”

As evident by the voice memo, I felt that I was almost there and I was motivated to complete the robot as I had gotten somewhat attached to it. I thought that it was shaping up to be a really cool robot and also, if I stopped now, all the work would have been for nothing (at this point I had almost forgotten that I was doing this for my PhD and not for the fun of building a robot).

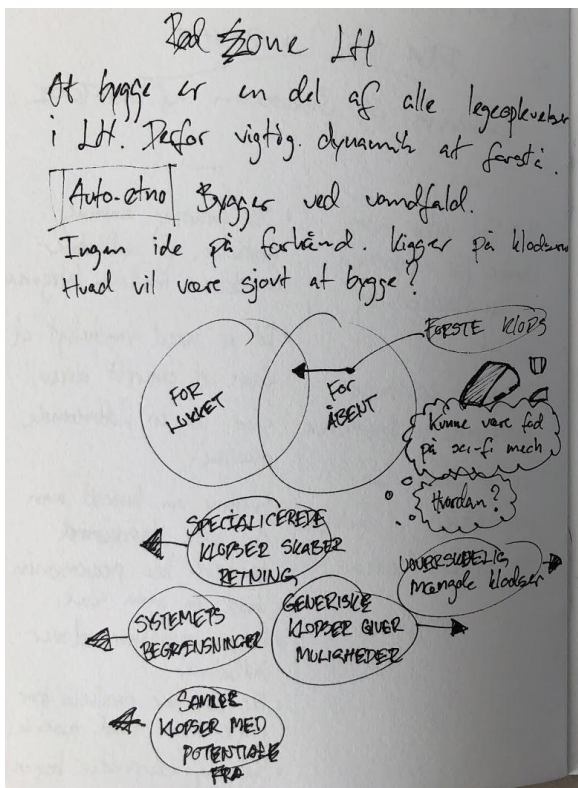
Pressed for time I found myself making creative compromises going for the easier solutions rather than the better ones. The time pressure introduced a new type of unruliness making me a little anxious whether I would make it in time or not. I realized that I had to abandon the idea of making proper hands for the robot, as this seemed an especially difficult endeavour that would entail difficult construction and require that I had to find many additional parts. Even if I was not happy with it I decided that the robot will simply have guns for hands, and I finished the arms as the last part. I put an antenna on the back of the robot and decided that it was done.



Finished mech

I felt proud of the result, and I took it to the office to put it on display with some of the other LEGO builds that sit on the desks and shelves of the design team workspace. Some of the other members of the design team took notice and complimented me on my building skills.

Before heading home I made a few reflections in my notebook to go along with the voice memos.



Notes on the mech building experiment

These notes represent my initial attempt at understanding this play experience and the role of the designed playthings through the lens of the concept of playful tension. As such, this is an example of when the fieldwork would begin talking back to the theory.

The Talkback

The experience of using the concept of playful tension as a lens for understanding the fundamental LEGO building experience gave me confidence that this particular way of conceptualizing play would provide me with valuable insight into the practice of play design. More importantly, it informed the development of the concept of playful tension by illustrating how this particular play design affords certain types of playful tension. I became aware of the particular types of tension between order and unruliness at play when building with LEGO bricks. Figure 16 illustrates how different elements of the robot building play experience work to create playful tension.

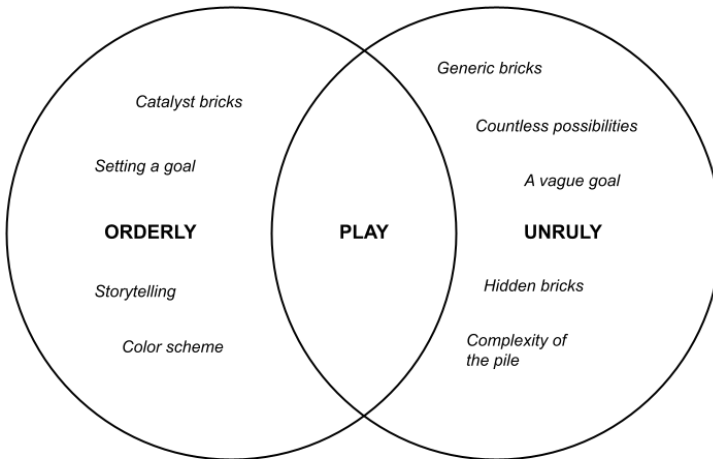


Figure 16. Mapping playful tension of mech building experiment

As shown by the example, a certain playful tension exists between the different types of bricks in the given brick mix.

Some bricks are more orderly, so to speak, by having a design that carries information that gives them direction. For instance, a set of wheels that wants to become a vehicle, the wing that wants to become a plane or the door that wants to become a building. They function as catalysts for ideas. Conversely, the more generic bricks are unruly in the sense that they provide little direction but could become anything. This tension between the catalyst bricks and generic bricks is pivotal to the creative LEGO building play experience in terms of deciding on what to build. The catalyst bricks work to counter the blank canvas problem of having too much freedom making it difficult to decide on what to do, as all actions appear to be equally valid. They create suggestions of what to build and offer ideas and directions that one may choose to follow. On the other hand, once an idea forms the role of the generic bricks is to ensure that there is enough freedom to make the play experience a personal, creative expression of the player's own ideas. If you pick two sets of wheels and decide to create a vehicle the generic bricks ensure that there is more than one way to connect the wheels and create a vehicle predetermined by the play designer. Rather the generic brick allows the same two sets of wheels to become a myriad of different vehicles. This tension between catalyst bricks and generic bricks can be understood as a tension of opportunity, and it is central to the creative LEGO building experience in the red zone. The play experience can have neither too little direction nor too much, but it needs to create a playful tension of opportunity whereby it inspires ideas without dictating them. This means that even in the case of a play experience such as the creative building in the red zone, which may not seem to be designed as much as some of

the other play experiences at LEGO House, the play designer's curation or composition of the brick mix is very important to achieve this playful tension. The play designers must consider carefully how the catalyst bricks juxtapose in terms of their affordances as well as the overall balance between catalyst bricks and generic bricks.

When the catalyst bricks help form an idea of what to build this creates order by creating a hierarchy of value whereby the experience of the brick mix changes. Certain shapes, colours or functions of bricks that the player relates to the given idea become relevant and more interesting than other bricks. They become valuable candidates for becoming part of the build and they are more likely to be picked up from the brick mix. On the other hand, the vagueness of the idea creates some unruliness. In the example of building the robot, the decision to build a robot didn't produce an exact image of the robot to be built and much less building instructions. Rather it activated a scattered, incomplete and distorted collection of memories and images of robots that would provide some direction, but due to the vagueness of the idea and because of the constant negotiation between the idea of a robot and the building materials that were available it would remain exciting to see how the robot would eventually turn out. The negotiation between idea and material is especially interesting in relation to the brick mix. Because of the huge number of bricks that were available at the waterfall in the red zone at LEGO House the brick mix as a whole becomes a highly unruly element of the play experience. It is complex along several dimensions: it is made up of millions of individual bricks of different sizes, shapes and colours making it impossible to perceive all the individual bricks at once at

least in any meaningful, focussed way. It is only possible to see the bricks that are at the surface, and as you dig through the bricks new pieces constantly appear while others disappear. This creates an uncertainty where you never know what you might find next. As mentioned, the brick mix attains some order as some bricks become relevant in relation to the thing that is being built. A further distinction in relation to searching through the brick mix is whether it is an undirected search without a specific target or a directed one targeting a specific brick. The undirected search is more unruly as the players do not know what they are looking for, only that they are looking for something that will inspire them. This search is divergent because it is about being open towards the inputs and suggestions that manifest from the bricks as they are being uncovered and considered. It is about uncertainty and letting yourself be surprised by the unpredicted relevance of yet unknown bricks and opportunities. The directed search, on the other hand, is convergent. In the example of building the robot it appeared often as the creative expression turned into cognitive problem solving. This would happen for instance when having to figure out how exactly to attach the legs to the body of the robot. Deciding that a certain type of brick would be needed in order to solve this specific problem, a search for such a brick would begin. This search has an almost game-like quality as you have a set goal. The search can succeed or fail and you can exert effort and skill in order to succeed. Even if this is more structured, surprises may still occur as you might find a different brick that can also solve the problem or you might even find other bricks along the way that have no relation to the specific problem but might be the result of performing an unstructured search in parallel to

the structured one. This playful tension between the divergent search for new opportunities and inspiration on one hand and the convergent search for a solution to a well-defined problem on the other hand suggests that the play experience is also relying on a basic playful tension of uncertainty – a tension between planning and being surprised.

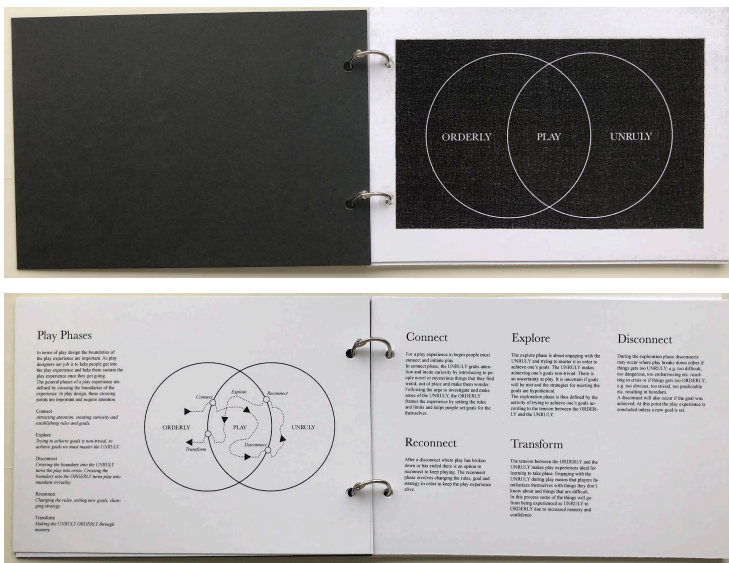
Finally the LEGO system itself creates a certain order that the creative expression must adhere to. It forms an implicit set of rules that govern the building experience given how the bricks are designed to be connected to one another. The design allows for certain structures, while bending, breaking and twisting the bricks outside of their intended use is not encouraged. While the LEGO system allows for countless different configurations within these implicit rules, the use of the SNOT building technique increases the unruliness of the building experience by increasing the complexity of the system. It makes many new shapes possible and it necessitates that the player considers a wider range of possible uses for each brick. This will then also raise the relative cognitive difficulty of figuring out how exactly to connect the bricks to achieve these more advanced shapes that become possible by being able to turn the direction of the build.

Applying the concept of playful tension to the experience of building a robot in the red zone at LEGO House led me to identify certain types of playful tension that appeared to be the primary drivers of the given play experience, namely the creative tension between directedness and freedom that suggests that the creative play with LEGO bricks is not about having total creative freedom. Rather it is about striving for creative agency in relation to the orderly and the unruly

aspects of the brick mix, overcoming the unruliness of endless possibility as well as the order of the system and the catalyst bricks to create something of your own. The vagueness of an idea of what is being built also invites a discussion between the intent of the player and the affordances of the available materials. This creates an unruliness of uncertainty, where in the example I was certain that I was building a robot but yet uncertain as to how it would turn out. This tension of uncertainty manifested itself between the order of having a goal and the unruliness of the brick mix, where it was uncertain what bricks I would find and as such what would be possible. Finally, the play experience entailed a cognitive tension of problem solving, whereby the robot that I was building should neither be too simple to construct so that the problem of achieving the goal would be too easy or straight forward, nor should it be too complicated or difficult to arrive at a result. In the example of building the robot, the hands proved to be too complicated for me to create so I changed the plan and opted for a simpler solution. As such, the freedom of setting my own goal would allow me to adjust the cognitive tension by abandoning problems that were too difficult (or too easy) in search of problems that had the optimal degree of challenge.

Introducing Playful Tension to the LEGO House Design Team

In order to transition my fieldwork from a more passive position of observing towards a proactive position of having the play design team use the playful tension model I would host two full-day workshops for the design team where I would introduce the model. For the workshops I created a little handbook on playful tension for each team member, where I introduced the playful tension model by relating it to the context of LEGO House based on my initial observations and analysis as described previously.



Playful Tension handbook prototype

The goal for the playful tension handbook was to introduce the playful tension model as a new perspective on play design to the team. In accordance with the tenets of design anthropology, as described previously, I intended to make changes by introducing the model as a new design tool while also respecting the existing practice by relating it to the 9-step Journey Tool and the LtP DNA Tool. The purpose of the playful tension handbook was to introduce the idea of play as a delicate tension between the orderly and the unruly and the understanding of designed playthings as instruments for establishing and maintaining playful tension. While introducing this new perspective that represented a different ontology of play and play design I sought to highlight how the playful tension would relate to and be compatible with the existing practice and tools.

In the handbook I related the playful tension model to the existing play design practice and tools of LEGO House by mapping their concepts of play and play design onto the playful tension model. Figure 17 shows how I applied the playful tension model to the three phases of the 9-step Journey Tool creating a hybrid model intended to illustrate how the playful tension model may work in combination with the 9-step Journey Tool.

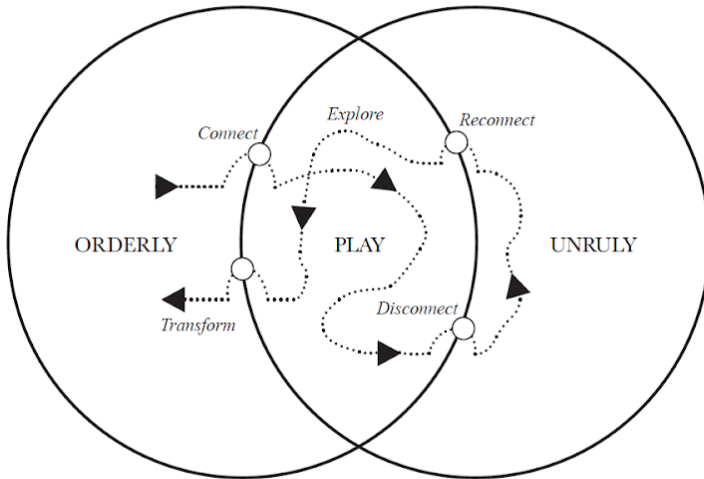


Figure 17. Combining playful tension and play phases

Mapping the three phases of the 9-step Journey Tool onto the playful tension model creates a reframing of the phases, where the ‘connect’ phase comes to represent a crossing into the state of play, and designing for this becomes a question of establishing playful tension between the attraction of the unruly and the direction of the orderly. On this basis the handbook proposes that the ‘connect’ phase is about establishing playful tension by *“attracting attention, creating curiosity and establishing rules and goals.”*

The ‘explore’ phase that follows becomes a matter of engaging with the unruly in whatever form in an attempt to resolve it. The handbook proposes that the ‘explore’ phase is about trying to master the unruly and to strive for agency and that players must do so by experimenting. As players explore the unruly and develop their skills and strategies the purpose

of designed playthings is to maintain the playful tension by making new unruliness available.

This then reframes the ‘transform’ phase as the inevitable result of the player’s exploration of the unruly. As the player engages with the unruly it resolves, as things that were unfamiliar become more familiar, as the difficult gets easier etc. In this fashion play constantly makes the unruly orderly and in turn must create new unruliness to engage with.

As the concept of playful tension proposes that playful tension is delicate and that players must exert effort to maintain it (maybe assisted by designed playthings) it implies that the 9-step journey may not be as straightforward as play designers might hope. As such, it suggests that play designers should keep in mind that players not only *connect* but may also *disconnect* from and have to *reconnect* to the play experience.

The handbook therefore proposes that play designers should pay attention to disconnects during playtesting and discuss whether the disconnect was due to too little unruliness or too little order. In other words, did the play stop because the player had exhausted the unruliness turning the experience trivial, or did it become too unruly losing its purpose, progression or even becoming uncomfortable? In any case, the volatile aspect of playful tension asks that play designers consider how their designed plaything might allow for the player to reconnect after playful tension breaks by being able to adjust the structure of the play experience to better suit their preferences.

Lastly, making the playful tension handbook also allowed for the team to reflect on the playful tension model in between the workshops, and I encouraged the team to write sticky notes with feedback and put these in the handbooks so that I could then collect them during the second workshop.

Tales from the Fieldwork: Episode IV – Pool Party

In the first workshop I introduced the playful tension model and the handbook and we did some exercises where we would have a play experience together and afterwards discuss it using the playful tension model. In an effort to keep the focus on using the playful tension model I decided that on the first workshop day I would only use examples and do play exercises that were not too similar to LEGO or the play designs at LEGO House. The reason for this was that I was concerned that if the team did not have a good grasp of the playful tension model then going into discussions about the LEGO play experiences that the team work with every day would likely divert the discussion away from the playful tension model and use the existing terms and tools instead. The primary exercise on the first workshop day was that we would play a game of pool (8-ball). We would play a two versus two format with teammates taking alternating turns at the table. For each participant (six in total) I would supply a template for noting the orderly and the unruly elements of the game of pool as shown in the photos below. Taking turns gave the players time to make their notes during the game and in addition being three teams with only two of them competing at a time meant that the team that was sitting a game out would have additional time to make observations and notes.

MIKE

<p>TRIANGLE SET UP → SIMPLE BASE RULES</p> <p>LEVEL TABLE → BALLS THAT FOLLOW LAWS OF PHYSICS.</p> <p>TURN BASED</p> <p>TEAM CAN PLACE WRITE WHERE THEY CHOOSE FROM A FOUL</p>	<p>PULL OUT - SMALL TIP - MUST BE PRECISE</p> <p>BACK AS A "JOKER" UNTIL THE END</p> <p>"SATISFY EFFECT" ON BIERRE</p> <p>SMALL MISUSE CAN HAVE A CERTAIN REACTION</p> <p>BALLS HANDLING OVER A-PALKEY FORCES DIFFERENT APPROACH</p> <p>DIFFICULT TO PLAY WRITE BALL WITHIN AGAINST CLASHING OR AVOIDANCE BALL</p>
--	--

SHREN

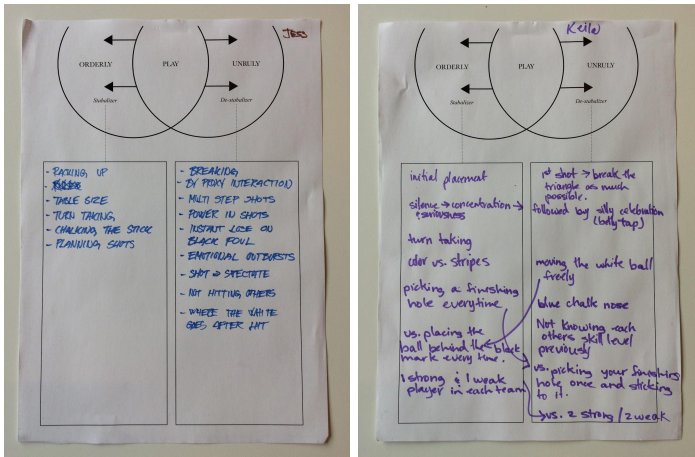
<ul style="list-style-type: none"> - Discussing rules - Ambivalent (Public) (no roses/bar damage) - Re - Discussing rules - Finishes up - who wins 	<ul style="list-style-type: none"> - Team names "Balls" - Fun moments in background (laughing) (shores) - Hugging the moments - Drinking going in (unformal to me atmosphere)
--	---

MADS

<p>organized balls</p> <p>taking turns</p> <p>colors to give silence</p>	<p>which rules?</p> <p>Agree with remember an meet team</p> <p>"Play with left hand"</p> <p>loud noises</p>
--	---

STONET

<p>Simple rules</p> <p>planning/strategies</p> <p>skill</p>	<p>physics</p> <p>social interaction</p> <p>luck</p> <p>keeping</p> <p>competition</p> <p>physical exercise</p> <p>high tables</p>
---	--



Photos of playful tension template used in pool exercise

Using the notes on our templates we would transfer our insights to sticky notes and take turns to place these on a poster of the playful tension model while discussing the play design of the game of pool in relation to the concept of playful tension. The photo below shows the elements of the play design that we identified as being pivotal for creating playful tension. The elements that we believed contributed to the orderly were placed on the left side of the model, and those considered to contribute to the unruly were placed on the right side.



Mapping of play design elements in pool

On the side of the orderly we decided that the basic rules provide order and structure. The rules dictate that the goal is to be the first to pot all his balls including finally the black 8-ball in the pockets. The rules also prescribe the means and limits as to how to achieve this goal. A specific rule that was highlighted is the rule that says that players take turns at the table to make their shots. There was some conversation about what turn-taking means for the play experience:

MA: "I wrote; always on in some way, there's always a role for me, even though when it's not your turn, you still have a role and try to help out your team member or try to distract the other team or something. You are not just turning around

and looking out of the window and waiting for someone to say, 'It's your turn', in that sense you are always part of it."

JE: "[...] I wrote something about turn-taking; that when it's my turn I feel like I'm engaged and I have this agency, I have the big impact on the game state, so when I do something it really changes things for the entire game and for all the players."

MI: "I wrote the game constantly evolves. It's just as much fun to watch the opposition take their shot as it is to take your own shot - you don't turn your back because you miss out on some stuff."

SØ: "Also in the process of the game, that you wanna win and the changes that occur, that you have to adapt for and observe."

The orderly function of this rule can also be appreciated if we imagine a version of the game without turn-taking, where the players are shooting away simultaneously as fast as they can to be the first to sink all his or her balls. This would arguably make for a very unruly situation, where the complexity of the physics combined with the speed of interactions would largely eliminate the element of planning and making strategy that was also put forth. As the discussion emphasizes, the rule of turn-taking makes for a tension between the orderly, deliberate problem solving and planning of actions as opposed to the tense pressure and uncertain moment of action when it is your turn and you must try your best to make your intentions become reality. As such, the rules create playful tension by carving out a possibility space where the orderliness of the limitations makes reaching the goal a non-trivial, uncertain and thus unruly journey.

Just as with the explicit rules of the game the implicit rules of physics are also discussed in relation to the orderly and the unruly.

MI: "It is a total butterfly effect on the break. You don't know where all the balls are going to end. So every table is different after the first shot."

ST: "I just put the word physics."

MI: "But I thought that was in the orderly."

ST: "For me the unruly kind of thing is that you can't predict that far into the future."

[...]

JE: "But it's the entropy, cause on one hand the physics, like one of you guys said - well, the angle in equals the angle out. There is some sort of orderliness to go by, but once one hits the next, hits the next, then it turns into this entropy, where you can't predict."

ST: "But also you know the table is not 100% accurate you know, it is a little worn out. So, you know that's why I am blaming everything else except my skill. It wasn't exactly perfect, not exactly level. You couldn't really take it into account all those factors, so the physics takes over once you release the ball."

MI: "I don't disagree, what I mean is the basic laws of physics, you know, you hit the ball and things roll [...] If you hit your shot correctly it will go in a hole."

ST: "That would work if you were an AI supercomputer you would be able to take it into account, but as human beings we can't take it into account all those factors [...]"

It is interesting that the debate is on whether the physics of the game provides order or unruliness and that both views appear valid. The laws of physics are a source of order, since it is our basic knowledge of gravity, friction and collision that allows us to make the plans and predictions that inform our actions in the game. Yet the same laws of physics come together to create a system with emergent behaviour, where chain reactions and butterfly effects make the experience unruly challenging our ability to make predictions and control the outcome of our actions. It suggests a playful tension of emergent behaviour, where the simple rules and properties of the design come together to form an unruly complexity through their interdependencies and interactions.

Certain elements of the play experience were identified as adding to this unruly complexity. The rule that states that players must use the white cue ball to sink the coloured balls makes for an indirect or by proxy interaction that increases the uncertainty of the outcome compared to a hypothetical design where players would hit the coloured balls directly. This complexity and uncertainty increases further when players try to make what one participant calls a “canon” shot meaning a multi-step shot where a series of balls must collide in a domino effect that ideally causes the last ball to go in the pocket. Though it was not mentioned in the discussion the same can be extended to the situation where the banks of the table are used to complete the shots rather than shooting in a straight line. Besides the opening break that was mentioned, powerful shots in general are also adding to the unruliness as the balls travel further and are likely to create more collisions and chain effects.

The playful tension between simple rules and complex emergent behaviour affords a certain dynamic play experience where the players interact with the design in loops of planning, acting and hoping, which in turn makes for an interesting playful tension between skill and luck.

The competitive and social aspects of the play experience were also discussed in relation to playful tension. The competitive element of the game is part of the structure of the game, but it also creates an unruliness by making opponents of the players, meaning that players have opposite goals and will be using their agency in the game to win by making things difficult for the opponent. This means that there is a little bit of social risk involved whereby, if you lose, you must concede that your opponent was better than you at the game (or blame it on bad luck). If the game had been a cooperative game, where players would work together to beat the game rather than each other it would be more orderly in the sense that it would work to alleviate the social differentiation between players. The experience of the competition was also discussed as being dependent on the relative skill of the players.

KE: "I wrote something about, it might a bit controversial, but each team managed to have a strong and a weak player."

SØ: "What?!"

KE: "I won't say which one was the strong and which one was the weak. But I think that was a stabilizer whereas if you would have been a team..."

MA: "It is a stabilizer? So it's?"

KE: "Yeah, I think it gave some order to the situation."

JE: "So it balances?"

KE: "It balances the skills. There weren't two weak players and two strong players."

This particular part of the play experience is an aspect of the play experience that works somewhat independently of the play design itself. As evident by the discussion, it is seen as a good thing that the teams happened to be fairly balanced in terms of their overall level of competence. Since each team had a strong and a weaker player the teams were able to make the game challenging for one another, whereas if as mentioned it had been two strong players against two weaker players it would likely mean that the game would have failed to be challenging for either team. Rather it would arguably have been too orderly by being too easy and boring for the stronger team and too unruly by being too difficult and frustrating for the weaker team. Achieving a playful tension between the teams was managed by the players independently of the play design itself, but the discussion did identify an element of the design that works to counter smaller skill discrepancies between opponents.

JE: "Another thing I thought about is the rule, that if you mess up on the very last, the 8-ball, then you lose. It is very unlike the chess example, because even though I'm losing I can still hope that you make a foul on the very last one. That creates an unruly thing where even though you are winning, you still have to be careful or be afraid that you might fumble."

[...]

MI: "It's a good point. You can be six behind or whatever, then they screw up on the black and then you win."

SØ: “Yeah, on the other hand, that’s also the part in the game where we can say luck is dialed down. We are more aligned on what is the rule, what can happen, what is the scenario now? That kind of makes it orderly also.”

JE: “Yes, the game gets more orderly you could say, because the more balls that are not on the play field, the less chaotic and more predictable it should be.”

ST: “But unlike chess, like you were using earlier, you can see that you are about to lose, but it takes 15 minutes before I have lost. Here you can still win.”

JE: “Yeah, there is that.”

ST: “You are living on hope. You are free, but there is...”

JE: “There is hope in it.”

MI: “It’s true, it’s also the, if you are five - one up or whatever, the person who’s behind has more choices, so is more likely to pot one next than you are.”

The discussion points to an interesting dynamic of the playful tension where, as more balls leave the field, the unruliness of the emergent complex interactions decreases and becomes more orderly; however, as the available options become more limited, the difficulty of finding a successful shot likely increases. This, to some degree, works to keep the game close, as the player who is behind has more available options for sinking a ball and thereby being rewarded with another turn. Being behind and having the most balls left on the table also creates an advantage by having them block the pockets for the opponent. This makes for a playful tension of difficulty, where the better you are doing the more unruly the game gets as the easy options are removed. While the unruliness of the emergent complex interactions decreases a new unruliness of

pressure to perform increases. Adding to this new pressure and uncertainty is the rule that making a foul when you have only the 8-ball left means that you lose the game. This means that despite one player being way behind the table may turn, so to speak, at the very last moment if the leading player makes a foul on the 8-ball and thereby loses the game.

The Talkback

The exercise playing pool and using playful tension as a tool for understanding the play design provided two types of insights about the concept of playful tension: it helped to identify specific types of playful tension, and it helped to evaluate the qualities of the playful tension model used as a tool by play designers. Beginning with the former, it was interesting to realize that the game of pool was designed to support a playful tension by combining a very orderly set of rules that dictates the goal and means of the players with the unruly uncertainty of being able to execute on a plan. Specifically, the exercise illustrated how the game supports playful tension by the emergent complexity that arises from a set of simple physical rules via their interactions. The orderly familiarity of the basic laws of physics makes planning possible, while the uncertainty of the by-proxy agency of players controlling a cue to affect the cue ball to affect the other balls makes the execution of the plan challenging and uncertain. This creates a playful tension where the orderly elements of skill and mastery meet luck and hope. Inasmuch as the exercise was a test of the playful tension model as a tool for play designers a key insight was that it managed to keep the team discussion and the analysis

focused on the play design and the relationship between the play design and the play experience. It helped break down a relatively complex play design into specific elements or design decisions and helped us to discuss their specific role in shaping the play experience. Even with a game that all players were more or less familiar with beforehand the playful tension model arguably allowed us to see it not only from the perspective of a player but from the perspective of a play designer. Specific elements of the game that we might otherwise take for granted were easily identified in terms of their role in shaping the play experience, which facilitated a discussion that proved to be very specific in addressing these elements as design decisions.

It worked well to have the individual template for making notes during the game and later transferring these to sticky notes that were then placed on the bigger shared poster of the playful tension model. One reason why the personal templates were needed was that the game of pool was played in one location and the discussion took place in another, meaning that we had a gap of approximately 30 minutes which included a small walk and a break between playing and discussing. It is likely that important details would have been forgotten if we had not had the notes from the play session to bring into the discussion. Taking quick notes appeared to work in order to remember key moments without putting so many requirements on the act of documenting that it would ruin the play experience. Translating the notes to sticky notes and placing those on the shared poster of the playful tension model facilitated the discussion by affording turn-taking and invited the team to build on each other's observations; it also created a map of the pivotal design elements that could be

saved for later use. One problem or cause of confusion in placing the sticky notes onto the playful tension model was whether it made a difference whether they were placed inside or outside the middle region of the model. Largely because of the number of sticky notes we made the practical decision to use the entire model in order to have enough room for everything, but everyone tried to place their notes further to the left the more orderly they were considered and further to the right the more unruly they were considered.

After having approximately three weeks to reflect on the playful tension model in the context of the everyday work of the play design team we met again for the second playful tension workshop. The design team had made sticky notes in their handbooks, and we began the workshop with the participants sharing their feedback with me. This would constitute a very explicit type of talkback from the practitioners concerning the qualities of the playful tension model as a tool for play designers. There was a relatively large and varied amount of feedback which is why, in the following, I will emphasise the segments that ended up having the biggest impact on the project. In general, I was more interested in the feedback that concerned the playful tension model itself and less interested in the feedback that concerned the handbook because my goal was to develop the playful tension model. In this context, the handbook was a means for introducing the model and stage the design intervention. The handbook itself was not intended to evolve into more than a prototype for producing and collecting knowledge about the playful tension model.

One of the primary insights from the feedback was the support for the minimalist approach of the playful tension model as expressed by one team member:

MA: “First of all I think doing something like this, it’s important to keep it simple. Simplicity, because it has to turn into a practical model that you can basically use without having to read through 100 pages during a design process. It’s important that the model is simple. I couldn’t imagine a model more simple than this one...”

This sentiment was reiterated by another team member who argued:

MI: “I also think to MA’s point, that simplicity makes it beautiful, because you get it. Designers don’t want things getting in the way of what they intuitively want to do, so this gives it a framing.”

On the surface level these types of comments support the minimalist approach to the development of the concept of playful tension by reducing the complexity in favour of usability as well as the visual minimalism of the playful model itself. This would, of course, encourage me to maintain this approach. The second quote, however, adds additional nuance to the consideration of the usability of theory in relation to practice by emphasising beauty as well as intuition. I found the notion of beauty to be very interesting in relation to scientific theory development. As I have described in detail previously, my project was concerned with the usability of playful tension as a tool for play design practice, and beauty is

a somewhat debated topic in relation to usability within the field of design. Notably, Norman have made an account of the relation between beauty and usability in his book *Emotional Design: Why We Love (Or Hate) Everyday Things* (2004) where he describes how functionality and usability have often been seen as opposites but makes an argument in favor of beauty in relation to usability in an attempt address the criticism of the absence of beauty and aesthetics in his seminal work *The Design of Everyday Things* first published in 1988. One notion expressed by Norman regarding the relationship between beauty and usability:

“Confuse or frustrate the person who is using the product and negative emotions result. But if the product does what is needed, if it is fun to use and easy to satisfy goals with, then the result is warm, positive affect” (Norman, 2004 p.37).

When the play designer finds the playful tension model to be beautiful in its simplicity I take it to mean that it manages to alleviate some confusion and frustration associated with complex fields of play studies and does what play designers need it to do. Whereas Norman's central argument that beautiful, aesthetic or appealing things also work better is made with regard to things and people in general, the particular feedback from the LEGO House play designers suggested to me that this might be even more important for designers. This creates a strong argument for the importance of aesthetics when developing ‘intermediate level knowledge’ concepts for design practitioners. The feedback would make me realize that my minimalist approach to developing the concept of playful tension actually served a dual purpose of

usability and beauty and that these are tightly interconnected in relation to whether and how play design practitioners will make use of a theoretical concept such as playful tension. The appeal of the simplicity of the playful tension model is also related to the comment that designers don't want tools to get in the way of their intuition. This ties back to Schön's concepts of 'reflection-in-action' and 'reflection-on-action' discussed previously. As 'reflection-in-action', where the designer is making design decisions on the fly, relies on tight loops of iteration it is a valid concern that a design tool should not get in the way of this process. When the play designer finds the playful tension model beautiful '*because you get it*' I take this to mean that it is simple enough to internalize and use for 'reflection-in-action' to frame design decisions and discussions without having to bring the process to a standstill in order to apply the tool. The same need for tools to be simple enough to internalize is echoed by another comment later in the feedback session:

SØ: "That's also where a really simple diagram like this comes into play, because I think it will stay on the shelf if it was complicated. I can easily see us talking, 'This is too orderly or this is too unruly.'"

This type of feedback would encourage me to keep pursuing a minimalist approach to the development of the playful tension model. The talkback from the field of practice clearly suggested that usability and appeal are as (if not more) important as the explanatory power of a theoretical concept when it comes to the application in a design practice. As such, I found that my design experiments at LEGO House would

challenge both the explanatory power and the usability of the playful tension model.

Tales from the Fieldwork: Episode V – Gone Fishing

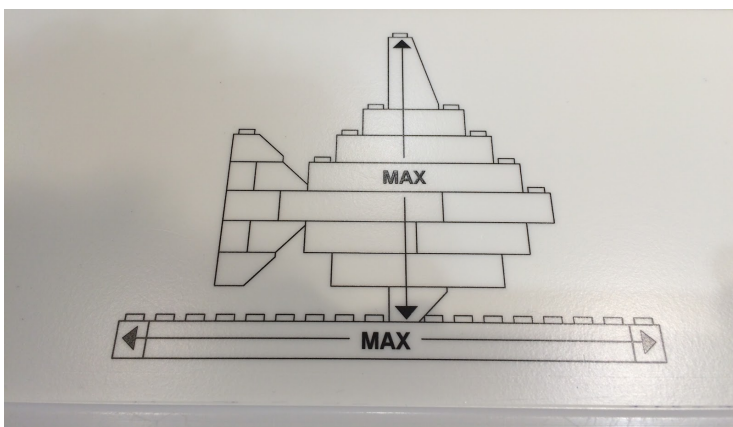
As the team was becoming more familiar with the playful tension model I decided that it was time to try using it in relation to their own work. We decided to map out the play experience named Fish Designer in terms of how the design supports playful tension.

According to the play design team Fish Designer is one of the most popular play experiences at LEGO House. It is designed as a giant virtual fish tank where big screens show LEGO fish swimming around in a reef environment having fun.



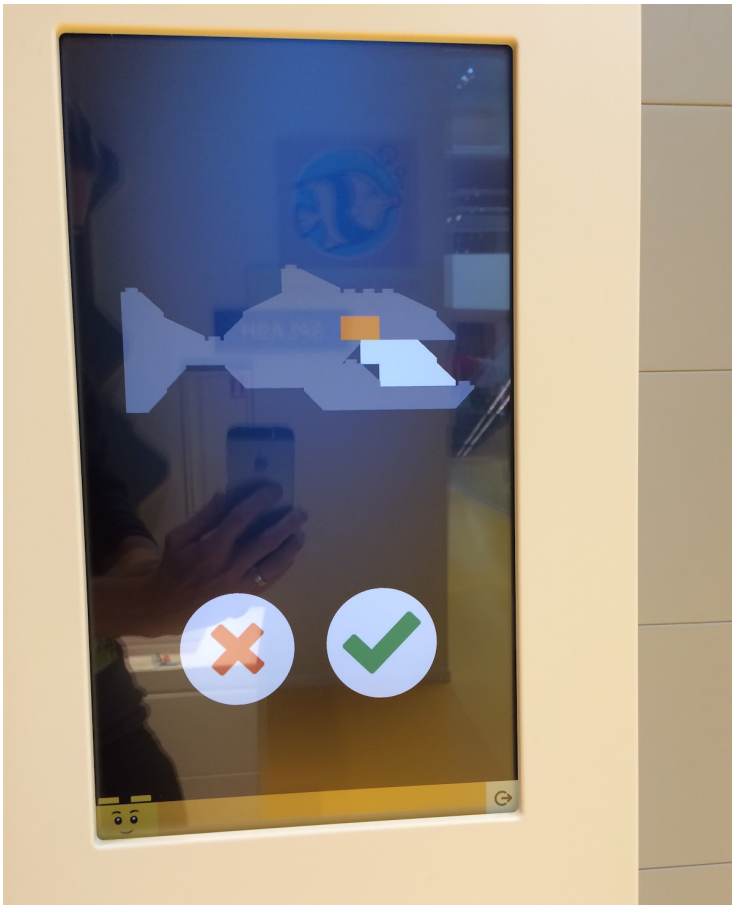
The Fish Designer virtual fish tank

Players can build their own flat 2D LEGO fish from the brick mix.



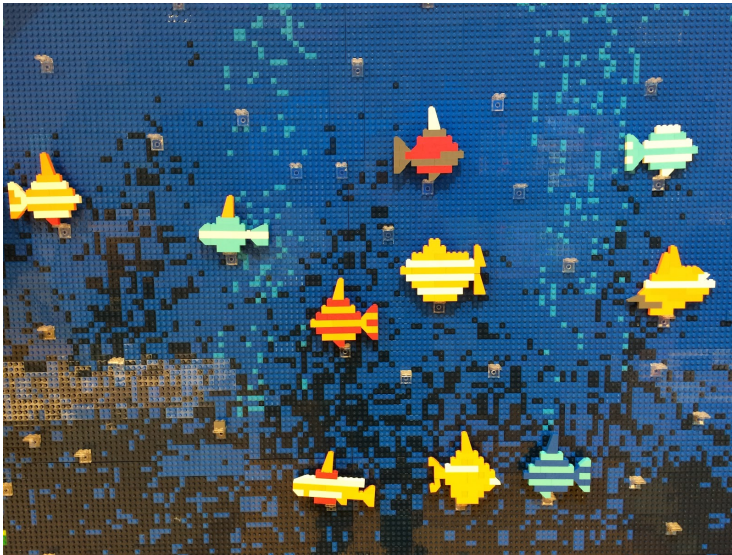
Fish Designer brick mix and instructions

The fish should be within a certain maximum height and length dimension in order for the guest to be able to place it in the scanner on the side of the fish tank.



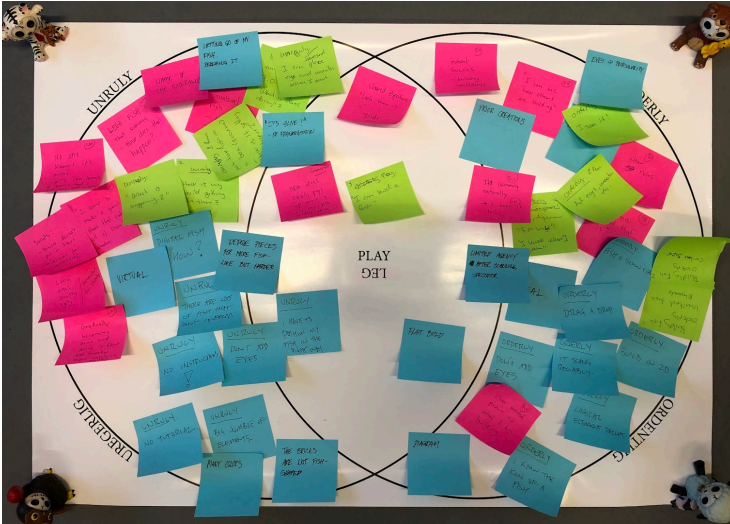
Scanning fish model

After scanning the fish it will appear in a virtual animated form inside the fish tank where it will swim around with all the other fish. After scanning the fish the physical model can be left on display on the ‘pride of creation’ wall next to the fish tank.



Fish Designer ‘pride of creation’ wall

For the discussion on playful tension in relation to Fish Designer we would take turns putting sticky notes onto the playful tension model printed in poster size and placed on the table between us. We decided to map the ‘connect’, ‘explore’ and ‘transform’ phase separately in order to explore the compatibility between the playful tension model and the 9-step Journey Tool.



Mapping of play design elements in Fish Designer

In terms of the ‘connect’ phase we decided that the design affords order by letting players use their (assumed) pre-existing knowledge of fish and fish tanks. As one play designer explains:

MA: “... I think to the orderly there’s also something, where you can say, ‘I know what that is, it’s a well known thing’, it’s not like you have to use a lot of brainpower on decoding an aquarium, so you have seen an aquarium before, you have seen fish swimming in an aquarium before, so there’s a lot of orderly things to it, when you say, for me it’s a known concept.”

The play design establishes playful tension then by juxtaposing the familiar concept of fish with the unfamiliar

possibility of seamlessly turning a physical model into a virtual animated one as a way of having a LEGO model come alive.

MA: "I think to the unruly part, I think that there is something interesting in that Lego fish really can't swim ... that's not my conception of Lego, so there's some kind of wondering, how does this happen?"

...

JE: "My experience when I did it the other day was also that the unruly part is what you said and also that the virtual world is unruly because it's unknown and I don't have access to it. It's something I know from computer games, but it's something behind the screen and usually I can't take anything from my table and put it into the computer, but here you can."

The 'connect' phase of Fish Designer relies on this playful tension between the familiar and the unfamiliar, where prior knowledge helps the player to assume the role of fish designer and begin building fish to populate the fish tank. On the other hand, the design also challenges the guest's concept of a fish tank. There is no water. This fish tank is virtual and even magical. It makes LEGO models come to life, and in the tank the fish have fun in fantastical ways as was also discussed:

MA: "I think we have things that don't fit the concept. We have a disco, an octopus disco, 'How the hell did that happen?'"

MI: "The unruly"

MA: "That doesn't fit the orderly, that's not order, that you have that. What it does is, that it communicates that this is not

a natural aquarium, you are allowed to – it's okay, to build a flag fish. It's not the same rules as out there. We are setting..."

JE: "It's a magical space."

MA: "We are setting the space, you can say. We are setting a play space, where you could be creative in many ways, you can even have a disco inside that aquarium, where there is an octopus. I think the communication in that allows..."

JE: "So it's pointing towards the unruly."

MA: "It's only to say, we are not designing for having the perfect aquarium, where everyone is happy. We are designing a pretty crazy aquarium where things can happen."

JE: "Even though you use your common understanding of an aquarium in the 'connect' phase, then as you learn about it, you learn that this is a fairly unruly aquarium, where you are allowed to explore the boundaries."

As the discussion shows, Fish Designer relies on the playful tension of being both a fish tank and not a fish tank. It invites the players to use their previous knowledge, but it also makes a clear promise that this will be insufficient, that there will be surprises and that they must play along to explore what kind of magical fish tank this might be.

As we move into the 'explore' phase, where the player has opted into the role of fish designer and begins building a fish, our discussion identified several design elements that contribute to playful tension. Concerning the process of building the fish we discussed both the brick mix and building the fish as a 2D model as being interesting in relation to playful tension.

MI: "... the unruly is, it's a big jumble of elements ... but the orderly is actually quite a logical element mix."

JE: "What do you mean logical?"

MI: "There's not that many different colours, there's not that many different shapes."

JE: "Oh yeah, so it's fairly easy to find the one, that you are looking for"

MI: "Because there's actually not as many as it looks when you first arrive."

This discussion shows how the brick mix might at first add to the unruly by being a big colourful jumble of bricks. This unruliness resolves, however, as the player learns that it is actually a brick mix carefully curated to provide bricks precisely for building a 2D model of a fish. Hence the brick mix is fairly uniform compared to the more varied and unruly brick mix in the red zone where I built the mech robot. This means that this brick mix is relatively predictable in terms of what you may find, and therefore it is quite easy to find the bricks that you need.

Another element that adds to the orderly is the diagram on the side of the trough that specifies the maximum dimensions of a fish in order to be able to scan it into the fish tank.

MA: "There are some very clear rules to it, like that it's 2D and it has to have a certain height and so on."

...

JE: "I think the diagram of the fish on the side of the brick mix was a very good thing, that helped me, because it's not just an outline of a fish, it actually has the - you did, when you can see the individual bricks, 'So this is the fin, this type of

brick, then there's two of these little ones and bla bla bla'. It shows a direct example of how a fish can be constructed within these, then I could expand on that or do it a little differently, so I think that helped me with order."

Other than the limited brick mix and the guiding diagram that exemplifies how a fish might be constructed the building process is also made less complicated by being a flat 2D build of a fish making the construction simpler and quicker to create.

The unruliness lies initially in the magical transition from physical model to a virtual character. This transition is quite interesting in terms of playful tension. Besides the move from the orderly, tangible model to a fantastical virtual character there is also a challenge in letting go of your creation. There is a sudden loss of agency concerning the fish, where the player is no longer in control of it but must watch it swim away on its own.

As the unruly element in the play design revolves largely around the transition from physical model to virtual character players begin to search for new unruliness as the novelty of the transition begins to fade. In the building process this shows when players begin exploring the limits of the design by creating things other than fish to scan into the fish tank.

MA: "A fish, everyone knows what a fish is or probably has some kind of picture of what that is. That also means that you can play around with the rules – we are playing around with nature here – so you could also say that there's something that is unnatural to a fish, so we see people building a flag fish, a Danish flag fish or a Swedish flag fish, then it becomes

unruly. It doesn't really fit the concept of a fish. We are playing with our own rules here, because we can do it. I think there's something to the fact that you're building up that confidence very early in the experience that, 'Hm, I'm good at this. I just built that and look how great it looks swimming around in there'. You gradually also become more and more confident, but at the same time you are also building up confidence in becoming more unruly and breaking the rules."

...

SØ: "I totally agree with everything, especially the circumstances about having some orderliness that prepares you for something unruly, and prepares you for play."

Confidence is being built as players resolve the unknown or the mystery of the play design. As they begin to understand the structure of the play design things become orderly and predictable. In order to maintain the playful tension, players use their new experience and knowledge of the play design to challenge its structure in creative ways to maintain an unruly uncertainty of what will happen. One of the play designers explains how this type of creative unruliness can be quite contagious inspiring other players to join in on a newfound playing with the design in seemingly unintended ways.

MA: "... as soon as you can see and understand the orderly, you might also quickly understand how to bring in the unruliness."

JE: "Yeah, and it can be attractive to be allowed to be unruly, try to mess with it."

MA: "Yeah exactly. Now I'm nice, the quote about the shark, but it could be..."

JE: "It could be other stuff."

MA: "It could be more inappropriate objects you put into the aquarium."

...

SØ: "If you are immersed and then either inspired or challenged by what other people are doing."

MA: "Or infected by others' unruliness. I think the flag example is one of them. There's something when someone puts a flag up there, there's flags everywhere."

...

SØ: "The same with the penis"

Playing with the design in ways that go beyond or even against the immediate intent of the design brings a new unruliness to the play experience in the form of a playful rebellion against the structure of the play design. Especially in a social setting such as LEGO House where you play alongside strangers. As the discussion suggests, this type of play relies on a playful tension that has to do with the social setting of play, a tension between orderly conformity and unruly outrageousness. It can be a collaborative unruliness where players inspire each other to partake in challenging the implicit structure of the play design such as filling the fish tank with all kinds of fish flags or it can be the unruliness of the trickster who creates the penis fish, scans it and quickly steps away to become an unknown perpetrator of social conduct excited to see what reactions his or her mischiefs will spawn from other players whose innocent fish now have a new friend or the LEGO House staff. What might they say?

MA: "Nobody is recording it. My name is not on it. I will just quickly scan and run. In that sense you..."

MI: "There's a little bit of a fart cushion in that sense. In the same way people scan their hand and run away. I have broken the system!"

MA: "Exactly."

The play design arguably affords this type of unruly play in the form of mischief by clearly advocating for one type of play experience but allowing players to take the experience in more unruly directions as they become more familiar with the design.

In this exercise we never got to relate the playful tension model to the 'transform' phase of the 9-step Journey Tool, since the discussion drifted into comparing the playful tension of the Fish Designer to other play experiences at LEGO House. I did not want to stop this discussion in order to focus on the 'transform' phase of Fish Designer, since I found it more interesting how the team was already adopting the playful tension model into their own discussions of the differences between the play experiences at LEGO House. As this discussion turned out to be quite esoteric it is difficult to present here without giving a lengthy description of several of the other play experiences for context. For the purpose of keeping the focus on how the experiment informed the development of the concept of playful tension I will only note that I had not anticipated how quickly the design team would be able to use the playful tension model for discussing their work in general.

The Talkback

At a surface level, the exercise of applying the playful tension model to Fish Designer with the LEGO House design team showed that the playful tension model was useful for framing a discussion focussed on individual design elements and decisions that would contribute to establishing and maintaining playful tension. Furthermore the exercise demonstrated that despite being developed to contrast the play as progress rhetoric the playful tension model could be used in combination with the 9-step Journey Tool in meaningful ways.

Aside from immediate affirmation of the playful tension model as a tool for reflecting on design elements and decisions, the findings from the exercise also provides talkback regarding the practice of designing for playful tension. As the discussion of Fish Designer has highlighted, maintaining playful tension happens in the complex interaction between the player and the designed plaything. With Fish Designer most of the unruly elements, such as the unknown magic of transforming a physical model into a virtual character as well as the brick mix, are resolved rather quickly as the player builds familiarity with the play design. Notably the play design does not introduce new unruly elements to maintain playful tension, no added difficulty as the play experience progresses, no additional functionality allowing players to create new types of fish with different behaviours etc. Rather, Fish Designer relies on the players for introducing new unruliness as their competence and confidence grow during the play experience. It does so by allowing players to explore and push the boundaries of its

orderly structure. Whereas the play experience initially seems quite directed, players begin moving beyond the most apparent use of the play design exploring and appropriating the design seeking out new unruly uses thereof. In this way, Fish Designer maintains playful tension by providing a directed experience but allowing for the players to set their own goals once they have exhausted the intended ones of their unruliness.

In terms of playful tension as an expression of play design, the discussion of Fish Designer suggests that the goal for the design of playthings is not necessarily to strive for some perfect balance between the orderly and the unruly. The plaything is not the final destination. It is an instrument that is meant to empower players to achieve playful tension. As such, even design playthings that are imbalanced in terms of playful tension can be great instruments of play, as long as they remain open for the players to supply whatever order or unruliness they are missing in order to establish and maintain playful tension.

A classic example of a designed plaything that is inherently imbalanced as to playful tension is the Rubik's Cube. Like Fish Designer, it relies on the players to achieve playful tension, but unlike Fish Designer it lacks the orderly rather than the unruly (at least initially). Playing with the Rubik's Cube is arguably a game or puzzle about restoring order. Once the colours have been thoroughly shuffled into a complex mess the player supposedly tries to sort the colours using the turning mechanics of the cube so that each side of the cube will consist of nine squares of the same colour. The immediate problem that new players will encounter is that the cognitive challenge of solving this puzzle is painstakingly difficult. It is

too unruly by being incomprehensible. The play design is imbalanced because most players will not be able to gradually build competence and solve the puzzle by playing with the cube unlocking its secrets by exploring it. In order to achieve playful tension with the Rubik's Cube I would argue that you need a key, a method that will let you engage with its unruliness, and that you learn this from other players. Once somebody lets you in on the secret and teaches you a method of solving the cube you have the orderly element that the play experience is otherwise missing. You memorize and practice the appropriate twists and turns to respond to the changing patterns of the cube to counter its complex unruliness. Once the player is competent enough with a method for solving the cube, the design works well to maintain the playful tension by shuffling the cube into new unruly configurations for the player to solve. At some point, however, the player will be so competent at the method for solving the cube that no matter if the starting point is new the cube will easily be resolved. At this point the play experience now begins to lack unruliness. As such, players may challenge themselves to see how fast they can solve the cube, making the speed of their pattern recognition and their fine motor skills for configuring the cube part of the challenge. It also means that the goal is not only to solve the puzzle but to find the fastest way from start to finish, which means that players have to learn additional methods of solving the cube in order to apply whichever one is most optimal in a given configuration of the cube. Eventually looking for this type of additional unruliness has created the speed cubing community, where players compete against one another to set the fastest time for solving the Rubik's Cube.

The discussion of Fish Designer proposes that designed playthings are on one hand instruments for helping players achieve playful tension but on the other hand the relative success of imbalanced play designs reminds us that players will also help our play design to succeed as long as we make it possible by inviting them to appropriate the design adding their own order and unruliness.

Designing for Playful Tension

After doing the playful tension workshops with the LEGO House design team it was decided that the playful tension model had shown enough promise as a design tool that it should be tested in the context of a bigger project that the design team was about to undertake. I was happy about this, not only because the team found the playful tension model useful enough to be included in their design process but also because it would let me explore the generative quality of the model in a project with real stakes, budget, deadlines and expectations.

Based on the results from our playful tension workshops we decided that the playful tension model should be used in the concept development phase for exploring and improving on the ideas that would be selected for further development. This would include using the playful tension model as a tool for reflecting on results from early play testing of prototypes.

After four concepts for potential new play experiences had been selected for further development we used the playful tension model to explore how best to realize these concepts. As with the examples of Pool and Fish Designer we would conduct team discussions about how different elements would afford order and unruliness. Based on these discussions I would write a summary for the team including questions and suggestions to consider going into the next iteration of the design.

notes containing the design elements that they would envision as part of the design and reflect on how this element would contribute to the playful tension of the play experience. As the concept is still fluid, open for suggestions and in need of being defined to prepare it for testing the process of mapping the would-be elements of the design helped the team to narrow down the concept together in order to approach a shared understanding of the concept.

Following our mapping of the playful tension I wrote a summary paper for the LEGO House design team where I described the concept with the working title Area 51½ as follows:

“Area 51½ is a UFO crash site where different aliens are walking around interacting with one another. They are talking gibberish but can display basic emotions. Guests can build things for the aliens that will affect their behaviour and mood.”

Area 51½ was to be created as a physical crash site with a big LEGO UFO in the middle and robotic LEGO aliens moving around the crash site to learn about Earth. As the aliens would not speak any human language, players would then use communication stations placed on the edge of the crash site to send things to the aliens by building and scanning little LEGO models. The robots should then react to these things in meaningful and amusing ways.

One of the elements that was empathised in our discussion of Area 51½ in terms of playful tension was the alien theme.

MA: "I have the same as before, it's aliens, it's a fantasy world, everything can happen, that's unruly."

SØ: "Wow."

MA: "Then there's another one, do the impossible, because there's something impossible in communicating with aliens, it's like, 'Okay, that just can't happen', so there's some unruliness there. And RI you had 'UFO' somewhere as well."

RI: "Yeah."

MA: "That's just crazy, so that opens for the crazy world."

...

JE: "But I think that there's actually some quite great ones here, because I think you're right, just with the aliens UFO theme, that creates this playful tension all on its own, because on one hand, we all know some cultural references in terms of UFOs and aliens, even kids, they have some kind of relation to it, but it's still very open, a UFO. It could be anything really, there could be anything inside – the aliens. What would these aliens be? So there is this nice tension in the theme of it all already."

As the discussion shows, we all saw in the alien theme a good potential for providing both order and unruliness to the play experience. Regarding the former, we thought that the players would have existing knowledge that would allow them to interpret the scene and quickly understand that an UFO had crash landed on Earth and that the robots were the aliens that were running around the crash site confused about their new environment and in need of help from the player. We would assume that it would make sense to the players that they should try to communicate with the aliens but that they would

not be able to speak to them but only to show them LEGO models. As such, the theme would perform an orderly function by providing a direction and a purpose for the play experience. It could also, however, support the unruly as it ‘opens for the crazy world’, meaning that there can be a great deal of uncertainty as to what can happen in this particular world of fantasy. In this manner the theme also provides unruliness in the form of uncertainty and surprise, as we could have the aliens react and behave in strange and unpredictable ways.

The unruliness of the alien’s behaviour was discussed specifically as being important for building playful tension.

SØ: “I don’t have a lot for this one, but I did write and I’m serious, and I’m serious, it’s not like last time. Brackets: Robo Lab. And I wrote that the robots are acting differently and independently.”

RI: “And I can... oh no, you can’t control them.”

...

ST: “They are kind of reacting, that I don’t know what, why and how they’re doing there...”

...

JE: “I think it’s a very good point that – okay, you have all these guys running around doing something on their own, so you get – I think you get that mystery like, “What are they doing exactly? What are they doing?” And also the additional question, “What is making them do that?” You kinda wanna figure them out. “Why are they doing this?” Or, “Oh, look, those two they’re angry at each other,” or whatever. You try to figure out this world, that there must be some logic behind it, right?”

RI: “Yeah.”

This is an example of a debate within the team whether Area 51½ would be too similar to an existing play experience called Robo Lab. In Robo Lab players program robot cars to perform a little mission. The argument was whether Area 51½ would be too similar due to the aliens also being robots moving around the play area. Through the lens of the playful tension model, however, they are not similar at all. As the discussion shows, this has to do with agency. In Robo Lab the player has direct control over the robot and it will do nothing outside of the inputs from the player instructing it to move forward, turn left etc. The aliens in Area 51½, on the other hand, would be autonomous characters with a behaviour of their own that the player can only influence indirectly by building things for the aliens causing a reaction. As a result, players aren't in control of the aliens, rather they are interacting with them in a way that leaves a lot of uncertainty as to what might happen. As such, the concept resembles the ‘unruly-by-proxy’ agency that was discussed previously in the pool exercise.

My summary for the LEGO House design team describes this element as being central to the concept:

“The unruliness of Area 51½ is fueled by the autonomous life of the aliens that have their own personalities. They form a complex system of interacting characters that guests can affect and play with through building and transmitting the builds to the individual alien characters. This makes for a playful tension where guests cannot directly control the aliens

but they can use the builds to change the aliens' moods and behaviour to have a big impact on life in Area 51½."

Pursuing the unruly potential of the indirect type of agency that players would have in Area 51½ a concrete suggestion was to enable complex emergent behaviour by using chain reactions to enable players to have a big but unpredictable impact on the aliens. As such, my summary would suggest the following:

"...For instance building fire might cause an alien to become scared and run around saying: 'Hot Hot Hot Aw Aw' affecting the moods and behaviour of other aliens that it encounters. This could allow guests to start chain reactions of emotions and behaviour, where they might know or have an idea of the effect on the alien that they are transmitting their build to, but uncertainty remains in terms of how it will affect the alien community as a whole."

The intention behind the suggestion of enabling these types of chain reactions was to make sure that players would not feel like spectators but that they would have a big impact on the life of the aliens while maintaining a high degree of uncertainty with many happy accidents and surprising results.

The Talkback

Bringing the playful tension model into the design process as a tool for concept development provided valuable insights. It demonstrated that the concept of playful tension is not only useful for analysing existing playthings (corresponding to

Schön's concept of 'reflection-on-action') but also for the generative purpose of developing new playthings ('reflection-in-action'). As with the mapping of existing playthings, mapping a concept for a new plaything revealed the same potential for keeping the focus on specific design elements and promoted consideration and articulation of the design intentions behind these elements. This is illustrated by the example of the concept for Area 51½, but the use of the playful tension model in the development of the other three concepts showed similar results.

What was particularly interesting with the example of Area 51½ was the question of its similarity to other play experiences. On the surface, some designers thought it resembled Robo Lab too much because both had to do with robots on a playing field. However, through the lens of the playful tension model they appeared to be very different given the unruliness of the limited and indirect agency of the players in case of Area 51½. It was remarkable how this design was, in fact, more similar to the game of pool even though these two play experiences look nothing alike in terms of their physical appearance. This exemplifies that certain dynamics of playful tension might be shared across play experiences that we would not think of as being similar at all. It made me consider if there might be archetypal ways in which designed playthings afford playful tension that play designers can employ independent of the type of plaything they are creating.

The explicit mapping of the concept, where we would put sticky notes with design elements onto a poster of the playful tension model was very useful in arriving at deeper insights

and discussions about the concepts. I would notice, however, that the design team would also use the concept of playful tension in more ad hoc fashion when they were working on the concepts. Specifically the unruly was being used frequently, as the team would often question whether some aspect of a concept was unruly enough. I would take this as an indication that the concept of playful tension was useful in 'reflection-in-action' even when it would concern quick in-the-moment design decisions.

The more explicit mapping of the concept was needed, nonetheless, as it allowed the design team to articulate the intentions behind specific design elements which would give us concrete expectations to evaluate when moving between concept development and play testing.

Going Viral

Right as we began play testing the prototypes of the four concepts a different type of unruly chain reaction than the ones we had been working on began its emergent unpredictable journey from China to Denmark in what would become known as the Covid pandemic. As both Design School Kolding and LEGO House were forced to shut down together with the rest of society, the conditions for my PhD project inadvertently changed. After a month of waiting and hoping that things would soon return to normal everyone realized that this would not happen for a long time. Given the uncertainty of the situation I decided after consulting with my supervisor and LEGO House that I would have to finish the project on the basis of the fieldwork that I had already completed rather than relying on us being able to finish the current design process within the timeframe of my project. On one hand it was a difficult decision, because I had been so happy to have had the opportunity to explore how the playful tension model would function as a tool in an actual play design project of a bigger scale. On the other hand, it turned out not to be a decision at all but simply an unfortunate circumstance.

Rather than feeling too sorry for myself I would recall that many adventures have that darkest-before-dawn moment, where we begin to doubt that the hero will be able to succeed. Like in *Return of the Jedi* when the Emperor reveals to Luke that the Death Star is in fact fully operational and that it is all a trap for the Alliance starfleet. Luke can do nothing but watch the losing battle in despair as all his plans crumble. But what would you know? All of a sudden it turns out that Darth

Vader is not that bad after all, and when a bunch of teddy bears manage to destroy the shield generator everything works out just fine.

Across Space and Time

After the untimely end to my fieldwork I was looking for a way to make the best of the new situation. Up until this point, my fieldwork had been contributing to the development of the concept of playful tension by analysing significant situations, where the application of the playful tension model at LEGO House would reveal how playful tension might appear in practice. I have described how some situations from the fieldwork would become particularly vulnerable in building an understanding of the concept of playful tension. As such, I would examine these situations carefully to have the fieldwork talk back to the concept of playful tension. By analysing concrete situations of applying the concept of playful tension in order to reflect on design decisions in relation to playthings I was able to develop a more nuanced understanding of the concept of playful tension and explore the extent of its usefulness in the design process. This has helped to identify several different ways in which designed playthings rely on qualities that afford playful tension by introducing certain types of order and unruliness to the play experience. I would consider this approach to be a vertical analysis, as it analyses a single situation from the fieldwork in detail focussing on producing as much valuable insight from the given situation as possible. It is common practice within qualitative research to move between vertical analysis of single sources of empirical material and horizontal analysis that compares different sources of empirical material. In their book *A Journey Through Qualitative Research From Design to Reporting* Gaudet & Robert argue that vertical analysis approaches the empirical material by considering each source

to be its own situated world of meanings, while the horizontal analysis draws comparison between sources (Gaudet & Robert, 2018 p.140).

On this basis I decided to perform a horizontal analysis of the empirical material that had been produced during my fieldwork up until its abrupt ending. Whereas the vertical analysis had been very useful in developing an understanding of the concept of playful tension as situated in the play design practice at LEGO House it had some limitations that I would attempt to counter by combining it with the horizontal analysis. The fieldwork was quite extensive, and even if certain situations appeared to have more gravity in terms of informing the development of the concept of playful tension it was entirely possible that looking across the entire empirical material would reveal something about the concept of playful tension that would have been invisible to my situated observations. So I decided to code the entire empirical material that pertained to the practice of play design in particular in order to dissolve individual concepts from their situated context and relate them to one another. Figure 18 illustrates this approach to the analysis of combining deep vertical analysis of single situations with a horizontal coding that looks across the material.

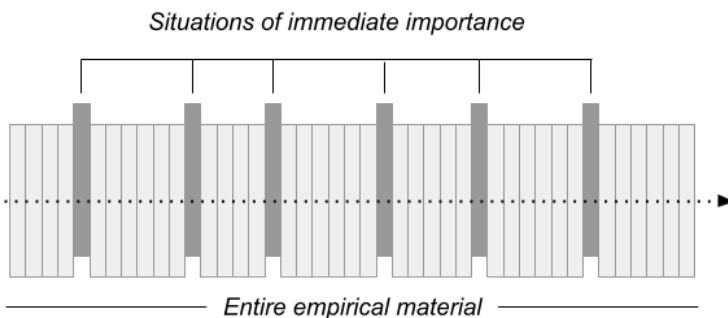


Figure 18. Vertical and horizontal analysis

In the model the dark gray vertical slices represent the situations of apparent critical importance that lifted themselves from the totality of the fieldwork immediately informing the development of the concept of playful tension. These are the situations that I have already described previously e.g. building the mech robot or the pool playing exercise. The dotted line represents the horizontal analysis looking across the empirical material as I will describe in the following.

In performing the horizontal analysis I was inspired by the methods of analysis developed within the social sciences associated with grounded theory. It is important to note, however, that I was not doing grounded theory. For the same reason I will not engage in a discussion of grounded theory but only remark that it is a purely inductive approach to theory development. Ideally it relies on performing an unbiased analysis of empirical data that begins in the actuality of the empirical material and proceeds towards abstracted general theory (Gaudet & Robert, 2018 p.49). My project was

conducted in an abductive manner moving iteratively between the theoretical and the empirical. As such, the theory was very much part of producing the empirical material and vice versa. When I say that I was inspired by the method of analysis it means that I appropriated the method of doing open coding. Flick describes this method of interpretation as follows:

“Open coding aims at expressing data and phenomena in the form of concepts. For this purpose, data are first disentangled (“segmented”). Units of meaning classify expressions (single words, short sequences of words) in order to attach annotations and concepts (“codes”) to them” (Flick, 2006 p.297).

I found this approach suitable for my efforts to examine what the play design practice at LEGO House would reveal about the concept of playful tension when looking across the empirical material as a cohesive desituated expression of the practice in general. I was particularly interested to learn whether something in between the situations of the fieldwork could inform my understanding of the concept of playful tension by allowing me to see beyond the immediate experience of the vertical slice. Again, I want to stress that I do not pretend to have followed the methods of doing grounded theory rigorously. In a pragmatic fashion I would appropriate the combination of vertical and horizontal analysis at a macro level to have both the individual critical situation and the relations across the situation of the fieldwork inform my understanding of the concept of playful tension. I would borrow from the technique of doing ‘open coding’ in an attempt to deconstruct the empirical material in order to

reassemble it in direct relation to the concept of playful tension as another way of producing talkback from the field of practice. Incidentally this strategy of analysis is quite similar to taking a big LEGO model apart to retrieve the building blocks or bricks in this case to build something new.

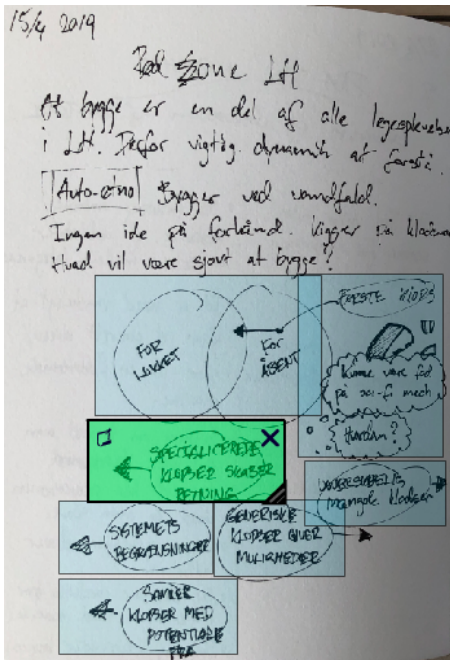
Taking it Apart

In order to perform the horizontal analysis I would code all the empirical material that contained information about the play designs and the play design practice at LEGO House. This would be all the transcripts from the playful tension workshop exercises, photos of the playful tension mappings, the internal documentation of all LEGO House play experiences and my own field notes from analysing existing play designs at LEGO House. I used the program named Dedoose to assign codes to this material by marking statements and descriptions of the LEGO House play designs and assigning conceptual codes. Inspired by Flick's method of 'open coding' (Flick, 2006 p.297) I would create codes directly from the statements in my empirical material in order to keep in close dialog with the material allowing it to talk back to the concept of playful tension.

For example, I would assign the codes: *Being Joyful*, *Challenge*, *Competing* and *Problem Solving* to the following statement from the transcript of the discussion of the pool exercise:

"I think when it's really joyful I think, when it becomes challenging, when your ball is hiding behind your opponent's

ball, you really have to figure out, how do I make a good shot out of this.”

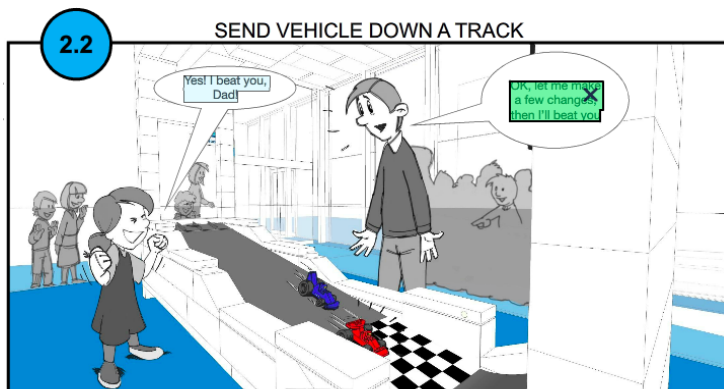


Using Dedoose to code field notes

Similarly, I would code field notes by marking elements and assigning them codes. In the above photo the selection marked green that proposes that specialized bricks create direction were assigned with the codes; *Providing Direction*, *Providing Inspiration* and *Framing*.

The same was the case for the internal documentation of the LEGO House play experiences. The picture below shows a

scenario from the documentation of the play experience named *Test Driver*.



Using Dedoose to code internal design documentation

The scenario shows a daughter and her dad who are racing each other using the cars they have built. The girl wins the race and the dad says:

“OK, let me make a few changes, then I’ll beat you.”

This statement was assigned the codes; *Socially Interactive*, *Competing*, *Failing*, *Problem Solving* and *Adjusting*.

The coding of the entire selected empirical material produced 202 unique codes being assigned to 641 excerpts from the material. In order for this collection of codes to be able to inform the understanding of the concept of playful tension I would follow Flick’s argument that

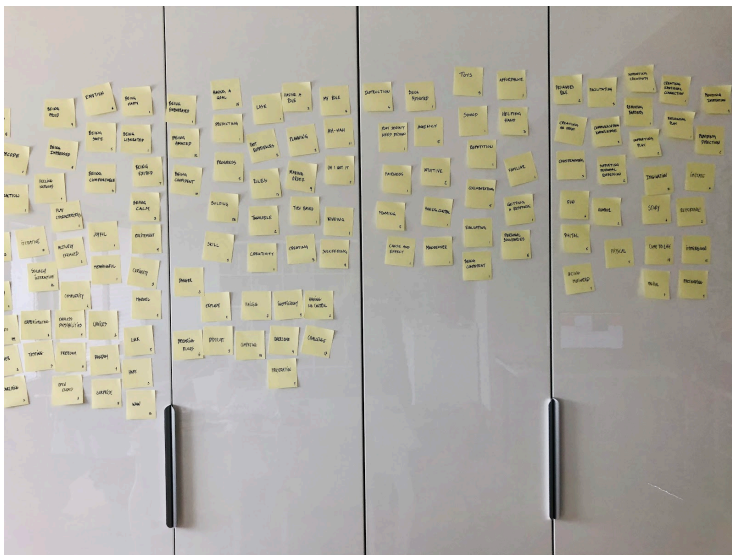
“The next step in the procedure is to categorize these codes by grouping them around phenomena discovered in the data, which are particularly relevant to the research question” (Flick, 2006 p.299).

Therefore I would proceed by arranging the codes into thematic groupings in relation to the concept of playful tension. At this point my method of analysis would inevitably deviate from that of grounded theory, because I would not be grouping my codes from a principle of having theory emerge from doing so. I had already formulated the basics of the concept of playful tension and as such I was looking specifically to learn what the codes would reveal about the nature of playful tension. In my position, having worked intensively on the development of the concept of playful tension prior to the horizontal analysis, it was practically impossible, nor did it seem very interesting, to try to interpret the collection of codes outside of the concept of playful tension. Rather I would specifically perform the thematic grouping of the codes by asking how they might relate to the concept of playful tension in order to identify new details as to how the play design practice at LEGO House exemplifies the concept of playful tension.

Putting it Together

The software had been very useful in marking the relatively large amount of empirical material and assigning the codes, but I decided to move the project out of the computer once I had the codes. The reason was that I considered the project a design process which was why I wanted to follow the

common design practice of keeping the analysis tangible and visual. As such, I decided to transfer all the codes to individual sticky notes in order to have the horizontal analysis be permanently visible and manipulable. In addition, it would keep me in dialog with the material from day to day inviting me to reconsider and reorder the codes over time. These and other qualities of using sticky notes in the design process have been well documented (see e.g. Ball, Christensen & Halskov, 2021), but also I found the immediacy of the physical manipulation better suited for what would be an ongoing process of ordering and reordering the codes. Hence, since the pandemic forced me to carry out the remaining part of the project from home, the empirical material started to populate my living room walls.



Codes transferred to sticky notes

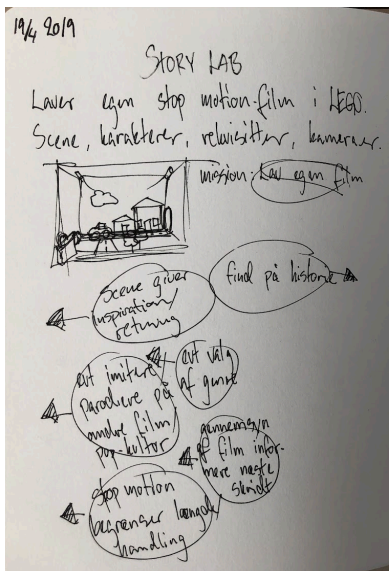
As mentioned previously, I would organize the codes into themes related to the concept of playful tension. This was done in an effort to identify different types of playful tension prevalent in the play design practice at LEGO House. By grouping the codes the empirical material would talk back to the concept of playful tension by pointing to the concept as operating in concert on several different levels. As such, it develops the understanding of playful tension by proposing certain types of playful tensions that exceed a given situation and hold general relevance across the play design practice. The grouping of the codes formed ten groups. While they all relate to the concept of playful tension, some appear more closely related to the concept. In the following I will present all ten groups and discuss how they advanced my understanding of the concept of playful tension.



Identifying themes

the freedom to build anything and the strong affordances of certain bricks are central to the experience as it provides direction and inspiration that help the player to formulate a goal and find purpose in the open-endedness of seemingly unlimited possibility.

The LEGO House play experience named Story Lab works similarly in terms of the tension of possibility. In Story Lab players can use LEGO bricks and mini figures to create their own stop motion movie. They are free to create any type of movie they want but the booth where they make the movie contains a preexisting LEGO scenery that will be the environment where the movie will take place. This creates a tension between the orderly function of the scenery and the unruliness of having the freedom to tell any story.



Story Lab field notes

My field notes emphasize the scaffolding function of the preexisting scenery in relation to the creative process of making the stop motion movie. This observation would come up later in the team discussion during the playful tension workshops.

JE: "In the Story Lab I'm thinking that part of it would make it orderly is that you have created a scene."

MI: "Exactly."

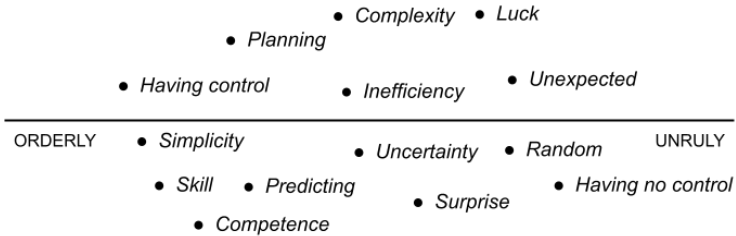
JE: "... to direct the imagination and if there is a little harbour, then we can start thinking: 'They could be fishing or taking the boat sailing' and these kinds of things, so it creates that order of coming up with a story."

The tension of possibility suggests that in play the concept of agency should always be seen as an opportunity in relation to necessity. Unlimited control or unlimited freedom is arguably fairly uninteresting and carries the risk of having play dissolve into meaninglessness. Rather the play design practice at LEGO House illustrates that the design can provide both structure and direction while leaving room for freedom and personal expression. In the case of Fish Designer it even shows that the design may encourage the player to break or bend the structure in search for new unruly possibilities for creative expression.

Tension of Uncertainty

This grouping is a collection of codes that points to play as a tension of uncertainty, where striving for mastery and prediction in complex situations is central to the experience.

TENSION OF UNCERTAINTY



In the unruly end some play designs use randomness to create unexpected and surprising situations. Some designs create structures that provide some orderliness to allow players to make some informed predictions about outcomes while other designs leave players to rely on luck alone. This was discussed previously as a tension between Agon and Alea in relation to the work of Caillois (Caillois, 1961).

Rather than pure randomness, the play design practice at LEGO House tends to rely on a high degree of complexity in order to provide uncertainty and to challenge the player's ability to predict exactly what will happen. This has also been exemplified previously in the discussion of the game of pool, where the complexity of the physical interactions of the balls and the inefficient means of having to use the cue to make the shots makes for unpredictable gameplay that affords unexpected situations. This type of tension is strongly related to the tension of novelty that will be presented below as an increasing familiarity with something will arguably make it

more predictable and increase player skill and competence in that area.

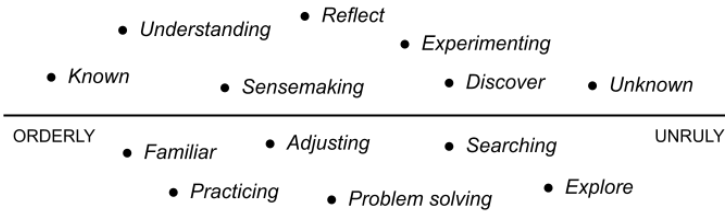
The play design practice at LEGO House also uses complexity to create uncertainty and surprise. In the example of Brick Builder the massive brick mix is so complex in terms of the number and the variety of bricks that the players never know what they may find when they dig through the pile.

The tension of uncertainty was also central to the development of the concept of Area 51½. Here a core design challenge was to create a tension where the aliens would display complex and surprising reactions to the models built by the players while maintaining some agency and ability for the players to plan and make some predictions even if the results would end up being surprising. As such, the tension of uncertainty describes the attempt at agency and control in complex or slightly random systems or environments. It suggests that play designers may afford playful tension by creating playthings that challenge the player's ability to control and predict situations or outcomes without making it impossible, allowing for both competence and surprise.

Tension of Novelty

This grouping is a collection of codes that points to play as a process of encountering the unknown and resolving it into familiarity through exploration and experimentation.

TENSION OF NOVELTY



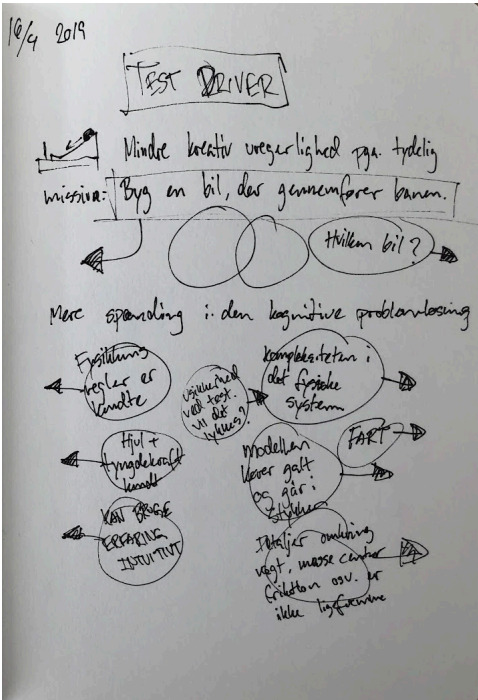
This type of tension suggests that play revolves around the player encountering something new and unknown and trying to make sense of it by exploring it to resolve it into familiarity. This movement from unknown towards known is prevalent in the play design practice at LEGO House as it relates directly to their concept of learning through play. The tension of novelty proposes a continuous movement from the unruly towards the orderly, and it makes two specific requests of the play design. Firstly, that it must be able to provide or support new novelty to engage with in order to maintain tension as things resolve, and secondly, that resolving the unknown should not be a trivial matter.

In terms of maintaining a tension of novelty as it is constantly being resolved by the player, the vertical analysis of Fish Designer exemplifies how the play design practice at LEGO House works to maintain this type of tension. As described previously, once the player builds and scans the first fish into the virtual fish tank the process is arguably less mysterious. The player has acquired some knowledge about the system but, as discussed in the vertical analysis of Fish Designer, it invites the player to further examine the boundaries of the

system by virtue of thinking: “If this is the case, what would then happen if I do X?” In this sense the design is intended for the answer to one question or leads to the formulation of new ones providing new opportunities for the players to keep exploring.

Regarding the player having to exert an effort in order to resolve the unknown, the argument is that it is not a play experience if you can bypass the explore phase of playing around. The unruliness of the unknown should not reveal itself instantly. The player must go through the process of exploring, experimenting, testing, adjusting and reflecting in order to resolve the unknown of the play experience. At LEGO House the play design practice will, in general, explicitly strive to achieve this. This is exemplified by the play experience named Test Driver.

In Test Driver the players build cars and race them down different tracks. The tracks are sloped so that gravity propels the car down the tracks. On one track the car is placed at the top of the sloped track, and the goal is for the car to race down the track and complete a jump through a hoop. Whether this is possible depends on the construction of the car. In my field notes from having tried this play experience I would emphasize that, among other qualities, the design creates a tension between the known and the unknown.



Test Driver field notes

On one hand the player may rely on intuition and tacit knowledge about gravity, friction and mass. On the other hand the play design is intended for this knowledge to be somewhat insufficient. As such, it is quite unlikely that the car will be able to complete the track on the first try. It might be too slow, unable to travel in a straight line or will tend to spin around as it picks up speed etc. So the player must reflect on the car's performance and adjust the build accordingly. It invites the player to explore different parameters of the car's design by

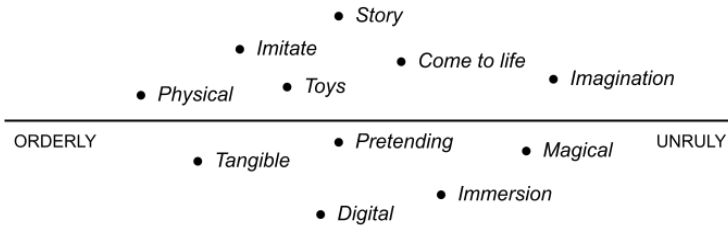
trying out different iterations of the car. What if it was longer? What if the wheels were larger? What if it was heavier? Even in the relatively simple scenario of rolling a car down the track, understanding how the different aspects of the car's design will affect its behaviour is not exactly straightforward, and this encourages experimentation to complete the challenge of the track.

The tension of novelty suggests that play designers may seek to design for playful tension by presenting the player with novel situations and information in order to afford curiosity, wonder and mystery. Resolving the unknown into the known should not be a trivial matter for the player. Rather it should require playful experimentation and iteration to make sense of things. As the player resolves the mysteries the design should reintroduce novelty to help maintain playful tension and keep the curiosity alive.

Tension of Abstraction

This grouping is a collection of codes that points to play as a place where reality is entangled with the virtual and the fictional as players create or engage with both physical objects and imaginative worlds.

TENSION OF ABSTRACTION



This is a tension between the real and the phantastical and, by extension, between the material and immaterial aspects of designed playthings. It illustrates a play design practice that is designed to let these opposites meet, a place where the orderliness of the physical toy in terms of its tangible trustworthiness, accountability and certainty becomes unruly, as players are invited to pretend that the toy has additional imaginary properties. It also suggests that the same holds true the other way around, that even quite unruly pretend play, where players are engaged in their own imaginary narrative absolved from the rules of reality, may, in fact, benefit from physical playthings such as props or costumes to make the imaginary come to life and be all the more immersing, in effect bringing the phantastical into reality, making it come true to some extent.

A play design practice that effectuates this type of tension corresponds directly to Fink's description of playthings as being reliant on the double nature of the real and the magical (Fink, 1957) as well as Bateson's description of play to similar effect (Bateson, 1955/1972 p.188), both of which have been discussed previously.

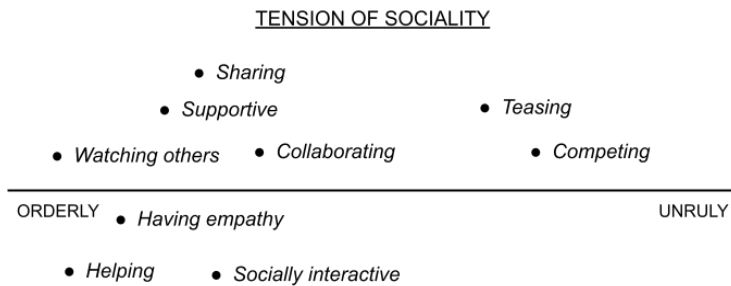
Empirically, this type of tension is quite prevalent in the play design practice at LEGO House. Most play experiences make use of it in one way or another, as the design team explicitly strives for the blending of the physical LEGO bricks with digital fantasy.

This is perfectly exemplified by Fish Designer, which was analysed in detail in the vertical analysis. Here the players create a physical model of a fish that is scanned into a digital fish tank to become a virtual character magically bringing it to life in an environment that exceeds reality in fantastical ways. It is both a simple physical model resembling a fish and a ticket to a digital place of fantasy that operates by its own rules. Whereas Fish Designer brings the physical reality into the digital world of fantasy, other play experiences work in an opposite way. In City Architect players create buildings and place them on a table to form a city. A digital layer fantasy is projected onto the table to bring life to the city that will grow and react according to the types of physical buildings placed by the players. Similarly the robots in Robo Lab are on a mission where they interact with a digital arctic world projected onto the play area. The game of pool that was also discussed in the vertical analysis is, on the other hand, an example of a play design that does not rely on this particular type of tension. It is completely orderly in this respect, as the elements are not designed to exceed their physical reality. The balls are nothing more than balls. The table is nothing more than a table with pockets along the sides. It relies, as described previously, on different types of tension. Tension of abstraction suggests that play designers may also design for playful tension by designing physical playthings that invite players to extend the meaning of these playthings

into the realm of fantasy or that anchors the fantastical in reality.

Tension of Sociality

This grouping is a collection of codes that points to playing with others as a tension between social conformity and nonconformity.



Tension of sociality is closely related both to tension of possibility and to tension of uncertainty which will be presented shortly. Concerning the latter, the presence of other players is in itself a source of uncertainty as they may shape the play experience in more or less predictable ways. This relates then also to the tension of possibility as the behaviour of other players may limit or expand opportunity. The tension of sociality differentiates this influence of others as a tension between conformity, where others are supportive and the outrageous behaviour becomes more challenging and even obstructive of social norms.

On the orderly side of this tension the influence of others does not stand in the way of the goals of the player but is supportive and inspiring. This is common with the LEGO

House experiences, which are all designed so that many guests who are strangers to one another may play in parallel alongside each other. As such, they can see what the other person is doing, which may encourage some level of imitation. Besides the real-time inspiration from watching other players, many of the LEGO House play experiences are designed to include an exhibition area referred to by the design team as *pride of creation*, where players may display their builds. This allows new players to observe creations from previous players, which may also inspire the direction of play.

As many guests come to LEGO House as a family, many play experiences are designed with collaboration in mind encouraging families to play together. Collaboration also relates to the orderly in the sense that considerable agreement between players as to their goals is required. It asks that the player is open towards new ideas and suggestions and is willing to seek agreement and compromise.

As evident by the sparsity of the codes on the unruly side of this tension, the design practice at LEGO House is less concerned with affording more obstructive or outrageous behaviour. A minor exception is the competitive element of Test Driver, where one track is for racing other players to see who can build the fastest car. In this case we can say that the players become opponents with conflicting goals if all are looking to build the fastest car. Even in this case, however, the design works to limit the unruliness of competition by making the race very informal. Players can participate in the race whenever they want if there is room for them at the track, and they may also withdraw from it at any point. This allows players to adjust the unruliness of the competitive element, as

they may for instance choose not to race against strangers but wait until the track is clear and race someone they know, maybe a parent who might not be very competitive.

The play design practice at LEGO House does not afford much teasing, poking fun at or sabotaging other players. By focussing on the open-endedness and allowing the players to bend and break the rules and appropriate the play designs to suit their own goals it does support some level of rebellious and slightly outrageous behaviour, not so much between players, more so between the player and the structure of the play design.

As discussed previously, this can be exemplified by Fish Designer, where players may deliberately challenge the design by scanning models other than fish. Interestingly, creating and scanning one's national flag into the fish tank tends to spawn more flags from other players, as it appears to be a level of unruliness that many players are comfortable with. Socially it also remains relatively orderly, as the players are in this sense collaborating in going against the immediate intentions of the design. The rare case of the penis fish suggests that this is a more unruly behaviour that goes further in challenging social conformity. As a result, it appears not to have the same infectious quality as the flag fish, since it may be a level of social unruliness that lies outside the preferences of most players.

The tension of sociality suggests that play designers may design for playful tension by creating playthings that allow and invite players to step outside of social norms to experiment with different degrees of conflict and outrageousness in relation to other people. As such, certain playthings may encourage players to lie, cheat, bully, backstab

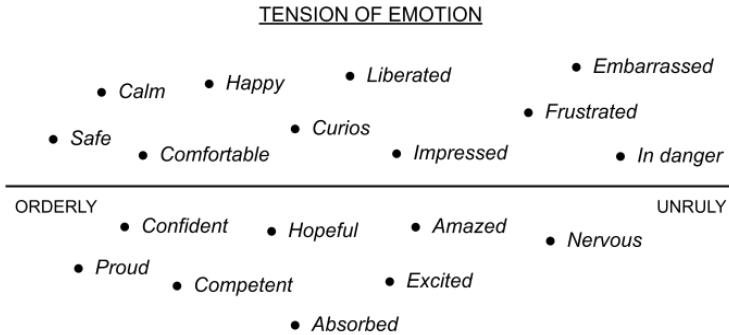
something to succeed at, something to overcome. This is exemplified in Brick Builder and the analysis of building the mech robot where I would devote considerable effort to finding the bricks and experiment with the relatively difficult building techniques in order to succeed at the creative challenge that I had set for myself.

Letting the player control the difficulty of the creative challenge allows players of different skill levels to achieve playful tension using the same play designs. It also works to eliminate concepts such as failing at or losing the challenge as players can adjust their goals along the way.

With the tension of success it is hardly a new or surprising insight that designing for playful tension implies a careful consideration of the difficulty of the goals of the player in relation to his means of achieving these. Playthings should help the achievement of goals from becoming too trivial or too difficult but rather be challenging. In relation to Csikszentmihalyi's flow theory, the tension of success reminds play designers that they are not aiming for a perfect sweet spot between player competence and the difficulty of the task but rather that the challenge must fluctuate between within the breaking points of the orderly and the unruly. As such, the goal is not for a constant level of exactly the right level of difficulty but for players to enjoy winning against all odds, rising from failure to try again, feel awesome by crushing the opponent etc. There is a great deal of wriggle room, so to speak, between what is too orderly and what is too unruly that should be considered in relation to the design of playthings.

Tension of Emotion

This grouping is a collection of codes that points to play as a tension of emotion moving between positive feelings and more negative ones.



Once all the identified types of playful tension have been presented it will become more apparent that they are very much interdependent. This is, however, especially true for the tension of emotion, as the emotions that the play designers associate with different aspects of the play experiences are thought to be closely related to specific play design elements. This is exemplified for instance by the different stages of the ‘connect’ phase as described in the 9-step Journey Tool that has been discussed previously. The *WOW* stage, which is intended to grab attention, create curiosity and motivate the player to engage with the design, implicitly relies on some measure of unruliness in terms of novelty in order to afford a state of curiosity, amazement and excitement that compels the players to explore the design in order to resolve the mystery

they have encountered. The following stages of *Oh I get it* and *My Role* are, however, intended to afford confidence to engage with the unruly by introducing the rules, goals and means of doing so.

As evident by the codes, the play design practice at LEGO House is predominantly concerned with feelings on the positive end of this tension. The few codes on the unruly end all originate from our principle discussions of play experiences in general but are very difficult to associate with actual play experiences at LEGO House. This is a conscious choice of the design team in their effort to design for wholesome play experiences that can accommodate the preferences of their diverse group of players. I would, however, assume that examining children's self-directed play that happens without adult supervision or facilitation would reveal play experiences where negative emotions are central. Even in a game of hide and seek there may be a sense of both danger and nervousness as the searcher walks right past the curtain behind which you are hiding. You hold your breath and try not to move. Did she see me? Maybe not. Suddenly the curtain is pulled aside as the searcher exposes you yelling FOUND! After the scare the emotional tension resolves into happiness and laughter.

In our discussion of the game of pool we touched on the tension between confidence and the risk of embarrassment afforded by the social setting and the uncertainty of the complex physical interactions of the game.

MA: "I think the satisfying shot is also related to the sound. So if you take a powerful shot and you hear that 'Dang!' when

it goes into the hole, it's more satisfying than if you go 'Ehh, klug'”

MI: “That is also ‘you lucky...’ you know”

MA: “Yeah exactly, if you just go straight in and it's like ‘Fuh!’, it is more like, ‘Yes!’”

...

ST: “It's very confident”

JE: “Yes, it is a dominant move to the opponents to show that, ‘I'm really good at this.’ It's interesting how that is part of the emotional thing of the game. I think you are right, that the sound - when you break, there is something satisfying in the sound.”

...

ST: “The sound of a cloth tearing as you missed...”

JE: “Yeah, and there's nothing worse actually - you know when you hit the white in the wrong way, so it says this very “Klak!”, that is not at all what you want.”

KE: “No.”

MI: “You stick the cue into the lamp.”

ST: “You hear it hitting the tiled floor.”

JE: “Yes, when you manage to get one to drop out. Especially in a bar setting, it's very embarrassing. There you go out emotionally into the very unruly area where you're embarrassed, then you just quickly want to pick it up.”

ST: “I meant to do that...”

As the discussion shows, the social context of the bar setting associated with the game of pool may create some incentive for the player to try to display confidence or dominance by the way he is playing. This can arguably be achieved by playing with excessive force to have the balls make the satisfying

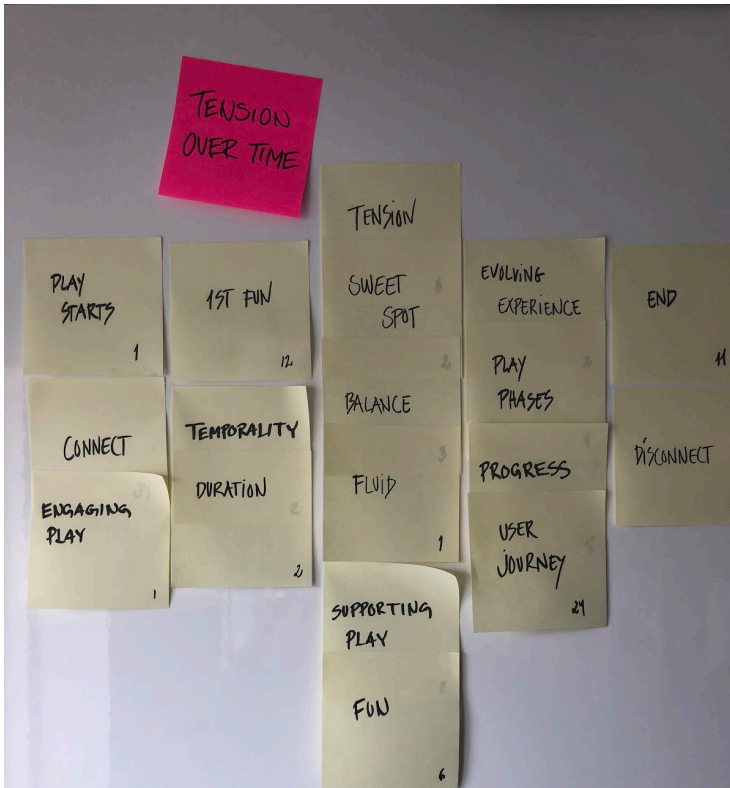
somewhat violent sounds that are being referenced in the discussion. However, the game is designed in such a way that playing more forcefully will also increase the risk of making mistakes. The worst mistake in terms of the emotional tension is having one of the balls drop off the table making a nasty sound that alerts everyone in the bar that you made a fool of yourself as you scramble to catch the ball.

The tension of emotion suggests that designing for playful tension may also make for a tension between positive and negative emotion, where players might have to endure or risk negative emotion in order to have the positive ones.

Three Bonus Levels

Other than the seven types of tension presented in the above three additional groups were defined from the horizontal analysis of the empirical material. These three groups do not pertain to the structure of playful tension as directly as the seven other groups. As such, they cannot be described as being types of tensions but they are, however, contextually related to the concept of playful tension. This makes them relevant to mention, even if they less directly inform the concept of playful tension compared to the seven types of tensions.

Timely Tension is a collection of codes that points to play as unfolding over time, which is why playful tension is not a constant that is achieved but is in flux, constantly building tension and resolving it. Building too much tension or resolving too much of the tension will cause play to end making play a flux of tension within an upper and lower limit.



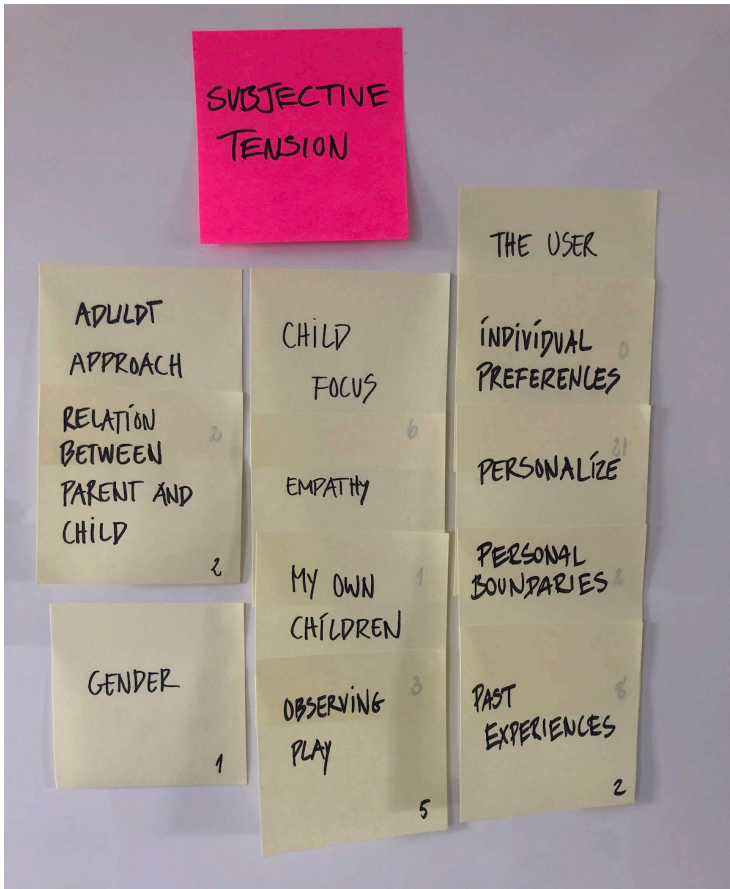
Theme about tension unfolding over time

The group originates somewhat unsurprisingly from the LEGO House design team's conceptualization of the play experiences as journeys that begin in the 'connect' phase, as playful tension is established through concepts such as the *1st Fun*. This *Tension* is being upheld in a *Fluid*, *Balance*, *Progressing* towards an *End*. The understanding of play as evolving over time implies that playful tension is not a static harmonious state for the play design to aim for but rather a

dynamic movement between the orderly and the unruly by which play is suspended before it ends as the tension is broken or exhausted.

An interesting question that surfaces in relation to the temporality of playful tension is how playful tension should be understood in more extreme cases of either very short play experiences or long-lasting ones. Due to the nature of LEGO House being a place that guests visit for a day, the play experiences are designed to last around 20 minutes. Therefore my field work does not describe playful tension in more extreme cases. It remains a relevant question how some playthings can support playful tension over longer periods of time as in the case of e.g. players playing the same game for years.

Subjective Tension is a collection of codes that points to playful tension as being subjective in the sense that the lower and upper thresholds may be different from person to person. It suggests that play designers must look for commonalities in preference of their users but also design for some flexibility that allows the users to appropriate the design to fit their preferences.



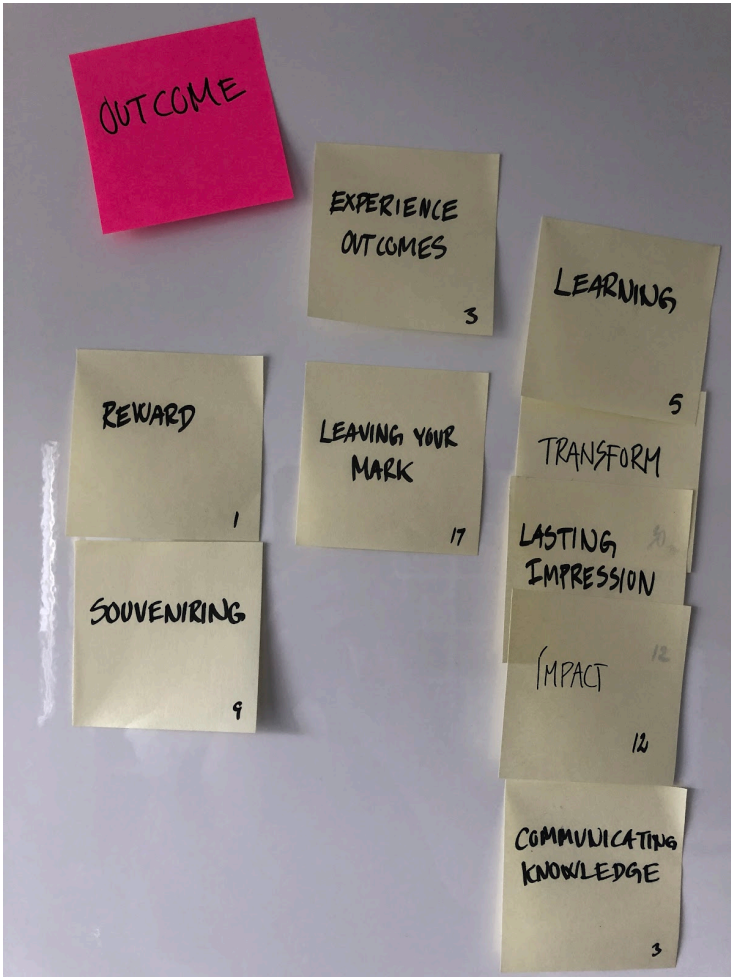
Theme about tension being subjective

This grouping of codes originates in the user-centred approach to the play design practice at LEGO House. Because LEGO House is visited by families from all over the world the design team is very much aware that their play designs must accommodate a diverse group of players in terms of

nationality, age, gender etc. Beyond these basic characteristics there is also an understanding that there is a subjectivity in play that makes designing a plaything different from designing a coffee machine in as much as it is more difficult for the designer to determine what the user is looking for in the product. This informs the empathy on *Observing Play*, having a *Child Focus* throughout the design process to build *Empathy* with the primary users of the play designs at LEGO House.

The LEGO House play design team has a strong sense that there is no one-size-fits-all when it comes to play design. In this respect their response to the concept of playful tension is that the threshold for when a play experience becomes too orderly or too unruly depends on *The User* in terms of *Individual Preferences*. It means that the question of whether a play design affords enough unruliness in the form of difficulty, surprises, novelty, danger etc. depends on the *Past Experiences* of the player and the associated skills, knowledge and interests that may have come with it. On this basis the ability of the player to *Personalize* the use of a plaything by appropriating the design to serve a personal playful tension remains a basic condition for the play design practice at LEGO House.

Fruitful Tension is a collection of codes that points to play as having outcomes both material and immaterial that go beyond the temporal limit of the play experience.



Theme about outcomes of play

The play design practice at LEGO House suggests that something will come of play, that the coming together of the

orderly and the unruly and maintaining playful tension will change something in the player or in the world or both. The play design at LEGO House exemplifies different outcomes of the play experiences – immaterial learning and materials created through play – that the players either leave behind or take with them after the playing ends.

As a result of the focus on learning through play, the most prominent type is the *Learning* that is implicit when players *Transform* the unruly into the orderly as the unknown or uncertain is being resolved through the play experience. This might result in the explicit ability of *Communicating Knowledge* acquired through the play experience, but it might as well be a more subtle transformation, that the play experience has a big emotional *Impact* leaving a *Lasting Impression* on the player.

The play design practice at LEGO House reminds us that the transformation goes the other way as well. Not only may the play experience change the player to some extent; as a player you may also change the world by *Leaving Your Mark* through playing. This might be as simple as setting a new high score on the global leaderboard of a video game or in the case of LEGO House, guests leaving the LEGO models they create on display as a testament to their creativity and for the inspiration of others.

In other cases the player might be able to take something concrete from the play experience. This could be as simple as some kind of *Reward* but at LEGO House it more frequently has to do with other kinds of *Souveniring*, where players get to keep digital materials created through play such as the stop motion movies made in the Story Lab or it may even be

physical bricks to create their own unique combination that guests receive upon leaving LEGO House.

As mentioned, the three conditions identified in the horizontal analysis were only of secondary interest. Nevertheless, they do provide some context for using the concept of playful tension as a tool for play designers, namely, that playful tension unfolds over time as it ebbs and flows between the orderly and the unruly, that player preferences in terms of the orderly and the unruly differ and that bringing together the orderly and the unruly in playful tension is inherently a process of transformation.

Talkback

The horizontal analysis of the empirical material that was done by a method of moving from open coding to a thematic grouping of the codes could produce new and concrete talkback to the concept of playful tension. By this process seven types of tension were identified across the empirical material which suggests that playful tension manifests itself with some fundamental similarity between different play experiences – that there may be archetypal ways in which play designers work to afford playful tension.

The identification of different types of tension arguably has immediate practical value and may make the discussion of playful tension in relation to the design of a plaything all the more precise. As has been illustrated in the presentation of the seven types of tension, a single design may involve several of these tensions. When mapping the playful tension, as described previously in the vertical analysis of play situations,

the seven types of tension would allow for sorting the orderly and unruly elements of the play design in relation to the respective types of tension. This would arguably make it possible to determine what types of tension are most relevant to a given design and as such qualify the discussion of how to design for playful tension. The different types of tension may also provide a way for differentiating different playthings in terms of the types of tension they are designed to emphasize. If we take for example the game *Never Have I Ever*, where players take turns to formulate a (supposedly) true statement about themselves beginning with the words *never have I ever*. If one player says *never have I ever run a red light*, any other player who has at some point run a red light loses, which may be associated with a punishment of having to take a shot of alcohol. The design of these rules allows players to be creative in forcing the other players to reveal some embarrassing secret. Hence the design of the game can be said to rely on a tension of sociality as players are invited to make each other lose face. The players have to maintain a level of playful tension, where the statements are unruly enough for players to risk some embarrassment but not so much that players will lie or quit the game to escape the social repercussion of revealing their secrets. By making the social tension central to the play experience the design of the game *Never Have I Ever* may be considered similar to that of *Truth or Dare*, where players must choose between having to answer a question truthfully or accept to perform an action formulated by the other players both of which may be embarrassing or dangerous in order to achieve playful tension. Another more commercial example might be the card game named *Cards Against Humanity*. Here players must compete

to make the funniest sentences by filling in the blanks in a sentence using their cards that will create the most outrageous statements thus inviting players to formulate taboo or politically incorrect statements in a social setting. Using the tension of sociality the game allows players to explore unruly statements with family, friends or colleagues or whoever they might be playing with, and the game achieves playful tension when the players take some social risk with their statements without having to bear the full responsibility for them due to the structure and context of the game.

The typology of the different types of tension allows play designers to understand how their play designs may offer different play experiences and help players achieve playful tension by different means. It creates a practical language for distinguishing between play designs that emphasize different types of tension. The aforementioned examples that are designed with a tension of sociality in mind work differently than say the game of pinball that is more focused on a tension of uncertainty carrying more resemblance to the game of pool that was discussed previously.

While some play designs place a clear primacy on a specific type of tension the discussion of the types with reference to the examples from the vertical analysis illustrates that most play designs engage several types of tension in concert. As such, the terminology of the different types of tension also serves to offer a deeper understanding of their interdependence in relation to the design of a given plaything. As mentioned, this may provide play designers with a better understanding of how their design is intended to assist players in achieving playful tension. It enables us to understand, for instance, the mech building play experience that was

described as part of the vertical analysis as a combination of a tension of possibility where anything is possible, but where the affordances of the individual bricks provide direction and inspiration; a tension of uncertainty because of the massive number of bricks makes it unpredictable what bricks are available; a tension of novelty in terms of learning the SNOT building technique, a tension of abstraction as the individual physical bricks becomes a character and a tension of success in the formulation of a creative challenge with a certain level of ambition. Exploring these types of tension at play enables insight into for example how resolving the tension of novelty by learning and practicing the SNOT building technique in turn creates more unruliness in terms of the tension of possibility as it makes even more shapes and ideas viable. Similarly in the example of *Fish Designer* resolving the mystery of transforming the first fish from a physical model to a virtual character encourages players to introduce new unruliness in terms of the tension of possibility and sociality by pushing the boundaries of the design and their agency to scan seemingly unintended figures into the fish tank. Identifying different types of tension allows play designers not only to differentiate between different playthings in terms of what types of tension they emphasize but also to discuss and reflect as to the types of tensions that are central in the development of a given plaything. As such, play designers are encouraged to ask questions about what types of tension their designs are attempting to support and how specific design elements and decisions relate to these types of tension. A concrete method of applying this might simply be for the play designers to ask themselves: What type(s) of tension are we

designing for? And how do the individual design elements afford such tension?

As such, the concept of playful tension may be applied in the concept development phase of designing playthings by questioning design decisions in terms of how they are intended to afford different types of tension. Figure 19 shows the seven types of tensions identified in the play design practice of LEGO House overlaid on the playful tension model.

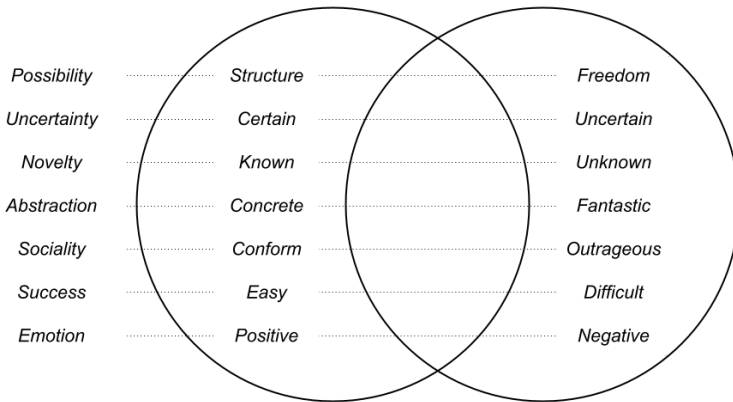


Figure 19. Types of tensions

When discussing the typology of playful tension it is important to note that the types of tension that were identified by performing the horizontal analysis are a direct product of this particular empirical material. It should be assumed that applying the concept of playful tension play design practices other than the one at LEGO House is likely to identify other types of tension. As such, it remains to be determined if the seven types of tension that were identified in this project holds

an archetypical value beyond the play design practice at LEGO House and what new ones are yet to be formulated. Nevertheless, the identification of the seven types of tension advances the understanding of playful tension and how it may manifest differently as a result of the emphasis of certain types of tension over others.

Back in the Scholar's Tavern

After three years I have finally made it back to the Scholar's Tavern, a little older and quite a bit wiser if I may say so. My return hasn't gone unnoticed. "So, how was the House of Bricks?" asks one of the townsfolk and wipes the beer off his mustache. "Did they give you a discount on their goods? My kids would love a..." Before he can finish, a voice behind me cuts him off. "How about the dragon? Did you kill it?" There is an authority behind the question that makes me turn to see a man clad in the professor's robe of the Academy. "I believe that I did," I mumble, suddenly not feeling so wise after all, "or, at least it is mortally wounded." The old man looks at me. "Claims!" he spits the word out between his teeth with disdain, "do you think that we will simply take your word for it?! Bring your evidence to the Academy in three months' time. Then we shall put your effort on trial to see if you are worthy of joining our ranks."

As he leaves, slamming the door behind him, I sink into my chair, staring into the fireplace. *Did I slay the dragon? Did I do the ways of the Academy justice?*

The Dragon's Post Mortem

To conclude my PhD project I will present a critical reflection on the playful tension model as a tool for doing play design and the methodology by which it was developed. I will preface this critique with a summary of the project since the road here has been long and winding.

What Exactly Happened Here?

This PhD project was motivated by my first- and second-hand experience that it is difficult for play designers to apply play theory to the practice of designing playthings. This dissertation points to the eclectic nature of play studies, where many academic disciplines with different epistemologies and terminology contribute to this complexity. It is also noted how despite several rhetorics within play studies (Sutton-Smith, 1997) they are all devoted to the description of play and do not take the design of playthings into consideration to such a degree that it becomes useful in the context of play design practice. On this basis, the purpose of my PhD project has been to develop the theoretical concept of playful tension to explicitly concern the qualities of designed playthings and the design decisions behind them. This theoretical concept has been developed into the playful tension model to function as a tool to be suitable for use in the practice of play design.

Being a designer I would approach the development of the playful tension model as doing 'research-through-design' (Redström 2017, Stappers & Giaccardi 2017). Informed by the design research that argues for design's inherent

foundation in pragmatism (Dixon 2020, Dalsgaard 2014), I decided to follow the principles of a pragmatic philosophy of science. On this basis I would define the difficulty of using play theory in play design practice as a problem of usability. This means that I did not question the value of the play theory but rather that its form failed to make it particularly useful in the context of play design practice. As such, the pragmatic sentiment that the value of knowledge must be considered in relation to the situation of use led me to formulate my HMW question as follows:

How Might We create a concept of play design that connects play theory and play design practice to help play designers ground their design decisions?

Outside the specific field of play design the same type of issue concerning the implementation of general theory from other fields into design practice had been addressed by design research that would share the pragmatic approach. This research, originating in the field of interaction design, makes a strong argument for developing ‘intermediate level knowledge’ to interface between abstract theory and design practice (Höök & Löwgren, 2012, Stolterman & Wiberg, 2010). After reviewing this research I decided to structure my research after a particular instance of ‘intermediate level knowledge’ called the ‘bridging concept’ which proposes that the development of ‘intermediate level knowledge’ be informed by both theory and practice with the intention that the ‘intermediate level knowledge’ should not only inhabit a space between theory and practice, it should actively work to bridge the gap between the two (Dalsgaard & Dindler, 2014).

Following this ‘bridging concept’, I would structure my research as an iterative movement between the fieldwork carried out with the design team at LEGO House and an analysis of play theory literature. The concept ‘playful tension’ emerged as a result of this reciprocal movement between theory and practice (Shepherd & Suddaby, 2016).

Having formulated the problem of using play theory in play design practice as a problem of usability it informed a strategy of minimalism in the development of the concept ‘playful tension’. This meant that I would apply a minimalist maxim of simplicity in an effort to reduce play design to its essence (Obendorf, 2009). This created an approach to the analysis of play theory that would identify play as a paradoxical union of opposite states, as an essence that appeared to be accountable across the selected texts.

On the side of the fieldwork I decided that the understanding of play as a paradox was well-suited for making design experiments that would create some creative friction, as I found the play design at LEGO House to be theoretically founded in the play as progress rhetoric.

As the understanding of play as being reliant on a coming together or a tension between the orderly and the unruly developed, I expressed the concept as a visual model to make it portable, applicable and relatable enough to stage experiments at LEGO House. The purpose of these experiments was for the design practice to produce talkback (Beck & Stolterman, 2016) that would inform the understanding of playful tension by exploring what the concept means in practice.

The analysis of the empirical material was performed by triangulating between deeper vertical analysis of specific situations and a broader horizontal analysis across the material. The latter identified seven types of tension prevalent in the play design practice at LEGO House: Tension of Abstraction, Tension of Emotion, Tension of Novelty, Tension of Possibility, Tension of Sociality, Tension of Success and Tension of Uncertainty. The vertical analysis of the application of the playful tension model in relation to specific play experiences illustrated the interwovenness of these different types of tensions. It also demonstrated the playful tension model to be a useful tool for identifying and reflecting on specific design elements and decisions in terms of their role in helping the player achieve and maintain playful tension.

The Good, The Bad and The Ugly

As emphasized throughout this dissertation, the concept of playful tension is very much a product of a pragmatic approach to design research and theory development. This has come with certain advantages and disadvantages that should be discussed as it is an important context for understanding and using the concept of playful tension.

The pragmatic pursuit of usability by way of a minimalist principle of simplicity and reduction (Obendorf, 2009) has arguably made it possible to develop the concept of playful tension to be both accountable to its theoretical foundation and useful in the practice of play design. As such, it is my understanding that the concept of playful tension realizes the

purpose of ‘intermediate level knowledge’ (Höök & Löwgren, 2012) and the ‘bridging concept’ specifically (Dalsgaard & Dindler, 2014) and delivers on the HMW in terms of connecting play theory and play design practice to support theoretically grounded design decisions following Dalsgaard & Dindler’s argument.

When Dalsgaard & Dindler (2014 p.1637) asks that a bridging concept should inhabit “*the middle ground between theory and practice*” I will argue that the concept of playful tension has demonstrated this quality. It has done so, by identifying and giving shape to the underlying theoretical understanding of play as a paradoxical union of opposites making it useful in the context of play design practice while also elevating concrete examples of play design practice towards the general by identifying the seven types of tensions as ways by which play design may seek to afford playful tension. I will also argue that the concept of playful tension is “*accountable to practical exemplars, the parameters that shape the concept (articulations) and theoretical grounding*” as it manages to express both the theoretical concepts of the individual texts that was included in the development as well as the practical instances of play design in LEGO House. Finally I will argue that the concept of playful tension has succeeded in “*unveiling and articulating untried design opportunities and potential theoretical advancements*” as it has brought a new perspective to the play design practice in LEGO House that has introduced a new language for reflecting and discussing design decisions that has made a difference as to how the LEGO House design team would conceptualize the development of playthings. This in turn has made it possible to begin identifying certain types of tensions that we may

begin to examine for their potential general value as specific archetypal ways for play designers to afford playful tension.

Designing for usability by means of simplicity and reduction is, as discussed previously, not by any means new or controversial in the field of design as it ties back to the Bauhaus principles (Gropius, 1926). In relation to a scientific ideal of providing the most accurate or nuanced description of things, the reduction of complexity may, however, be viewed as being a problematic endeavour. In the context of a pragmatic-oriented design research, where the value and function of knowledge must be considered in direct relation to practical problems in design, I will argue on the basis of the results of this PhD project that it is not only sensible but necessary to prioritize the usability of theory, in some cases even if it is at the expense of some nuance. In this respect my PhD project intends to contribute to the greater discussion of ‘intermediate level knowledge’ by demonstrating how connecting theory and practice is not only about accountability but also usability. As such, it proposes that the pragmatic purpose of ‘intermediate level knowledge’ in understanding theory to be a tool for practice implies that design researchers develop such theoretical tools considering their usability as much as their explanatory power.

As designers we can name loads of products that can do all kinds of wonderful things but are never used because they are too complicated or fail to consider the context of the user. When designers enter into scientific research, the emphasis on the usability of theory might arguably be an area where design researchers can use their design practice to make a valuable contribution to other academic fields by being explicit about

the user experience of knowledge forms. As per Nielsen's definition of usefulness as being made up of both utility and usability, a pragmatic understanding of theory means that if the purpose of theory is to be useful in practice then the development of theory as 'intermediate level knowledge' has to consider for instance the memorability, learnability and even the pleasurability of these theoretical concepts (Nielsen, 2012). My PhD project has been an attempt to explore what it means to develop theory that emphasizes usability.

The pragmatic approach to the development of the concept of playful tension also invites a different critique in relation to the use of literature. Having done what I have described as a designerly reading of the literature it can be criticised for being rather mindless when it comes to the historical context of the text, the motivations of the author, the position of the given text in relation to the authorship as a whole, etc. This is true. Furthermore the designerly reading pragmatically prioritizes how the text may be used or even misused in the service of creating something new over the objectivity of the analysis. It rejects any sense of sacred status of the text but sees it rather as material for creating new concepts. It proposes that doing 'research through design', where the goal is to develop a prototype of a theoretical concept, may be approached similarly to the development of any physical prototype where you take the materials you need and leave the rest in the workshop. My PhD project has demonstrated how research through design can work with literature as design material providing an alternative to design research that reserves the role of theory for interpreting the results of design experiments. My PhD project and the use of the play theory

literature specifically should be understood in relation to Buchanan proposal that

“In design research, however, the central challenge is to understand how designers may move into other fields for productive work and then return with results that bear on the problems of design practice.” (Buchanan, 2001 p.17)

Whereas the quote remains at a somewhat abstract level, my PhD project provides a concrete example of moving *‘into other fields’*, in my case the play theory literature, in order to *‘...return with results that bear on the problems of design practice’* being the concept of playful tension as a tool for doing play design. As Buchanan suggests the emerging field of play design cannot import all the disciplines of the diverse field of play studies. It is necessary to carve out the part that appears relevant to our practice and by this process we must accept that some of the original context is lost for something new to be created that serves the practice of design.

Another area that deserves critical attention concerns the fieldwork and the problematic situation of deciding to occupy both the role of the researcher developing the concept of playful tension as a tool for play designers, while also deciding to be a part of the LEGO House design team that uses the tool in the various design experiments. This means that when doing for example the exercises in the playful tension workshops, where we would map design elements in the game of pool and Fish Designer, I would be part of the exercise on the same terms as the other members of the design

team. I would take part in the discussion and write sticky notes to put onto the poster of the playful tension model. I have described previously how being a full member participating in the practice that is being studied would essentially mean that my fieldwork would produce a very deep and nuanced but also idiosyncratic understanding of the play design practice at LEGO House in relation to the development of the concept of playful tension (Gold, 1958, Adler & Adler, 1987, DeWalt & DeWalt, 2002). As such, it is quite unthinkable that another researcher going through the same process would have arrived at the same result. Rather the concept of playful tension is precisely the result of a deep involvement in the play design practice at LEGO House and my interpretations of taking part in it. Whereas this casts aside any notion of neutrality of the observations I would argue that this position has been necessary for the project to succeed. From the beginning of the PhD project there was a clear expectation from both sides that I would collaborate closely with the LEGO House design team. It was important to become a legitimate part of the team in order for me to appreciate their practice and build empathy with the situation and the challenges of doing play design in this specific context. It would also serve to build strong personal relationships and a high level of trust with the members of the design team, which was important for the purpose of introducing a new tool that would intervene with their practice. I am convinced that it would not have been possible to ask the highly skilled and busy professionals that make up the LEGO House design team to go on this journey of exploring the concept of playful tension had I not been willing to go on the journey with them.

The position as a full member of the LEGO House design team also meant that there were no restrictions in terms of what materials, processes, discussions, meetings etc. I would be allowed access to. Never once during the project was I not invited to take part in their projects or asked to sit out a meeting, nor did I ever get a sense that anyone would behave differently due to my presence.

Any methodological concerns regarding my choice of involving myself must also be addressed in relation to the project as doing ‘research through design’. My decision to forego an ideal of neutrality and involve myself fully in the play design practice was also based on an understanding of design being inherently interventive. As such, I would argue that any claim to neutrality would always be illusionary given that designers are essentially in the business of changing things. When relying on a process of design synthesis that is the facts of the situation filtered through the personal experience of the designer (Kolko, 2011) it would be dishonest to masquerade as a neutral invisible bystander. This is essentially a defining condition of design anthropology and the notion of ethnographies of the possible (Otto & Smith, 2013, Halse, 2013, Kjærsgaard et al., 2016).

In choosing a position of full involvement I must emphasize that the purpose of the fieldwork was never to “prove” the concept of playful tension; the purpose was to develop it. This is a key distinction, as the role of the fieldwork was to produce talkback in the form of information and experiences that I would be able to use in the development of the concept of playful tension by gradually building an understanding of what it might mean in practice.

By opting to take part in the play design practice and using

the concept of playful tension as a tool for reflecting on design decisions, my goal was to arrive at a deep understanding of playful tension in relation to the practice of play design by being able to use my own experience to inform my interpretation of the situation and the statements from the other members of the LEGO House design team.

Next there is the concept of playful tension and the playful tension model as being the concrete result of the PhD project. There are two contributions that deserve attention. Firstly, there is the question of the playful tension model as a practical contribution to play design. Secondly, there is the question of the concept of playful tension as a theoretical contribution in providing a definition of play design.

It is my interpretation that the playful tension model did manage to provide the LEGO House design team with a novel way of reflecting on play design elements and play design decisions that could qualify the play design practice by providing a different theoretical grounding. It remains unfortunate that we were not able to explore the use of the playful tension model further in the context of the concept development that was begun but shut down prematurely due to the Covid pandemic. Nevertheless I would argue that the project illustrated the practical usefulness of the playful tension model. Since the shutdown I have been in contact with the LEGO design team to learn that they have proceeded to use the playful tension model and that discussions of different types of unruliness have become a recurring part of their design process. It is difficult to determine how much of the participants' engagement with a given intervention is afforded by the presence of the designer, but I take it as a testament to

its usefulness that the LEGO design team are still using the playful tension model long after my departure.

As discussed previously, the usefulness of the playful tension model is a result of the minimalist approach of simplicity by means of reduction. I will argue that the playful tension model has achieved a useful simplicity both in terms of defining playful tension as an essential object of play design and in terms of the model itself consisting only of two overlapping circles. I will argue that the playful tension model exemplifies Tufte's third principle of visual excellence that

“Graphical excellence is that which gives to the viewer the greatest number of ideas in the shortest time with the least ink in the smallest space.”

(Tufte, 2001 p.51)

While the playful tension model consists of few elements it has demonstrated that it is able to facilitate reflections and discussions for arriving at deep insights about play design decisions and the qualities of designed playthings.

There is, however, one aspect that arguably fails to achieve usefulness through simplicity, and that is the terminology of the orderly and the unruly. The terms arguably manage to represent the various theoretical concepts of play as a paradoxical union of opposites and as such they serve their function. They do not do much, however, for the simplicity of the playful tension model as they do not express themselves as being opposites that meet in play particularly well. The model would have communicated the concepts of playful tension more clearly had the terms been more apparent antonyms. This was suggested by people often saying the orderly and the

disorderly and even the ruly and the unruly when discussing the concept of playful tension, which happened with the designers at LEGO House, colleagues at Design School Kolding and people at conferences. This points to a usability problem with the words themselves not sufficiently expressing their paradoxical union. The reason why I did not use the orderly and the disorderly was that the word disorderly does not accurately describe many of the unruly elements of play. If we take something as simple as the uncertainty of a roll of a dice, it is not by any means disorderly. It follows a very clear order. When describing it as being unruly I was trying to emphasize that it does not let itself be governed. It resists the player's need for control. I preferred the term unruly for that reason, but I was unable to formulate a better antonym than orderly as I thought that the word ruly would be confusing to many users. Looking back I think that I might have been wrong not to use ruly as the antonym to unruly. As such, the terminology is something that I will be looking to develop in future iterations of the model.

In relation to the practical contribution of the playful tension model as a tool for doing play design it is also important to underline that, whereas it has been developed to be relevant to play design practice in general given the focus on reducing this practice to an essence, its development has only been informed by the particular play design practice at LEGO House. As such, it remains to be explored how it will perform in other types of play design practices. Specifically it should be relevant to examine if other types of play design practices will reveal types of tension similar to the ones that were identified at LEGO House and whether new ones will present themselves.

When discussing the general viability of the playful tension model as a tool for play design practice it is also relevant to consider not only what it does (of which this dissertation has given an account) but also what it does not do.

I would argue that the pragmatic goal of reducing the practice of play design to an essence has resulted in a structural ontology of play design that is more concerned with function than with form generally speaking. Conceptualizing playthings as instruments for maintaining playful tension emphasizes the function of design elements to this effect. This largely leaves out the aesthetics of playthings. This is a result of my focus on the literature study and also the fieldwork at LEGO House, where the aesthetics are arguably already a given as the play designs are all based on the LEGO product. I would argue that the aesthetics of playthings do play a role in affording playful tension but it has not been an explicit focus in my PhD project. As such, future research into playful tension is warranted in order to examine the concept in relation to aesthetics specifically.

Finally there is the theoretical contribution to the field of design research and play design in particular.

I have explicitly approached my PhD project as doing ‘research through design’ even though it was not centred around the design of a physical prototype. I found that most commonly the emerging methodology of doing ‘research through design’ prominently features physical prototypes (Redström, 2017, Stappers & Giaccardi, 2017), to a degree where I would argue that it can come to imply that this is a defining quality of the approach. I find this to be unfortunate as it contradicts the well-established understanding within the

field of design research that design has evolved to include immaterial forms (Buchanan, 2001). On this basis my PhD project intends to contribute to the discussion of doing 'research through design' by exemplifying the approach in relation to a conceptual prototype rather than a physical one. As to the theoretical contribution to play design considered as an academic field of study, I will argue that the process of designing a tool for play design practice has also worked to provide a definition of the field as proposed by Redström (Redström, 2017). With the development of the concept of playful tension, its function as a practical design tool and as a general definition of play design have been two sides of the same coin being a result of the iterative movement between theory and practice suggested by the 'bridging concept' methodology. The practical purpose of the concept of playful tension of supporting play designers in reflecting on design decisions in relation to playful tension have resulted in a definition of play design as being the practice of designing playthings as instruments for players to achieve and maintain playful tension. Hence it exceeds the immediate practical value as a tool to offer a general understanding of what it means to be a play designer.

On the basis of this PhD project it is my interpretation that play design is the practice of creating playthings to become tools that helps players achieve and maintain a playful tension between the orderly and the unruly. By this definition I hope to contribute to the formulation of play design as a field within design research (Gudiksen & Skovbjerg, 2020) and to be part of establishing play design as the 8th rhetoric of play as an addition to Sutton-Smith's classification of play (Sutton-Smith, 1997).

An Answer at Last

So, What makes a great toy? What are the common qualities of the playthings that we design that make them catalysts of play?

That was where we began three years and a few hundred pages ago. I have made my argument for the concept of playful tension as a way of understanding what makes a great plaything - that play relies on the paradoxical coming together of the orderly and the unruly and great playthings are the perfect instruments for players to achieve this playful tension. The player may achieve playful tension all on his own using only his imagination or by appropriating a stick or a stone to become a plaything. However, by way of the examples, we have seen how designed playthings may be created not only to achieve playful tension for a moment but rather to help maintain playful tension by resisting the player's attempts at mastery and resolve. They employ an intricate web of different types of tensions to make the process of mastery a gradual or even endless pursuit as the design helps the player wind up the unruliness as things settle and provide order when things are spinning too much out of control or lose their meaning. In doing so great playthings become a source of the playful tension that is the livelihood of play.

References

- Adler, P.A. & Adler, P. (1987). *Membership Roles in Field Research*. Newbury Park: Sage
- Archer, B. (1995). *The Nature of Research*. Co-Design: An Interdisciplinary Journal of Design: 6–13.
- Argyris, C. & Schön, D. (1991). Participatory Action Research and Action Science Compared: A Commentary. Chap 6. in *Participatory Action Research*, edited by W. F. Whyte, 85–96. Newbury Park, CA: Sage
- Arnheim, R. (1969). *Visual Thinking*. Berkeley, CA: University of California Press
- Ball, L.J., Christensen, B.T. & Halskov, K. (2021). Sticky notes as a kind of design material: How sticky notes support design cognition and design collaboration. In *Design Studies*, Volume 76, 2021
- Bateson, G. (1955/1972). A theory of play and fantasy. In *Steps to an Ecology of Mind*. Jason Aronson Inc. Northvale, New Jersey London
- Beck, J. & Stolterman, E. (2016). Examining Practical, Everyday Theory Use in Design Research, She Ji: *The Journal of Design, Economics, and Innovation*, Volume 2, Issue 2, 2016

Bichard, J.-A. & Gheerawo, R. (2011) The ethnography in design. In: Clarke A.J. (eds) *Design Anthropology*. Edition Angewandte. Springer, Vienna.

https://doi.org/10.1007/978-3-7091-0234-3_4

Biesta, G. & Burbules, N.C. (2003). *Pragmatism and educational research*. Lanham, MD: Rowman & Littlefield.

Buchanan, R. (2001). Design Research and the New Learning. *Design Issues*: Volume 17, Number 4 Autumn 2001

Caillois, R. (1961). *Man, Play, and Games*. New York: Free Press of Glencoe

Cairo, A. (2013). *The Functional Art: An introduction to information graphics and visualization*. New Riders Publishing, USA

Carroll, J. M. (1998). *Minimalism Beyond the Nurnberg Funnel* (Technical Communication, Multimedia, and Information Systems). Cambridge, MA: The MIT Press.

Coleridge, S. T. (1817). In Shawcross, J. (1907). *Biographia Literaria*. Oxford: The Clarendon Press

Cross, N. (1982). Designerly ways of knowing. *Design Studies*, 3(4) pp. 221–227

Cross N. (1993). A History of Design Methodology. In: de Vries M.J., Cross N., Grant D.P. (eds) *Design Methodology*

and Relationships with Science. NATO ASI Series (Series D: Behavioural and Social Sciences), vol 71. Springer, Dordrecht

Csikszentmihalyi, M. (1975). *Beyond Boredom and Anxiety*. San Francisco: Jossey-Bass Publishers

Dalsgaard, P. (2014). Pragmatism and design thinking. *International Journal of Design*, 8(1), 143-155

Dalsgaard, P. & Dindler, C. (2014). Between theory and practice: bridging concepts in HCI research. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (CHI '14). Association for Computing Machinery, New York, NY, USA, 1635–1644

Dam, R.F. & Siang, T.Y. (2020). *5 Stages in the Design Thinking Process*. Published by The Interaction Design Foundation. (available online per 15/10/2021 at <https://www.interaction-design.org/literature/article/5-stages-in-the-design-thinking-process>)

Deleuze, G., & Guattari, F. (1994). *What is philosophy?*. New York: Columbia University Press.

DeWalt, K.M. & DeWalt, B.R. (2002). *Participant Observation: a Guide for Fieldworkers*. Walnut Creek, CA: AltaMira Press

Dewey, J. (1938). *Logic: The Theory of Inquiry*. Henry Holt and Company, New York

Dixon, B. (2020). *Dewey and Design: A Pragmatist Perspective for Design Research*. Springer

Fink, E. (1957/2016). Oasis of Happiness: Thoughts toward an Ontology of Play. In *PLAY as SYMBOL of THE WORLD and other writings*. Indiana University Press

Fink, E. (2003). *Nietzsche's Philosophy*. Continuum, London - New York

Flick, U. (2006). *An introduction to qualitative research*. London: Sage Publications.

Frasca, G. (2003). Simulation versus Narrative: Introduction to Ludology. In Mark J.P. Wolf & Bernard Perron (Eds.) *Video/Game/Theory*. London: Routledge.

Frayling, C. (1993). *Research in art and design*. London, Royal College of Art.

Friedman, K. (2008). Research into, by and for design. *Journal of Visual Art Practice*. 7. 153-160.
10.1386/jvap.7.2.153_1

Friis, S.K. (2015). *Co-Creation Cards*. København: U Press

Frost, J.L (2015). Designing and Creating Playgrounds: The Future Is Now. In Johnson, J.E. et al. (2015). *The Handbook of the Study of Play*. Lanham : Rowman & Littlefield

Fullerton, T., Swain, C., & Hoffman, S. (2008). *Game design workshop: A playcentric approach to creating innovative games*. Amsterdam: Elsevier Morgan Kaufmann.

Gadamer, H.-G. (1975/2006). *Truth and Method*. Continuum Publishing Group

Gaudet, S. & Robert, D. (2018). *A Journey Through Qualitative Research From Design to Reporting*. Sage Publications

Gold, R.L. (1958). *Roles in Sociological Field Observations*. *Social Forces*, 36, 217-223

Gropius, W. (1926). Principles of Bauhaus production. In *Programs and Manifestoes on 20th-Century Architecture*, ed. Ulrich Conrads (1971). Cambridge, MA: MIT Press

Gudiksen, S. & Skovbjerg, H.M. (2020). Uncovering the Qualities of Play Design. In Gudiksen, S. & Skovbjerg, H.M. (Ed.) *Framing Play Design: A Hands-on Guide for Designers, Learners and Innovators*. BIS Publishers.

Halse, J. (2013). Ethnographies of the Possible. In Gunn, W. Otto, T. & Smith, R.C. (Eds.), *Design Anthropology – Theory and Practice* (pp. 180-198). Berg Publisher.

Henricks, T.S. (2009). Orderly and Disorderly Play: A Comparison. *American Journal of Play*, 2, 12-40.

Hesse, M. (1966). *Models and Analogies in Science*. Notre Dame, IN: University of Indiana Press

Hesse, M. (2017). Models and Analogies. In *A Companion to the Philosophy of Science*, W.H. Newton-Smith (Ed.). <https://doi.org/10.1002/9781405164481.ch44>

Hinman, L.M. (1975). *Nietzsche's Philosophy of Play*. Dissertations. 1584.

Höök, K. & Löwgren, J. (2012). *Strong Concepts: Intermediate-Level Knowledge in Interaction Design Research*. ACM Trans. Comput.-Hum. Interact.. 19. 23:1–23:18. 10.1145/2362364.2362371

Huizinga, J. (1949). *Homo Ludens: A Study of the Play-element in Culture*. London: Routledge & K. Paul

Hunicke, R. et al. (2004). *MDA: A Formal Approach to Game Design and Game Research*. AAAI Workshop - Technical Report. 1.

Järvinen, A. (2007). *Games without Frontiers: Theories and Methods for Game Studies and Design*. Tampere: Tampere University Press

Jessen, C. (2008). *En definition af leg*. Center for Playware, SDU. (available online per 15/10/2021 at http://carsten-jessen.dk/?page_id=206#_ftn1)

Johnson, J.E. et al. (2015). *The Handbook of the Study of Play*. Lanham : Rowman & Littlefield

Juul, J. (2005). *Half Real. Video Games between Real Rules and Fictional Worlds*. Cambridge, Massachusetts: The MIT Press

Karoff, H.M. (2014). Om Friedrich Nietzsches legefilsosofi. In Karoff, H.M. & Jessen, C. (2014). *Tekster om leg*. Akademisk Forlag.

Karoff, H.M. & Jessen, C. (2014). *Tekster om leg*. Akademisk Forlag.

Kjærsgaard, M.G. et al. (2016). Introduction: Design Anthropological Futures. In Smith, R.C. et al. *Design Anthropological Futures*. Publisher: Bloomsbury Academic

Kolko, J. (2010). Abductive Thinking and Sensemaking: The Drivers of Design Synthesis. In MIT's *Design Issues*: Volume 26, Number 1 Winter 2010

Kolko, J. (2011). *Exposing the Magic of Design - A Practitioner's Guide to the Methods and Theory of Synthesis*. Oxford University Press, Inc.

Koskinen, I. et al. (2011). *Design Research Through Practice: From the Lab, Field, and Showroom*. Morgan Kaufmann

Löwgren, J. & Stolterman, E. (2004). *Thoughtful Interaction Design*. Cambridge, MA: MIT Press.

Liu, C. (2017). *Neuroscience and Learning through Play: A Review of the Evidence*. The LEGO Foundation

Meyer, M.W. & Norman, D. (2020). Changing Design Education for the 21st Century, She Ji: *The Journal of Design, Economics, and Innovation*, Volume 6, Issue 1, 2020.

Morrison, M. & Morgan, M. (1999). Models as mediating instruments. In M. Morgan & M. Morrison (Eds.), *Models as Mediators: Perspectives on Natural and Social Science* (Ideas in Context, pp. 10-37). Cambridge: Cambridge University Press.

Mouritsen, F. (1998): *Child Culture – Play Culture*. The University of Southern Denmark

Nielsen, J. (2012). *Usability 101: Introduction to Usability*. Published by Nielsen Norman Group. (available online per 15/10/2021 at <https://www.nngroup.com/articles/usability-101-introduction-to-usability/>)

Nietzsche, F. (1910/2016). The Birth of Tragedy or Hellenism and Pessimism. In *The Complete Works of Friedrich Nietzsche - Volume One*. Edited by Dr Oscar Levy. T.N. FOULIS 13 & 15 FREDERICK STREET EDINBURGH: AND LONDON:

Norman, D. A. (2013). *The design of everyday things*. Philadelphia, Pa: Basic Books.

Norman, D.A. (2004). *Emotional design: Why we love (or hate) everyday things*. New York: Basic Books.

Project Gutenberg. Retrieved October 14, 2020, from <https://www.gutenberg.org/files/51356/51356-h/51356-h.htm>.

Obendorf, H. (2009). *Minimalism: Designing simplicity*. Dordrecht [The Netherlands]: Springer.

Otto, T. & Smith, R. C. (2013). Design anthropology: A distinct style of knowing. In Gunn, W. Otto, T. & Smith, R. C. (Eds.) *Design Anthropology: Theory and Practice* (pp. 1–29). Bloomsbury

Parnes, S. (1967). *Creative Behavior Guidebook*. New York: Scribner

Peirce, C. S. (1965). *Collected Papers of Charles Sanders Peirce*, edited by C. Hartshorne, P. Weiss, and A. Burks, 1931–1958, Cambridge MA: Harvard University Press.

Piaget, J. (1951). *Play, Dreams and Imitation in Childhood*. Routledge and Kegan Paul Ltd.

Piaget, J. (1952). *The Origins of Intelligence in Children*. (M. Cook, Trans.). W W Norton & Co.
<https://doi.org/10.1037/11494-000>

Redström, J. (2017). *Making Design Theory*. The MIT Press

Ryall, E., Russell, W. & MacLean, M. (2013). *The Philosophy of Play*. Abingdon, Oxon: Routledge

Schiller, F. (1793/1985). Letters Upon The Aesthetic Education of Man. In Schiller Institute *Friedrich Schiller, Poet of Freedom*. Schiller Institute. New Benjamin Franklin House. New York

Schön, D. (1983) *The Reflective Practitioner*, Temple-Smith, London

Shackel, B. (2009). Usability – Context, framework, definition, design and evaluation. In *Interacting with Computers*, vol. 21, no. 5-6, pp. 339-346, Dec. 2009

Shakespeare, W., & In Rolfe, W. J. (1623/1903). *Shakespeare's Comedy of As you Like It*. New York: American Book Company

Shepherd, D.A., & Suddaby, R. (2016). *Theory Building: A Review and Integration*. *Journal of Management*, 43(1), 59–86. <https://doi.org/10.1177/0149206316647102>

Sicart, M. (2008). *Defining Game Mechanics*. *Game Studies. The International Journal of Computer Game Research*. 8.

Sicart, M. (2014). *Play Matters*. Cambridge, Massachusetts: The MIT Press

Sicart M. (2021). *Playthings*. *Games and Culture*. May 2021. doi:10.1177/15554120211020380

Simon, H.A. (1969/1996). *The Sciences of the Artificial* (3rd ed.). MIT Press, Cambridge, MA, USA

Skovbjerg, H.M. (2016). *Perspektiver på leg*. Turbine Akademisk

Skovbjerg, H.M. et al. (2021). Examining theory use in design research on fantasy play. In *International Journal of Child-Computer Interaction*.

Spriosu, M. (1989). *Dionysus Reborn: Play and the Aesthetic Dimension in Modern Philosophical and Scientific Discourse*. Ithaca; London: Cornell University Press.
doi:10.7591/j.ctvr7f2vt

Stappers, P.J. (2007). Doing design as a part of doing research. In R Michel (Ed.), *Design Research Now: Essays and Selected Projects* (pp. 81-91). Basel: Birkhauser

Stappers, P.J. (2007b) Designing as a Part of Research. In: van der Lugt, R. & Stappers, P.J. (Eds) *Design and the Growth of Knowledge: best practices and ingredients for successful design research*. Delft: StudioLab Press, 12-17.

Stappers, P.J., & Giaccardi, E. (2017). Research through Design. In M. Soegaard, & R. Friis-Dam (Eds.), *The Encyclopedia of Human-Computer Interaction* (2nd ed., pp. 1-94). The Interaction Design Foundation

Stappers, P.J., & Hoffman, R.R. (2009). *Once More, Into the Soup*. IEEE Intelligent Systems, 24 (5), 9-13

Stappers, P. J., & Sleeswijk Visser, F. (2014). Meta-levels in design research: Resolving some confusions. In: YK Lim, K Niedderer, J Redstrom, E Stolterman, A Valtonen (eds.), *DRS 2014: Design's Big Debates*, Umea, Sweden, June 16-19, 2014, Printed by: Umeå Institute of Design, Umeå, 2014, pp. 847-857

Stolterman, E. & Wiberg, M. (2010). *Concept-Driven Interaction Design Research. Human-Computer Interaction*. 25. 95-118. 10.1080/07370020903586696.

Suárez, M. (1999). The role of models in the application of scientific theories: Epistemological implications. In M. Morgan & M. Morrison (Eds.), *Models as Mediators: Perspectives on Natural and Social Science* (Ideas in Context, pp. 168-196). Cambridge: Cambridge University Press

Sutton-Smith, B. (1966). Piaget on play: A critique. *Psychological Review*, 73(1), 104–110.
<https://doi.org/10.1037/h0022601>

Sutton-Smith, B. (1997). *The Ambiguity of Play*. Cambridge, MA: Harvard University Press

Tufte, E. R. (2001). *The Visual Display of Quantitative Information*. Cheshire, Conn: Graphics Press

Venn, J. (1880) I. On the diagrammatic and mechanical representation of propositions and reasonings, *Philosophical Magazine* Series 5, 10:59, 1-18, DOI: 10.1080/14786448008626877

Weisberg, M. (2013). *Simulation and Similarity: Using Models to Understand the World*. Oxford University Press

Wertz Jr, W.F. (2005). A Reader's Guide To Schiller's Letters on the Aesthetical Education of Man. In *Fidelio* Volume 14, Number 1-2, Spring-Summer 2005

Whitebread, D. et al. (2017). *The Role of Play in Children's Development: A Review of the Evidence*. The LEGO Foundation

Zosh, M. J. et al. (2018). *Learning Through Play: A Review of the Evidence*. The LEGO Foundation

Appendix

The empirical material that are referred to and cited throughout the dissertation consists of:

<u>Name</u>	<u>Documentation</u>
<i>Existing Tools</i>	Photos
<i>Play Facilitator Interviews</i>	Transcript
<i>Field notes from LEGO House</i>	Photos
<i>Mech build voice memos</i>	Transcript
<i>Playful Tension Workshop #1</i>	Transcript/photos
<i>Playful Tension Booklet Prototype</i>	Photos
<i>Playful Tension Workshop #2</i>	Transcript/photos
<i>Summary Paper: Playful Tension in the Four Yellow Zone Concepts</i>	Copy
<i>Codes/Themes</i>	Photos

The empirical material can be reviewed online at:
shorturl.at/otBQX



Summary

In English

This PhD project is motivated by the difficulty within the field of play design to connect play theory and play design practice to ground design decisions theoretically. As such, the purpose of the PhD project has been to develop a new tool for play design practice that connects play theory and play design practice, offering play designers a new method for reflecting theoretically over the relationship between design decision and play experience.

The PhD project is situated within the field of design research and takes a pragmatic approach to the problem area, where the development of a new play design tool is carried out as doing research through design, meaning that the results of the PhD project is itself a product of a design process. The methodological framing of the PhD project is the concept of intermediate level knowledge, that argues for the need for developing theoretical design tools that inhabits the space in between general theory and design practice. The development of a new play design tool is modelled specifically after the so-called bridging concept, that proposes that intermediate level knowledge is to be developed through an iterative movement between knowledge from theory and knowledge from practice. As such, the development of a new tool for play design practice is informed both by a literature study of play theory and by fieldwork in LEGO House.

Following the basic assumption, that the complexity of play theory constitutes a problem of usability in relation to its application in the context of play design practice, the purpose of the literature study is to identify a single common basic condition for play that play designers may seek to afford. The analysis of the selected texts proposes the paradoxical double sided nature of play to be such a basic condition. This informs the formulation of the concept of playful tension, that conceptualizes play as relying on a tension between the orderly and the unruly. It follows that play design practice is then the design of playthings that supports players in achieving this playful tension.

The concept of playful tension is expressed as a visual model that forms the basis for a series of design experiments in LEGO House through which the understanding of playful tension as the object of play design practice is developed. In close collaboration with the design team in LEGO House the playful tension model is used to reflect on design decisions in relation to existing play experiences in LEGO House as well as in the development of new ones.

The design experiments in LEGO House have resulted in seven types of playful tensions being identified as central to the play design practice of the LEGO House design team. As such, this play design practice emphasises a tension of possibility, tension of uncertainty, tension of novelty, tension of abstraction, tension of sociality, tension of success and tension of emotion.

The PhD project has produced both practical and theoretical contributions to the field of play design. In terms of play design practice the playful tension model has demonstrated itself to be a useful tool for supporting play theoretical reflection and discussion as to the relationship between design decisions and play experience. The theoretical contribution that follows is the definition of the practice of play design as being the creation of playthings that supports the player in achieving playful tension by affording a tension between the orderly and the unruly across the different types of tensions.

In Danish

Dette PhD-projekt er motiveret af udfordringerne inden for design af leg med hensyn til at koble legeteori og lege-designpraksis, på en måde så designvalg er teoretisk funderet. PhD-projektet har derfor haft til formål at udvikle et nyt værktøj til lege-designpraksis, der knytter legeteori sammen med lege-designpraksis og tilbyder legedesignere en ny måde at reflektere teoretisk over forholdet mellem designvalg og legeoplevelse.

Projektet placerer sig inden for feltet design research og anlægger en pragmatisk tilgang til problemfeltet, hvor udviklingen af et nyt designværktøj for lege-design udføres som research through design, hvilket vil sige at projektets resultater i sig selv er produktet af en designproces. Projektet har sin metodologiske rammesætning i begrebet intermediate level knowledge, som argumenterer for et behov for udvikling af teoretiske designværktøjer, der eksisterer i spændet mellem generel teori og designpraksis. Udviklingen af et nyt værktøj

for lege-design modelleres specifik efter det såkaldte bridging concept, der foreskriver at intermediate level knowledge udvikles gennem en iterativ bevægelse mellem viden fra teori og viden fra praksis. Således informeres udviklingen af et nyt værktøj til lege-design både af et litteraturstudie af legeteori og et feltarbejde i LEGO House.

På baggrund af en grundantagelse om, at legeteoriens kompleksitet udgør et brugervenlighedsproblem med hensyn til anvendelse i en lege-designpraksis, har litteraturstudiet til formål at identificere et enkelt grundvilkår for leg, som legedesignere kan forsøge at understøtte. Analysen af de udvalgte tekster peger på legens paradoksale dobbelthed som værende et sådant grundvilkår. Dette giver anledning til formuleringen af begrebet playful tension, der konceptualiserer legen som byggende på en spænding mellem det ordentlige og det uregerlige. I dette henseende bliver lege-designpraksis fremstillingen af legetøj m.m. som understøtter de legende i at opnå denne playful tension.

Playful tension begrebet udtrykkes som en grafisk model, der danner baggrund for en række designeksperimenter i LEGO House, hvorigennem forståelsen af playful tension som objekt for lege-designpraksis udvikles. I tæt samarbejde med designteamet i LEGO House er playful tension-modellen anvendt til at reflektere over designvalg både i forhold til de eksisterende legeoplevelser i LEGO House samt i udviklingen af nye.

Designeksperimenterne i LEGO House har resulteret i at syv typer af lege-spændinger er blevet identificeret som værende

centrale for det lege-design, der praktiseres af designteamet i LEGO House. Som sådan bygger denne praksis på en muligheds spænding, forudsigelighedens spænding, bekendthedens spænding, abstraktionens spænding, socialitetens spænding, overvindelsens spænding og emotionel spænding.

PhD-projektet har både affødt et praktisk og et teoretisk bidrag til lege-designfeltet. I praksis har playful tension-modellen vist sig som et brugbart designværktøj til understøttelse af en legeteoretisk refleksion og diskussion over forholdet mellem designvalg og legeoplevelse. Det teoretiske bidrag består som følge heraf i at tilbyde en generel definition af lege-designpraksis som havende til formål at skabe lege-designs, der understøtter den legende i at opnå playful tension ved at designe for en spænding mellem det ordentlige og det uregerlige på tværs af de forskellige typer lege-spændinger.