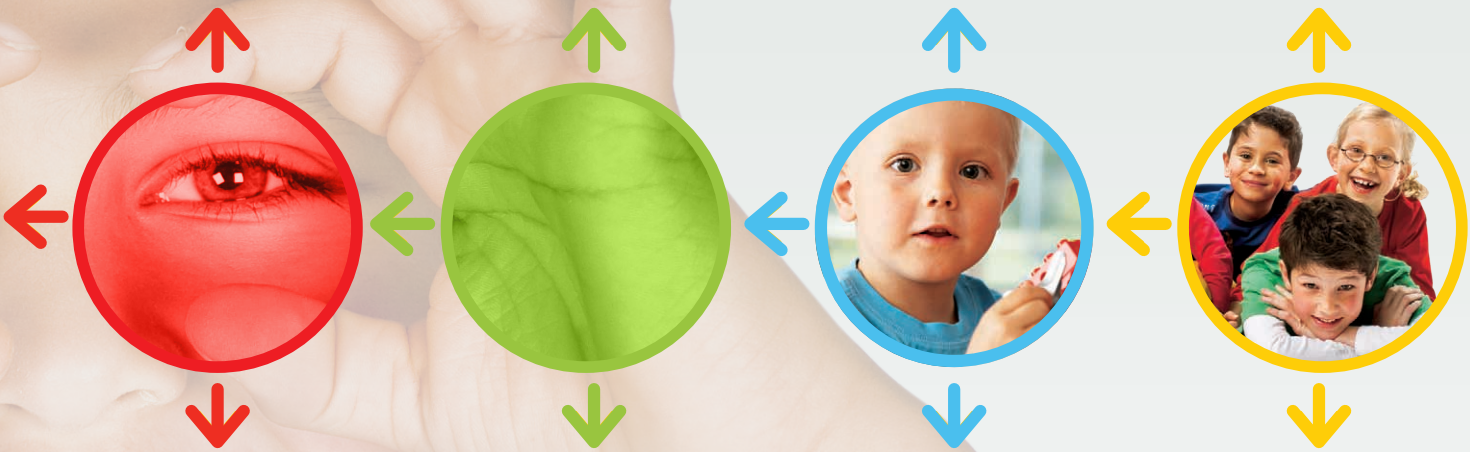
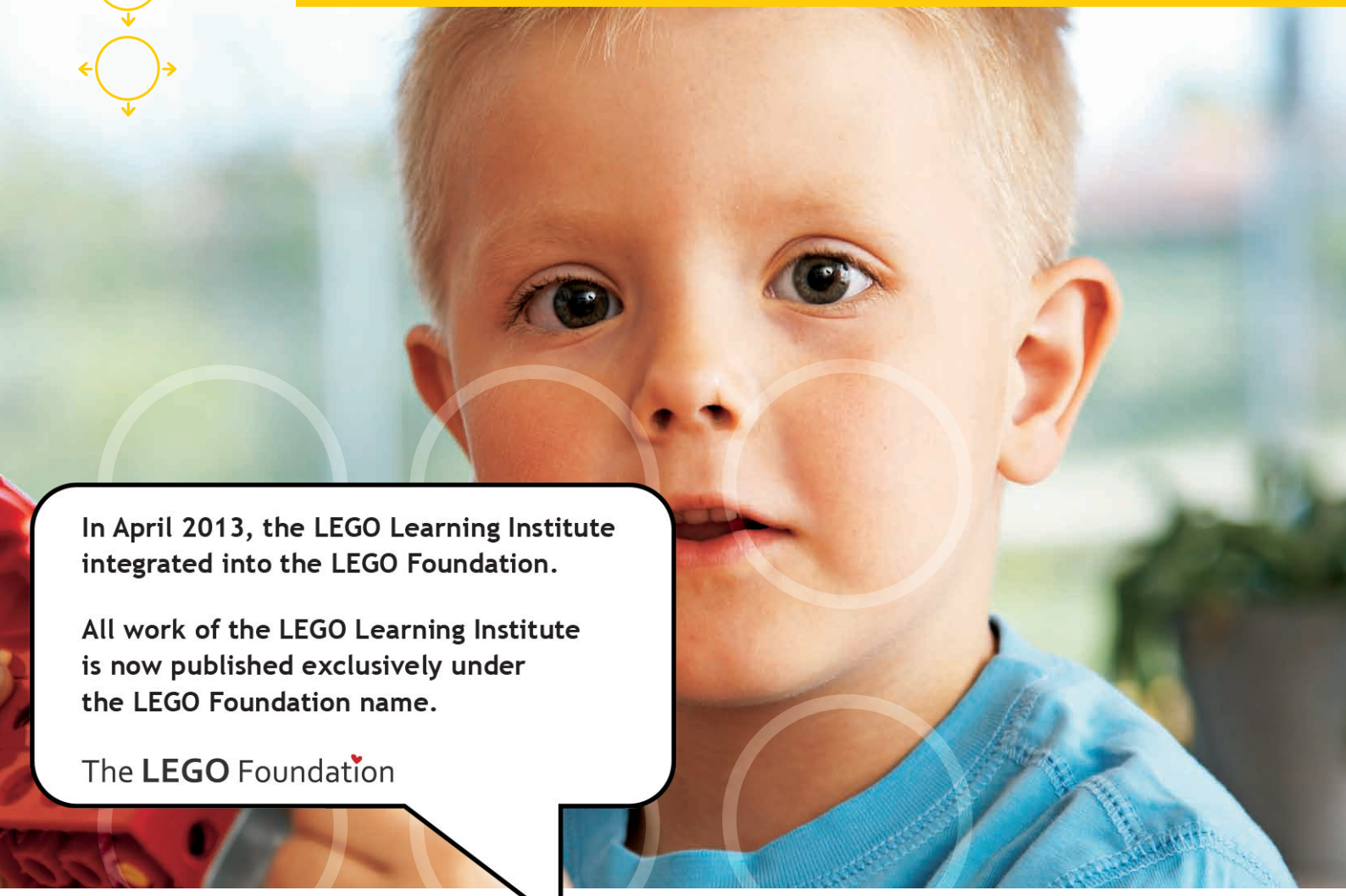
LEGO® Learning Institute



The future of play.

Defining the role and value of play in the 21st century

Foreword



In April 2013, the LEGO Learning Institute integrated into the LEGO Foundation.

All work of the LEGO Learning Institute is now published exclusively under the LEGO Foundation name.

The LEGO Foundation

The LEGO® Learning Institute is a network of international academic experts, funded by the LEGO Foundation. Its purpose is to build greater public understanding around play, learning, creativity and child development. Beyond being publicly available, the research findings help translate the company motto of "only the best is good enough" into all LEGO products and experiences; each designed to "inspire and develop the builders of tomorrow" and develop creativity and learning ability in children of all ages.

Previous work by the Institute includes "Defining Systematic Creativity" (2008), "Systematic Creativity in the Digital Realm" (2009) and "LEGO System in Learning" (2010). The reports can be found at www.learninginstitute.lego.com.

Introduction

Play is at the heart of emotional wellbeing and mental health. Free play in particular is critical to the balanced development of children. It supports adapting and responding to both cultural change and the sheer quantity of information to which children are exposed from an early age.

In today's societies, many children have less time for free exploratory play as they are hurried to adapt into adult roles and prepare for their future at earlier ages (Hardy et al., 1993; Rosenfeld and Wise, 2000; Elkind, 2001). Moreover, the field of early childhood education is undergoing a change towards more measurable standards and frequent testing, specifying what young children should know and be able to do in academic areas such as science, literacy, and mathematics. As a result, children's time is becoming increasingly structured and focused on explicit learning goals while, and time for free play is dwindling away. Without a profound understanding of its value and the ways of encouraging free play in children, we risk depriving them of the very dynamic that drives their development as learners and creatives.

This report explores the benefits of play, the many ways of playing and the relevance of the different types of play for child development and the stimulation of adults. It highlights the deep connections between play, learning and creativity and how the foundations for this are laid in children's play, furthermore showing how play, regardless of age, remains an essential ingredient in how we fuel our creativity and capacity as learners.

Against this background this report looks into the future, to what is driving the development of play in society and how this development might best be harnessed in pursuit of greater creativity and innovation capability among children and adults alike. Lastly the report concludes on what it means to play well (Leg Godt) in the 21st century, i.e. how the LEGO® idea can best support children's positive development through providing compelling play activities that support their learning and creative development.

The objectives for the research on the future of play are thus three-fold:

- **To outline** the nature and value of play, and free play in particular, for children's positive development, creativity and learning
- **To define** the qualities of mind and matter most conducive to play and identify a set of principles relevant to designing open-ended play experiences and contexts.
- **To clarify** why play with systems and platforms, and particularly LEGO play, supports creative development and learning ability

Summary

To play is to engage. When we play, we pick up objects, ideas, or themes and turn them upside down, experiment with them, often arriving at something inspiring and amazing; yet we don't play for the outcome, but for its own sake. For humans and some animals, play is a vital part of development. Play allows children to use their creativity while developing their imagination, dexterity and physical, cognitive, and emotional strength. Adults also play to break from conventions, to experiment, to shift from normality into a rich world of imagination or to push themselves in new ways.

Play in children can be generally divided into four broad types based on the developmental purposes each serves. These are: physical play, play with objects, symbolic play, pretence and socio-dramatic play, and games with rules. Beyond participating in children's play, adults can support it by creating a supportive environment, providing a range of opportunities for play and thoughtfully providing structures that support play. The five play types also feature in adult play, but a defining quality of much adult play is the considerably larger social dimension.

Another quality of adult play is the rise of the hobby culture, where we have seen a resurgence in do-it-yourself making, hacking and craft, supported by new platforms and channels celebrating user-created content. Play is becoming more accepted in business, where any tools and technologies that enable people to play with constraints and simulate alternative realities are seen as critical enablers of greater innovation.

We, find, therefore, that play which taps into our ability to experience curiosity, competence and reciprocity and makes it possible for us to exercise autonomy, mastery and a sense of purpose offers some of the most engaging play of all. Evidence suggests that our engagement is initially driven by situations and contexts and through positive feedback and experiences we become more self-directed in pursuing the subject of our interest.

This also manifests itself in the cycle between immersion and mastery, a feature of truly engaging play. Four qualities of mind are critical in our ability to sustain our playful engagement. Our ability to focus is critical as it is the first step on our path to experiencing Flow; an optimal experience where our abilities are in balance with the challenges at hand. Caring that things are done well involves actively pursuing mastery over a medium. Adopting a beginner's mindset enables us to explore ideas further, unconstrained by that which we already know. Lastly, provocation helps us disrupt known ways of seeing the world, discovering adjacent areas of interest, and propels us back into an immersion orientation, emerging a step further along than where we began.

These findings have important implications for designing engaging play experiences that enable Flow. Materials and platforms can also be designed to further encourage playful engagement, and experiences as a whole should foster the emotions of pride, curiosity, love and feeling smart. Engaging play experiences offer a set of gifts, innate rewarding experiences that encourage individuals to continue their engagement. These are reflection and integration of what we have learned, the pleasure of Flow, self-expression, positive emotions, new ways of seeing, mastery, innovation, connecting with and learning from others, and lastly self-realisation.

Looking into the future it appears that significant societal changes in the coming decades will also affect the perception of the role and value of play globally. Rapid economic development,

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increasing urbanisation and growing connectivity will all play their part in moving societies from culturally curtailed play towards accepted and eventually to culturally cultivated play.

The four alternative futures are still equally plausible. Apart from the possibility of a major conflict or crisis reversing societies' development back into a world centered around the fight for survival, the most significant challenge will be between the view of play as critical to personal growth versus the time-restricted play scenario, where play happens despite adults' repeated interventions to structure children's time rather than supported by adult engagement.

These alternative futures will further be influenced by four variables that the LEGO Group, its stakeholders and community respectively, educators, decision makers and child development experts can address to effect a positive development for the future of play. The variables are: changing generational traits and preferences, educational reform, the growing social dimension of play and the rise of game mechanics to drive wide-spread behaviour change in society.

LEGO® Learning Institute members emphatically stress the importance of time dedicated to free unstructured play, as research evidence suggests that play which is open, experimental and with little apparent educational content is one of the very best ways to stimulate learning and creativity.

Furthermore, the LEGO Group can play an active role in supporting families spending time together, as well as better highlighting the value of free play, tinkering, exploration and discovery – not simply as a basic element in pre-school development but as a crucial part of all learning. The growing social dimension of play also calls for more action to connect phases of the play and creation process socially, supported by platforms and ecosystems where all members can contribute and find value in participating.

The future playing field can thus be seen to extend in three directions: firstly, children's free play is recognised as crucial for child development, and in particular for the nurturing of imagination and creativity. Secondly, adult play expands as adults come to acknowledge the importance of play within everyday life in both home and work contexts. Thirdly, digital platforms enable inspiration, communication and sharing, and new augmented reality technologies will enable the blending of the greatest opportunities provided by digital and physical tools.

The changing social context presents opportunities for creative companies to provide the tools, services and experiences, which will facilitate play in the 21st century. Play is a timeless feature of human societies, and when combined with 21st century learning it provides children and adults with opportunities to experiment with their surroundings as a form of problem solving. Using meaningful tools that expand our mental capacities, we can improvise and discover, and construct dynamic models of real world processes, taking our knowledge and understanding to unprecedented levels, enabling innovation.

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To play is to engage. When we play, we pick up objects, ideas, or themes and do whatever we want with them. We turn them upside down and we experiment with them. We might arrive at something inspiring and amazing, but that is not necessarily the point. We play anyway – this is play for its own sake. For humans and some animals, play is a vital part of development. What is more often forgotten is that play is not for children alone but is good for all people, young and old alike.

Why have we evolved to play?

Play is an activity so fundamental that it can be observed not only in humans but also in many animal species. Research shows that beyond pleasure, the purpose of play is to provide stimulation for proper perceptual, motor and neural development. Play is also known to be much more prevalent in well-cared-for captive animals buffered from needing to source their own shelter, defence or nutrition.

Play is often found when animals begin to add new behavioural components to their repertoire, and the drive to attempt such behaviour can be intense, as in human infants "learning" to crawl, stand, and walk. Play may aid self-training or the integration of sensory and motor systems due to the unpredictable consequences of interacting with objects, social partners, and even one's own body (Spinka et al., 2001). Bruner has shown that as ever more complex animals evolved, with increasingly larger brains, the length of time in which the young were cared for by their parents increased. This increase in the length of immaturity reflected the need for increased periods of learning in complex animals with increasingly larger brains and, as Bruner notes, was paralleled by increasing playfulness. (Bruner, 1972).

Furthermore, Bruner argues, as mammals evolved into primates, and as primates evolved into humans, there was an increase in problem solving abilities allowing greater 'tool use' and an increase in 'representational' abilities supporting the development of language and thought. Paralleling this we see in mammals the emergence of physical play, while in primates we see 'play with objects' developing and in humans we see the emergence of 'symbolic' forms of play which depend upon our mental representational abilities and which include pretence, role-play, artistic expression, playing games with rules and so on.

Based on this analysis, Bruner argued that humans have been a successful species because of our adaptability to new circumstances and our ability to solve new problems. Children's play, crucially, enables them to develop this 'flexibility of thought' because it allows them to try out different ways of looking at the world, different strategies to deal with problems and difficulties, and different ways of thinking, all within a safe context with no consequences.

Pellegrini (2009) has concluded that, in animals and humans, play (as opposed to work) contexts free individuals to focus on 'means' rather than 'ends'. Unfettered from the instrumental constraints of the work context, where one has to get something done, in play the individual can try out new behaviours, exaggerate, modify, abbreviate or change the sequence of behaviours, endlessly repeat slight variations of behaviours, and so on. It is this characteristic of play, it is argued, that gives it a vital role in the development of problem-solving skills in primates, and the whole gamut of higher-order cognitive and social-emotional skills developed by humans.

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There are, of course, a number of different definitions of play. The play and learning expert Tina Bruce has produced an extensive list which captures key elements of the nature of play. She is writing primarily about children's play here, but the description applies just as well to the (less common) free-flow play of adults. She lists twelve features of this kind of play (2005: 261-2), which are worth quoting in full:

- It is an active process without a product.
- It is intrinsically motivated.
- It exerts no external pressure to conform to rules, pressures, goals, tasks or definite direction. It gives the player control.
- It is about possible, alternative worlds, which lift players to their highest levels of functioning. This involves being imaginative, creative, original and innovative.
- It is about participants wallowing in ideas, feelings and relationships. It involves reflecting on and becoming aware of what we know – 'metacognition'.
- It actively uses previous first-hand experiences, including struggle, manipulation, exploration, discovery and practice.
- It is sustained, and when in full flow, helps us to function in advance of what we can actually do in our real lives.
- During free-flow play we use technical prowess, mastery and competence we have previously developed, and so can be in control.
- It can be initiated by a child or an adult. [...]
- Play can be solitary.
- It can be in partnership or groups, with adults and/or children, who will be sensitive to each other.
- It is an integrating mechanism, which brings together everything we learn, know, feel and understand.

Bruce sums up these features in an equation: "Free-flow play = Wallow in past experiences + Technical prowess, competence, mastery and control acquired" (2005: 262).

The metaphor of the "leap" is often used to capture the sense of exhilaration and delight that characterises play. We leap out of constraints to feel free. "Play is a special form of violating fixity" (Bruner, 1976, p. 31). Through play, we select which constraints to experiment with, but for it to be meaningful, for the 'what if' to engage our imagination, it has to be a contrast to the reality we find ourselves in.

Susanna Millar (1968) further suggests that playfulness, like people's appreciation of humour, art, theatre or performance, resides in our abilities to decouple messages, experiences, and objects from their context of origin, thus creating a new frame that allows for greater freedom and creative possibilities.

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To Millar, play is essentially about "throwing off constraint" (1968, p. 21). As we play with the constraints of a situation while respecting or transgressing rules, we feel free to move, engage with new contexts, and we treat our own experience as an object of play.

The test of good play is not whether it transforms a state of affairs, represents the "real" world, or conforms to pre-existing rules. Instead, its main value lies in the following: the sense of delight and playfulness emerging from decoupling things as they appear from how they could be, e.g. interpreting them in a non-literal sense; from looking at things from different and unusual angles (violate fixity, leap); and from mimicking things while adding our own interpretation to it (simulate, imitate, iterate).

> ***"...innovation is less the product of how innovators think than a byproduct of how they behave. Serious play is about innovative behaviour. When talented musicians improvise, you don't look inside their minds, you listen to what they play." (Schrage, 2000, p.1)***

Play and brain development

The billions of neurons that make up the human brain also control our behaviours, thoughts and feelings and research shows that play has profound effects on brain development. In fact, research undertaken by John Byers from the University of Idaho has shown that when one looks at the play behaviour of different species, the amount of play they engage in is correlated with the development of the frontal cortex.The frontal cortex is responsible for much of what we usually call high-level cognition: distinguishing relevant from irrelevant information, monitoring our own and other's behaviours, learning from mistakes, flexible or divergent thinking etc.

Early insights into the ways play can shape brain development came from the landmark studies of Marian Diamond, conducted in the 1960s. In her many experiments, she and her colleagues observed not only that rats living in 'enriched' environments not only were smarter, but also that their brains grew larger and became more complex. Of course, this idea quickly took hold in popular imagination: if babies were raised in an enriched nursery, with lots of colourful mobiles and murals, this should greatly improve their brain development. However, Diamond's research clearly showed that it was active play – with a continuously changing variety of toys and with other rats – that stimulated brain growth in these animals. In contrast, simply putting the animals in a novel environment without giving them the opportunity for playful interactions did not have the same effects.

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While the findings of Byers, Diamond and others indicate that play affects the development of the brain, how exactly does this happen? When a child is born, the information encoded in the genes is not enough to specify how exactly the billions of neurons in the brain should connect with each other. Instead, the brain wires itself up by creating far too many neurons at first. These neurons initially make far too many connections with other neurons. Following rules of interactions laid down in our genes, neurons then communicate via the connections, strengthening those that are recruited very often while eliminating those that are not. This pruning process is essential for ensuring that networks in the brain operate fast and efficiently.

Play, which is more prevalent during the periods of most rapid brain development (childhood), seems to promote this process of evolution in the brain. For example, play involves the repeated execution of sequences of actions. Hence, connections between the specific neurons that are required for executing these actions can be strengthened during play, while non-recruited connections may disappear. Bell and colleagues showed this effect in a study with juvenile rats that had the opportunity to engage in extensive play with peers. Compared to animals who were deprived of this opportunity, the playful rats showed a marked reduction in neural connections in the medial prefrontal cortex, leading to a less complex, but more functional network of connections. Importantly, this brain structure is also recruited in pretend play situations in humans, strongly suggesting that play can help optimise the functioning of neural circuits in the developing brain.

A second way in which play supports the pruning process in the developing brain is by strengthening connections that otherwise might become lost or by creating new ones. Playful behaviour often involves treating objects in unusual ways, pretending to be somebody else or even a different creature. Behaviours like these can recruit networks of neurons – often from separate structures in the brain – that would not normally be active simultaneously. If connections between these regions already exist, repeatedly recruiting them increases their chances for survival. Alternatively, if no connections are present, they sometimes can be generated.

One key feature of play is that we often venture into unknown territories. During play, children can try novel ways of interacting with the environment, both with the living (i.e. other children, animals) and non-living (i.e. toys) parts of it. Such behaviours can not only help a child make sense of a complex world, but in addition the novelty of the situation also has a direct impact on learning and memory.

Neuroscientific experiments have clearly shown that when the brain registers novelty, this often leads to strong activity in the midbrain. Sub-regions of the midbrain are traditionally associated with the processing of reward, thus it appears that the brain perceives many novel situations as rewarding. More importantly though is the fact that such reward signals increase activity in the hippocampus, which is the brain's key structure for learning and memory. As a consequence, novel ways of interacting with the environment can directly lead to better memories for all the events that happened in the novel situation. This in turn may greatly contribute to quickly building up a larger and larger repertoire of knowledge about ourselves, the workings of our environments and the ways we can interact with them. In other words, play can equip children with permanent and versatile abilities to understand and change the world they live in.

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Why do we play?

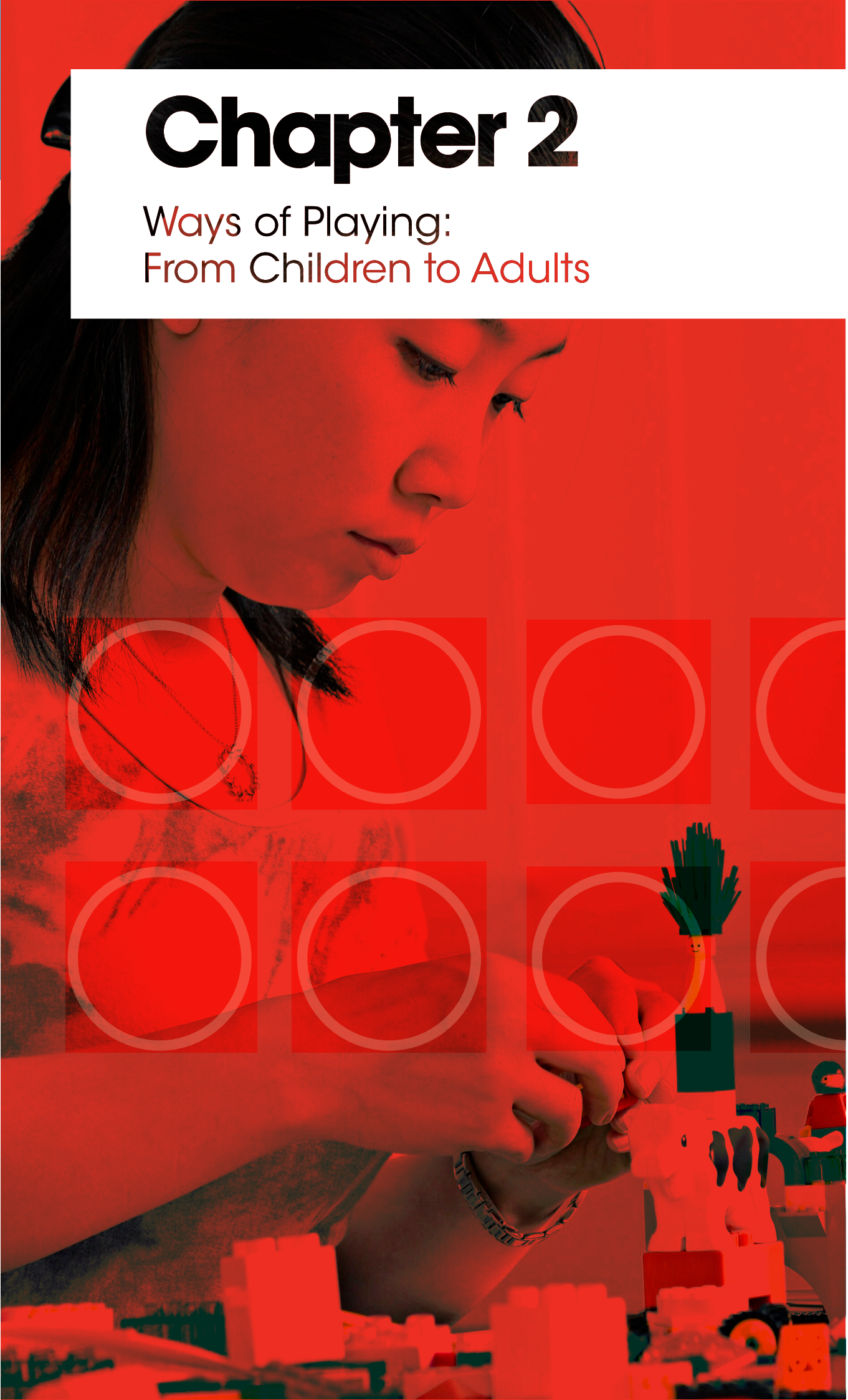
Across human cultures, all children have always had an intrinsic desire to play. "Play, broadly conceived, may be a major process underlying lives worth living." (Pellis and Pellis, 2009, ix) The culture of adults typically undervalues and derides play, so it is difficult to assess what is lost in adult lives by the absence of play. We do know that play allows children to use their creativity while developing their imagination, dexterity and physical, cognitive, and emotional strength. Adults also play to break from conventions, to experiment, to shift from normality into a rich world of imagination, to push themselves in new ways.

Play is important to healthy brain development (Shonkoff and Phillips, 2000; Tamis-LeMonda et al., 2004). It is through play that children at a very early age engage and interact with the world around them, and it provides a vehicle for them to derive meaning from their experiences. Adults also use play to make connections and meanings, and for mental and physical stimulation.

Play allows children to create and explore a world they can master, conquering their fears while practicing adult roles, sometimes in conjunction with other children or adult caregivers (Barnett, 1990; Pellegrini and Smith, 1998a; Hurstwitz, 2003; Smith, 1945). As they master their world, play helps children develop new competencies that increase their confidence and the resiliency they will need to face future challenges. For adults, play, although engaged in less often, can be a way to explore possibilities and find new ways to gain control and mastery. It can be a way to find a Flow state of engagement and concentration, free from distractions and ripe with challenges, which is sought-after but rare in adult life.

Chapter 2

Ways of Playing: From Children to Adults



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Introduction

Play in childhood takes specific forms, each of which contributes to children's development in important ways. As we move into adulthood the expressions of play change, yet many of the same motivations remain. These motivations form a framework of play across the ages.

We find that play is at the root of many different activities that people find engaging and where communities have formed a sense of belonging and identity has also emerged, creating a compelling reason to stay engaged and return. What unifies this diverse set is less the nature of this activity, but more the 'gifts of play' that engagement in playful activities can bring.

Children's play

Why is play children's most important work?

Today it is almost universally accepted by developmental psychologists that children develop and learn principally through play. Figure 2.1 shows that for all aspects of development, including physical, intellectual, social and emotional, there are multiple forms of play.

Basic form		*Detail*	*Examples*
PHYSICAL PLAY	Gross motor	Construction	Building blocks
		Destruction	Clay/sand/wood
	Fine motor	Manipulation	Interlocking bricks
		Coordination	Musical instruments
	Psychomotor	Adventurous	Climbing apparatus
		Creative movement	Dance
		Sensory exploration	Junk modelling
		Object play	Finding out table
INTELLECTUAL PLAY	Linguistic	Communication/function/ explanation/acquisition	Hearing/telling stories
	Scientific	Exploration/investigation/ problem solving	Water play/cooking
	Symbolic/mathematical	Representation/pretend/ mini-worlds/	Doll's house/homes/ drama/number games
	Creative	Aesthetics/imagination fantasy/reality/ innovation	Painting/drawing/ modelling/ designing
SOCIAL/ EMOTIONAL PLAY	Therapeutic	Aggression/regression/ relaxation/solitude/ parallel play	Wood/clay/music
	Linguistic	Communication/interaction cooperation	Puppets/telephone
	Repetitious	Mastery/control	Anything!
	Empathic	Sympathy/sensitivity	Pets/other children
	Self-concept	Roles/emulation/ morality/ethnicity	Home corner/service 'shop'/discussion
	Gaming	Competition/rules	Word/number games

Figure 1: (Moyles 1989)

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Considerable evidence exists on the close relationship between play and various aspects of development and learning. The Russian developmental psychologist Lev Vygotsky (1978) specifically relates play to children developing a sense of control and self-regulation of their own learning. During play children set their own level of challenge (create their own zone of proximal development), and so what they are doing is always developmentally appropriate (to a degree to which tasks set by adults will never be). This also involves the notion that when play is spontaneous and initiated by the children themselves, they are in control of their own learning.

Secondly Vygotsky argues that play makes a crucial contribution to the development of so called 'symbolic representation.' Human thought, culture and communication are all founded on the unique human aptitude for using various forms of symbolic representation for culturally defined meanings. These include drawing and other forms of visual art, visual imagination, language in its various forms, mathematical symbol systems, musical notation, dance and drama. Play is recognised in this analysis as the first medium through which children explore the use of symbol systems, most obviously through pretence.

Vygotsky further argues that pretence play becomes, therefore, a 'transition' to the adult capability for abstract thought. So, as an adult, when one has had an interesting experience upon which you wish to reflect, a problem to solve, or a story to write, one has the capacity to represent the challenge in their mind and explore it from different angles. Not having yet developed these abilities, children require the support of real situations and objects with which the ideas are worked out through play. Thus when children have had a new or interesting experience, like a visit to the zoo, they act out significant events and ideas with their toys and with their peers. This kind of play, it is argued, allows children to both consolidate their understandings of their world and develop the representational abilities they will use to think through ideas as an adult.

The 5 types of play

Given the complexity of play, it is not surprising that there have been numerous attempts to categorise different types of play. Moyles (1989) categorises play according to related aspects of development, others according to assumed purposes (exploration, imagination, skill development), or the area of learning involved (mathematical play, play with language, narrative play). Others concentrate on the equipment, materials or contexts used (sand play, computer play, outdoor play), or the individual or social nature of the play and so on.

Within the psychological literature, the Swiss developmental psychologist Jean Piaget was among the first to describe in detail distinctly different types of play, which he observed as they emerged at different stages during early childhood. He observed the early emergence of 'practice' play with objects in infants, then that of 'symbolic play', involving various kinds of pretence at around 1 year of age and finally, at around the age of 5 or 6, the emergence of 'games with rules'.

Chapter 2: Ways of Playing: From Children to Adults

In contemporary literature the various kinds of play are generally divided into five broad types based upon the developmental purposes which each serves. These types are commonly referred to as:

1. physical play,
2. play with objects,
3. symbolic play,
4. pretence/ socio-dramatic play,
5. games with rules.

Although each type of play has a main developmental function or focus, arguably each of them supports aspects of physical, intellectual and social-emotional growth and, in practice, children's play nearly always includes more than one of these types of play. Moreover, in each case children can play alone, with other children (of the same or different ages) and with parents and other adults.

Physical play

This type of play includes active exercise play, rough-and-tumble and fine-motor practice. Exercise play is related to children's developing whole body and hand-eye-coordination, and is important in building strength and endurance.

The most extensively researched aspect of physical play, however, is what is usually referred to as 'rough-and-tumble' play. It includes chasing, grappling, kicking, wrestling and rolling on the ground and appears to have evolved as a mechanism through which children learn to control aggression.

Although this kind of play causes concern to some, it is easily distinguishable from actual aggression by the shared enjoyment of the participants, and appears to be wholly beneficial. Research suggests that it is clearly associated with the development of emotional and social skills and understanding emotional states, contributing to strong emotional bonds between children and their parents.

Fine-motor play refers to a wide range of activities which support young children's development of their fine-motor hand and finger coordination skills. These activities are often solitary, can be beneficially supported by an adult (e.g. sewing, construction) and, due to their absorbing nature, help children develop their concentration and perseverance skills.

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Play with objects

This second type of play concerns children's exploration, as young scientists, of the world and the objects they find within it. It also has interesting and important links to physical, socio-dramatic and symbolic play. Play with objects begins when infants can grasp things and hold on to them. It can also be described as 'sensori-motor' play (see Smith, 2000) when the child is exploring how objects and materials feel and behave. From around 18-24 months on, toddlers begin to arrange objects, a practice which gradually develops into sorting and classifying activities. By the age of 4 years, building, making and constructing behaviours emerge.

Play with objects appears to have a number of benefits related to the other types of play. Manipulating and constructing with large and small objects are excellent ways of developing physical skills. Play with objects also supports the development of creativity (when associated with symbolic or pretence and socio-dramatic play). For example, while young children are making or building, they are also often developing a story or narrative.

Play with objects itself, however, seems to be distinctively related to the development of thinking, reasoning and problem-solving skills. Children set themselves goals and challenges, monitor their progress, and develop problem-solving strategies. Experiments have demonstrated that through play children develop more flexible ways of thinking about objects and how they can be used, but also more positive attitudes to problems and any initial setbacks.

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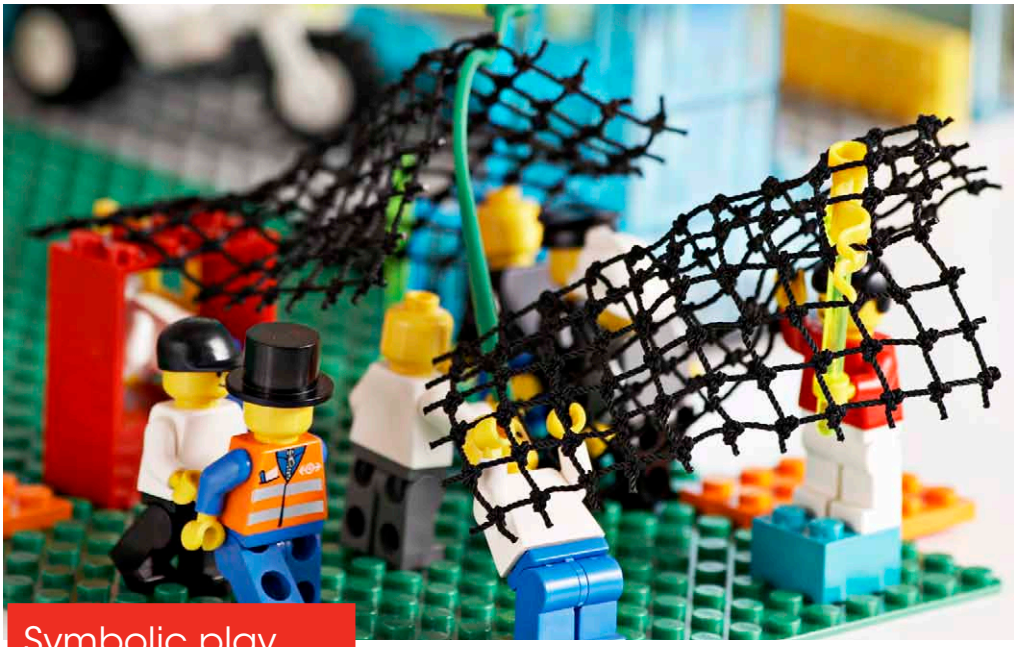
Play with objects is also particularly associated with 'private speech,' which involves children's spoken self-commentary on the activity at hand. This phenomenon was first identified by Piaget (1959), and is very commonly observed in young children. Vygotsky (1986) suggests it helps children keep track of the goals of an activity, progress made and the relative success of different approaches. A number of studies have demonstrated that the production of private speech during object and construction play is particularly related to the development of these important cognitive abilities. Construction and problem-solving play are also associated with the development of perseverance and a positive attitude towards challenge.



Symbolic play

It is important to distinguish between playing with language, which we refer to as 'symbolic' play, and using language to develop pretend scenarios or narratives, which we term pretence and socio-dramatic play. Although closely related, they perform separate, but equally psychologically important, purposes. In general, symbolic play supports children developing technical abilities to express ideas, feelings and experiences through language, painting, drawing, collage, numbers, music and so on.

Play with language starts very early in life, with children under the age of 1-year-old playing with sounds and, as they grow older, particularly playing with the sounds of the language or languages they are hearing around them. A wealth of evidence shows its association with developing language abilities and early literacy.

The role of children's drawing, painting etc. in their development has been less extensively researched. However, what is known is that before they are fully literate, drawing and other mark-making are universal and important ways in which children record their experiences and express their ideas. As with all play, to understand children's drawings it is important to observe the process rather than the product. Often they are not a snapshot, but retrace a narrative sequence of events and are accompanied by actions and dialogue performed by the child.

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It is also important to understand children's purposes in drawing. Children are often recording what they know about objects, rather than attempting to represent how the objects look. Through drawing, they gradually increase their 'graphic vocabularies' and ability to organise graphic elements into a pictorial representation (a kind of 'graphic grammar'), becoming increasingly able to use this mode of representation to express their ideas.

Musical play is another very under-researched area, despite being a ubiquitous and highly significant form of play in all human cultures. Infants' innate response to rhythm and sounds plays a part in establishing early communicative abilities. A part of this response appears to relate to children's more general interest in patterns of all kinds, which seems to underlay both mathematical and aesthetic developments. Pound (2010) has argued persuasively that musical play supports children's abilities in social interaction, communication, emotional understanding, memory, self-regulation and creativity.

Pretence and socio-dramatic play

Pretence and socio-dramatic play are perhaps the most common types of play. As well as dressing-up and role-playing (fantasy and real-world), this type of play includes all forms of pretence, arguably including playing with pets. It typically emerges in children during their second year as solitary pretence play, then evolves into dressing-up and the child pretending he is someone or something else (eg: a mummy, Buzz Lightyear, a dog). By 4/5 years of age, it becomes co-operative and social, involving role-play and developing stories.

High-quality pretend play has repeatedly been shown to be very closely associated with cognitive, social and academic development. Studies have reported the effect of pretence play on deductive reasoning and 'theory of mind' (the basis of children's developing social understanding), and of socio-dramatic play on improved 'self-regulation' among young children who are prone to be highly impulsive.

Two aspects of this kind of play are often a cause for concern, however, and involve play with imaginary friends and play with guns. Studies have shown that children's ability to distinguish fantasy from reality is not compromised by having imaginary friends; on the contrary, it contributes to developing imagination and narrative skills (Taylor & Mannering, 2006). Gun play, like rough-and-tumble, is easily distinguishable from real aggression, in the same way that Tom and Jerry cartoons are easily distinguished from horror movies. In this kind of play, as in all other aspects of socio-dramatic play, children are developing their co-operative and social skills in contexts which are salient to their interests (Holland, 2003, and Levin, 2006).

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Games with Rules

Young children are strongly motivated by the need to make sense of their world and, as part of this, they are very interested in rules. From a very young age children begin to enjoy games with rules, and to invent their own. While playing games with their friends, siblings and parents, young children are learning a range of social skills related to sharing, taking turns, understanding others' perspectives and so on.

The use of electronic and computer games (together with TV viewing) is a particular area of anxiety for parents. The concerns relate to violence and to their lack of developmental or educational value. There is some evidence to suggest that viewing violent images can lead to increased aggression in children. Studies have also shown, however, that well-designed computer games can offer very engaging, creative, open-ended or problem-solving challenges to children, which are likely to share some of the benefits of problem-solving or constructional play with objects. Despite worries about the solitary nature of electronic and computer games, in practice children enjoy these most when they are played with others and the best games stimulate a good deal of talk between children which helps develop their language skills.

Supporting children's play activities

Participating in play, especially with infants, is important. Mother-infant interactions in particular have been proven to greatly affect the child's emotional responses later in life and can have an impact on their cognitive and social development, as well as their tendency to be fearful or show positive emotions more often.

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Beyond participating in play with infants, there is much that parents and adults can do to enhance the educational and developmental benefits of play; these can be categorised as follows:

- **Creating a supportive environment:** children are likely to engage in the most complex forms of play, involving risk and challenge, and so derive the most educational and
- developmental benefit when they feel emotionally secure;

- **Providing a range of opportunities:** children benefit from experiencing a good mix of the various types of play; this involves providing appropriate equipment and materials, which inspire and support young children to engage in the various types;

- **Structuring:** this is a term first coined by Manning & Sharp (1977) and refers to the idea of developing playful projects within educational contexts in which the adult responds to the children's interests and provides opportunities for various types of play incorporated within a developing meaningful or narrative context;

- **Participating:** it is well established that, if adults are able to play alongside children (e.g. playing with modeling clay or take on a role (e.g. a customer in the hairdressers) this can enormously enhance the quality of the play, the language that it supports and so on;
- however, this requires great sensitivity – for example, it is far more engaging to describe
- what you are doing than to ask the children what they are doing – but can be extremely productive (and informative about the children's real level of understanding).

When considering peers and siblings the combination of competition and cooperation feature strongly. Play partners with whom we either easily or never gained an advantage were likely to be the ones we found least exciting. In contrast, those individuals with whom gaining the advantage was a challenge, but who did not make it impossible for you to win, were likely to be the ones you played with most often (Pellis et al 2009, p.15). Successful play interactions depend on the players' ability to signal to each other whether they are seeking play or not. These unspoken negotiations provide the most striking evidence of the intimate connection between play, expressivity and communication.

Adults' play

Over recent years the notion of play has been broadened to embrace a positive idea of adult play and its value.This shift has been led in part by successful mainstream books which advocate this view, such as Pat Kane's The Play Ethic: A Manifesto for a Different Way of Living (2005), and Stuart Brown's Play: How It Shapes the Brain, Opens the Imagination, and Invigorates the Soul (2009).

Kane makes a detailed and powerful argument that when play is repressed in adult life – as it so often is – we pay a heavy price. He writes:

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> *"Our consumer society exploits our aspirations towards a more beautiful, more meaningful existence – while our working lives rarely allow us the opportunity to actively pursue that, in a constructive and lasting way. The identity of the worker, pursuing a work ethic... is simply too cramped and limited to address this gap between our desires and dreams, and our ability to realise them... Play – as a biological fact, as a cultural tradition, as a technological possibility, as a way of behaving – is one way to bridge that gap. The player submits their entire life to the basic test of play: can this be changed? Why does this have to be this way? Can we try something different, more fulfilling? Can we put this, literally, into play?" (Kane, 2004)*

He asserts that this is not a recipe for 'doing nothing' – rather, a person in play is 'passionately active' and engaged in their projects. He notes a distinction made by the theologian James Carse between finite and infinite games: whilst the finite game is played to be won, the infinite game is played for its own sake, to keep the play alive, and for the enrichment that it offers. The kind of work that people do for paid employment can involve a series of finite games, but ideally these should be in support of the greater project – the infinite game – of ongoing play and development of the self and community.

The 5 types of play in adult life

Revisiting the 5 types of play, it becomes clear that as play develops from childhood into adulthood it inevitably becomes more complex, as do its psychological purposes. Often, though not always, the transformation from child to adult play also includes the introduction of a competitive element. It is also notable that adults enjoy watching and discussing playful activities almost as much as participating in them.

Physical play

- This includes sport and physical activity of all kinds, including those which:
- represent a physical challenge, risk and danger and are mostly individual, e.g. rock climbing, skateboarding, free running (urban acrobatics), and other extreme sports
- involve playing in a team (and include a social/emotional aspect), e.g. football, cricket, rugby, hockey
- include physical combat (an extension of rough and tumble play), e.g. martial arts, boxing, wrestling
- include an aesthetic element, e.g. walking, dancing, gymnastics
- give pleasure through physical exercise, e.g. aerobics, running, working out

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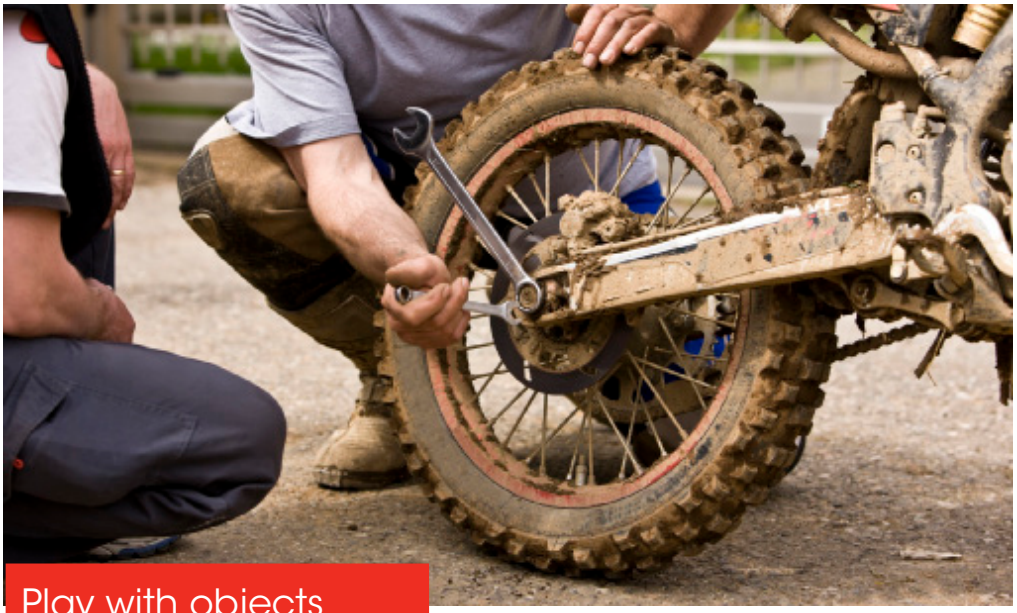
All of these types of play activity clearly involve an element of maintaining physical fitness and developing and maintaining physical skills. Physical fitness, while a useful end in itself, is known to also contribute to improved concentration skills and to improved feelings of well-being. Physical play among adults also often involves an important social and emotional element, supporting the psychological well-being derived through friendships and the social status and self-esteem derived from achievement.



Play with objects

Many adults enjoy and spend hours making things and, as we discuss later, this activity has increased considerably in popularity in modern post-industrial societies. The intense drive for perfection often seen in this kind of activity and the common loss of a sense of time when engaged in them are also powerful clues that this type of adult activity is essentially playful.

Adult play with objects is also at the root of scientific discovery and the invention of new solutions to practical problems. It is no coincidence that many of the most successful inventors and discoverers have a reputation for being playful in addition to their fame as eminent thinkers; consider Albert Einstein or Richard Feynman, for example.

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Symbolic play & pretence and socio-dramatic play

Symbolic play and pretence/socio-dramatic play are at the root of all of human culture, including the whole range of artistic expression involving music, singing, dance, the visual arts, literature and drama. Adult play includes active involvement in these activities as well as being, rather less playfully, a consumer of them as a listener or spectator.

As with other forms of adult play, this type of play is usually far more structured than their equivalents in childhood and also something that adults discuss and debate at length. In their various forms they are also embedded in the cultures of different societies and accorded differing cultural values.

Games with rules

Finally, "games with rules" expand enormously as a play type amongst adults, while also enjoyed by children. These expressions of adult playfulness are the least concerned with alternatives and imagination and are most concerned with rules and realities. The predominant driving psychological purpose of game playing in adults appears to be enjoyment of intellectual challenge. This is play which can be engaged in individually but is often social and communal and, like adult physical play, nearly always involves competition.

The changing nature of play and the rise of hobby culture

The striking distinctive feature in the discussions of adult play is the emphasis on the disruptive role of play. Here, play is seen to usefully shatter preconceptions, norms and set ways of doing things which can dampen innovation and make working life dull. Play reduces self-consciousness and the need to say or do the 'right' thing, inviting imaginative activity and acceptance on a more level playing field. Play can also involve seeing things from a different angle. When lowered constraints are combined with fresh perspectives, there is a greater chance that valuable creative disruption will happen; new ideas and ways of doing things emerge. The kind of play advocated for adults by these authors tends to be most similar to the 'free-flow' type of play. It has been argued that the growth of adult play has also been influenced by the extent to which video games are now a mainstream activity for many adults, as according to a study by the Pew Research centre in 2008 53% of American adults play video games of some kind (whether on a computer, gaming console, cell phone or other device).

Much play behaviour is, of course, timeless and not associated with any particular technology. However, certain technologies enable types of play which were not previously possible. Most notable here is the huge growth in multimedia mobile phones, or smart phones, which enable people to create games, puzzles, and treasure hunts for each other, requiring players to navigate around a city, or other area, whilst communicating with others.

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Play and innovation in business

One of the most well-known interventions putting 'play' into the 'adult' space of business is perhaps LEGO® Serious Play, a process which encourages adults in organisations to communicate, connect and develop ideas through the playful construction and manipulation of three-dimensional metaphorical models. LEGO Serious Play both taps into and contributes to the growing body of literature in both academic journals and popular paperbacks which argues that behaving in 'play' mode offers creative possibilities because it emphasises freedom and plays down feelings of responsibility, self-consciousness and shame.

Michael Schrage (2000) further suggests that to truly exploit organisations' ability to innovate, "any tools, technologies, techniques, or toys that let people improve how they play seriously with uncertainty is guaranteed to improve the quality of innovation" (p.2). In his definition of 'Serious Play', Schrage advocates a mindset change in business towards more experimentation and iteration, where the ability to 'play' with alternative futures becomes a way to convert uncertainty into manageable risks and opportunities. Playing with options, alternatives and trade-offs is both a perspective and a practice that makes innovation possible. He goes on to show how tools for modelling, prototyping and simulation may not change the meaning of innovation, but instead change how organisations innovate. He argues that "play is more about behaviour than thought - as is successful innovation" and outlines deliberate steps to embed play and a prototyping culture in organisations

The rise of playful, creative adult hobbies

While adults have indulged in hobbies throughout history, the past decade in particular a kind of individual and collective activity, characterised by playful construction, experimentation and tinkering, has notably gained a growing following.

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For instance, Make magazine, a quarterly magazine launched in 2005 by Dale Dougherty and Mark Frauenfelder, celebrates varied do-it-yourself projects and, perhaps more crucially, a do-it-yourself attitude and mindset, which has become influential. 'We celebrate your right to tweak, hack, and bend any technology to your own will,' they assert (http://makezine.com/about). The popularity of this approach can be seen at the huge MakerFaire events, held by the magazine to 'celebrate arts, crafts, engineering, science projects and the Do-It-Yourself mindset', attracting enormous numbers of participants. Furthermore a television show, Make:television, is also available on public-service TV in the US as well as online.

The rise of concern about the environment, pollution and climate change has also prompted people to reduce the amount of material they consume, and to find new ways to reuse and recycle. There has been a parallel resurgence of interest in craft activities, clubs and fairs (documented in Levine & Heimerl, 2008; Spencer, 2008; Gauntlett, 2011).

The literature on crafting can provide valuable insights into why people like to make things in a more general sense. For instance, in The Subversive Stitch, a largely historical, feminist study of embroidery, Rozsika Parker argues that this craft practice has been, at least in part, a 'weapon of resistance' for women, enabling them to actively produce things in the world – transforming materials into meaningful objects – and to carve out a place for personal thought and self-expression (Parker, 2010: ix). She argues:

> *"The processes of creativity – the finding of form for thought – have a transformative impact on the sense of self. The embroiderer holds in her hands a coherent object which exists both outside in the world and inside her head. Winnicott's theory of mirroring helps us understand how the experience of embroidering and the embroidery affirms the self as a being with agency, acceptability and potency… The embroiderer sees a positive reflection of herself in her work and, importantly, in the reception of her work by others. "(Parker, 2010: xx)*

This sense of self-affirmation through creativity is surely transferable to entirely different kinds of craft and making activity. The maker transforms raw materials into something new and in doing so demonstrates their ability to generate real new things in the world: things which other people can experience and appreciate, and which have an impact in the world. This in turn helps to anchor a more purposive sense of self (Gauntlett, 2011). These activities all grow and thrive because they connect individual creative satisfactions with a strong social, community dimension, which has been especially magnified by the internet.

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A framework for play across ages

As we have seen, the five types of children's play (physical play, play with objects, symbolic play, pretence play, and games with rules) correspond with adult play. However, adult play is especially celebrated for its free and disruptive potential. The twelve-point list offered by Tina Bruce, quoted above, effectively sums up the values and significance of free play.

If we synthesise all of this we arrive at the following diagram, capturing differeThe diagram shows four elements of play in relation to rules (y-axis), and imagination (x-axis). Game play – play that is enclosed by rules and standards – is the 'opposite' of free play in that the player must operate within strict boundaries. Depending on the game, however, they may be able to exercise their imagination in play.

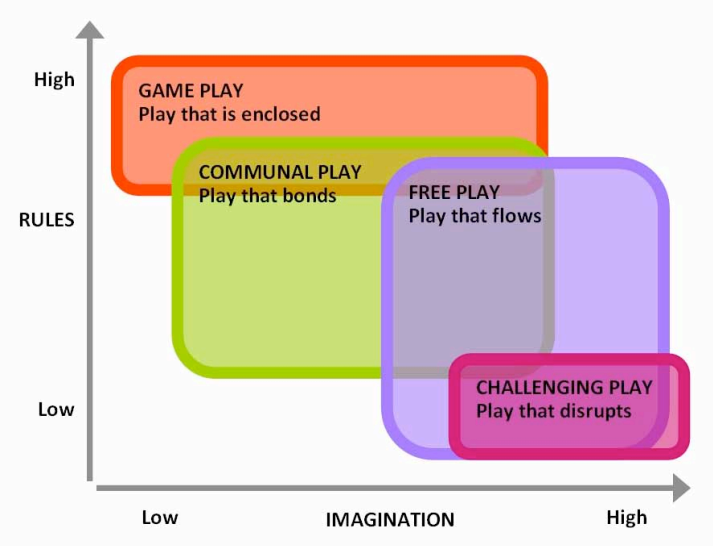

Fig.2: Four elements of play, in relation to rules and imagination

Free play can sometimes overlap with some kinds of game play, but describes the most straight forwardly 'playful' play which is often advocated as healthy and inspirational for children and adults alike. Play very effectively brings people together, as highlighted in the communal play element, but also it can be a positive disruptive force, indicated as challenging play in the diagram, during which rules are disregarded and levels of imagination are high.

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Modes of engagement in play

In our previous report, Systematic Creativity in the Digital Realm (2009), we identified three 'modes of engagement' with digital services which invite participation and creativity. This drew upon the work of Nick Yee (2007) and Mizuko Ito et al (2009). The three modes were the 'immersion' orientation, the 'social' orientation, and the 'achievement' orientation.

As we have developed our thinking in this area further, it has become apparent that 'achievement' is not really the most appropriate term, as it suggests competitiveness and the idea of an individual trying to prove that they are more successful than others. A better term is 'mastery', which suggests a more self-motivated kind of achievement – becoming very skilled at something for its own sake. Therefore we would now present the three modes of engagement as:

- **the 'immersion' orientation –** also known as 'messing around' (a non-competitive mode of exploration)
- **the 'social' orientation –** also known as 'hanging out' (a more relaxed and sociable or collaborative attitude)
- **the 'mastery' orientation –** also known as 'geeking out' (an intense and committed approach)

In all three of these modes, intrinsic motivation is essential. Jerome Bruner, in his seminal article 'The Will to Learn' (1966), identifies three key human motivations underlying playful behaviour: curiosity, competence and reciprocity. Each of these feature in the modes of engagement mentioned above, although in each instance one of the motivations plays a dominant role. In the immersion orientation, players are motivated primarily by curiosity, playing within the constraints of the medium, situation or context, and exploring where the boundaries are for their own ability and for the medium. In the social orientation, reciprocity is the driving motivation, whereas in the mastery orientation it is the attainment of competence. In this instance, play moves from exploring constraints to play beyond constraints, where one's realisation of ideas is supported and magnified by one's mastery of the medium.

Daniel Pink, in his recent book Drive (2010), explores motivations further and arrives at three things that lead to better performance and personal satisfaction: autonomy, mastery and purpose. Autonomy is about our desire to be self-directed and have control over our lives. Our need for autonomy may involve either the tasks we do, when we do them, the techniques we use to solve them, or who we do them with. Mastery speaks to our fundamental urge to get better at what we do and is both a mindset and a willingness to persevere through frustration and difficulty, as it involves recognition that we can never fully attain perfection. Purpose is about being intrinsically motivated, connecting our quest for excellence to something meaningful. Autonomous people working towards mastery perform at very high levels, Pink asserts, but those who do it for a greater cause perform even higher. The most deeply motivated people, who also tend to be the most satisfied and productive, are those whose pursuit of mastery is related to a cause greater than themselves.

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Interest as motivation

Recent neuroscientific evidence has supported the view that emotional and cognitive aspects of brain development and functioning are highly interconnected. Suzanne Hidi (2006) has reviewed the now-extensive evidence that cognitive aspects of motivation, such as belief in one's own ability to perform a task (Bandura, 1977), pursue mastery (Dweck & Leggett, 1988) and be self-directed (Deci & Ryan, 1985), are intimately linked with emotional aspects. Furthermore, the evidence shows that these links are bi-directional: we enjoy and are motivated to engage in activities in which we feel competent, and that increased competence results in positive emotional responses, setting of personal goals and development of personal identity in the areas we are most competent. Thus a virtuous circle is established whereby, through development, initial positive experiences of a particular activity lead to increased motivation to engage in it, which in turn leads to increased competence and expertise.

Interest in an activity has been linked to intrinsic motivation, flow and mastery goal orientation. Situational interest, arising from particular experiences, has also been distinguished from individual interest, which arises from the personal trait of curiosity. Hidi argues that individual interest develops through the repeated experience of situational interest, pointing to the value of contexts and situations that inspire our interest. According to Hidi, interest develops according to four phases, moving from the external (situational) gradually to the internal (individual) as follows:

- triggered situational interest
- maintained situational interest
- emerging individual interest
- developed individual interest

She reviews a number of studies in education showing that children's and students' interest in a topic which initially does not interest them can be increased by teachers relating it to areas of existing interest, providing positive feedback and affect, and by demonstrating their own interest in the topic. Equally, in terms of play, this model suggests that playful contexts and experiences, in relation to a new domain, can thus ignite a lifelong interest and passion.

From immersion to mastery – and back again

> *"We shall not cease from exploration, and the end of all our exploring will be to arrive where we started and know the place for the first time."* - T. S. Eliot

When exploring the progression of interest from a situational orientation gradually towards an individual orientation, the path appears very similar to the ancient Japanese term Satori which is defined as understanding and enlightenment. It implies an awakened mind or wise heart. The path of Satori is fuelled by an intrinsic hunger for knowledge and connections and delight in exploration and communication. Moreover, it is an instinctive inclination to become more of who you are and knowing what you are here to do. This spirited self-determination to develop insight, create meaning, and gift the world

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with originality is attained through a balance of sustained discipline and spontaneous exploration – effectively, through a bold engagement with life.

The path towards Satori, which leads from open exploration to more focused mastery and then back into more open exploration informed by this new understanding, has helped us to develop the model shown in Fig. 3. This shows how play becomes the means whereby we engage creativity and learning in pursuit of personal development and growth.

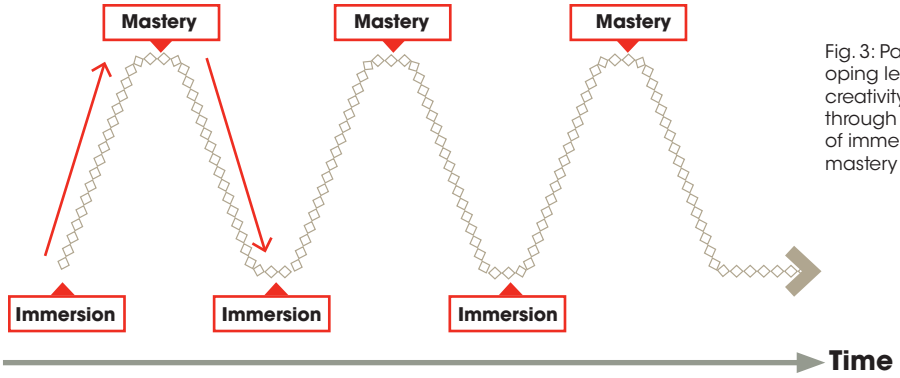

Fig. 3: Path of developing learning and creativity in play, through phases of immersion and mastery

The individual is likely to begin in the immersion mode, playing quite freely with ideas and materials, testing their abilities and their limits; this builds towards the mode of mastery, which brings a greater intensity and focus to the conquest of a particular challenge. This new insight can then lead into a new phase of immersion and discovery in areas related to one's interest, leading to greater mastery, and so on. The 'spiral' process shown in the diagram continues across time indefinitely, as understanding and skills continue to develop through life.

It will be noted that the social mode of engagement does not appear in this model. The social is very important – often central or perhaps crucial to the process of development through play shown here - but these social engagements and supports do not necessarily appear at fixed points in the cycle. Instead they could be represented as flashes, or phases, cutting across the model, as in Fig. 4:

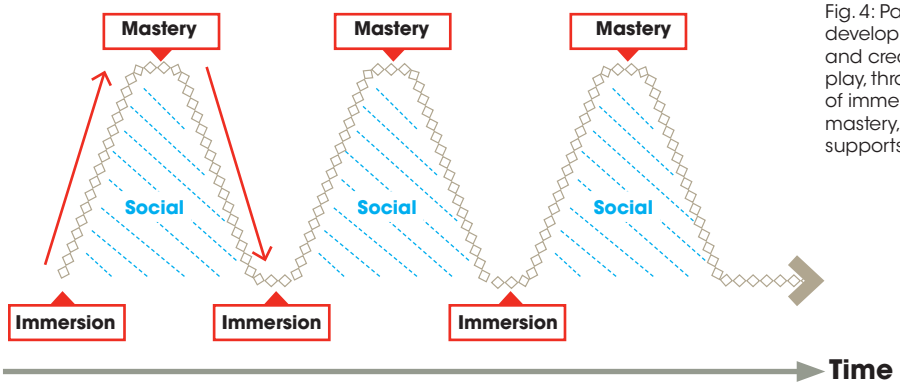

Fig. 4: Path of developing learning and creativity in play, through phases of immersion and mastery, with social supports

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This model reflects the journey we make when we play. It may vary in purpose and intensity, and is not necessarily undertaken consciously or deliberately, but represents a common process.

Qualities of a playful mind

Building on the research on Flow, interest and motivation, the 'spiral' process outlined above links with a set of qualities, which are at the heart of a playful approach to creativity and learning:

- Attention and the ability to focus
- Care - the way of the craftsman and caring for things done well
- Mindfulness and the beginner's mindset
- Provocation and the trickster or jester

Although each of these qualities can be significant at any time or continuously part of play, they can be positioned on the spiral at these points of strongest significance, as in Fig. 5:

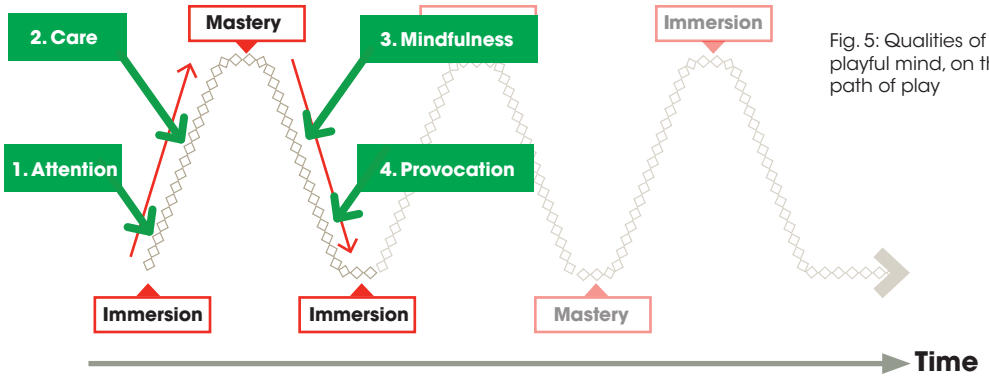

Fig. 5: Qualities of a playful mind, on the path of play

Each of these qualities, although complex in their own right, fuel creativity and learning in general. These behaviours give rise to the gifts of engaging play, discussed at the end of the chapter.

1. Attention and the ability to focus

In his book Flow: The Psychology of Optimal Experience, first published in 1990, Mihaly Csikszentmihalyi explains the ideas and research which underpin the notion of 'Flow' in detail. Flow is not simply the process of 'doing something enjoyable', but is about gaining mastery over the attention which consciousness directs towards the variables of everyday life, including what is happening presently, what could be happening elsewhere, and what might happen in the future. Neuroscientists have subsequently found evidence that "without attention, information that our senses take in literally does not register in the mind" (Begley, 2009). They posit that what you see is literally determined by what you choose to pay attention to.

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How the brain manages this has only become clear in the last few years, as research has shown that neurons compete with one another. All the stimuli that we are exposed to register as electrical signals, and the ones that register are determined by the strength of the signal, its novelty, by its strong associations, or by attention. Paying attention physically quiets down activity in neurons unrelated to the target of your attention.

> *"The intensity of activity in a circuit that specialises in a particular task is amplified by the mental act of paying attention to what that circuit specialises in. Attention is also, as it happens, indispensable for neuroplasticity". (Begley 2009: 196).*

> *"Experience coupled with attention leads to physical changes in the structure and future functioning of the nervous system… moment by moment we choose and sculpt how our ever-changing minds will work, we choose who we will be in the next moment in a very real sense, and these choices are left embossed in physical form on our material selves" (Begley 2009: 198).*

Since Flow is about immersion in a current task in the present moment, it necessarily entails the focusing of attention and the suppression of concerns which are not of immediate significance. Csikszentmihalyi writes: 'Tthe best moments usually occur when a person's body or mind is stretched to its limits in a voluntary effort to accomplish something difficult and worthwhile' (2002: 3).

These challenging activities help to give one a sense of mastery, or, as Csikszentmihalyi puts it, 'a sense of participation in determining the content of life' (2002: 4), which offers the deepest satisfaction of all. He also calls it 'reclaiming experience': deciding to take an active role in making one's own life meaningful and enjoyable, using whatever tools are available.

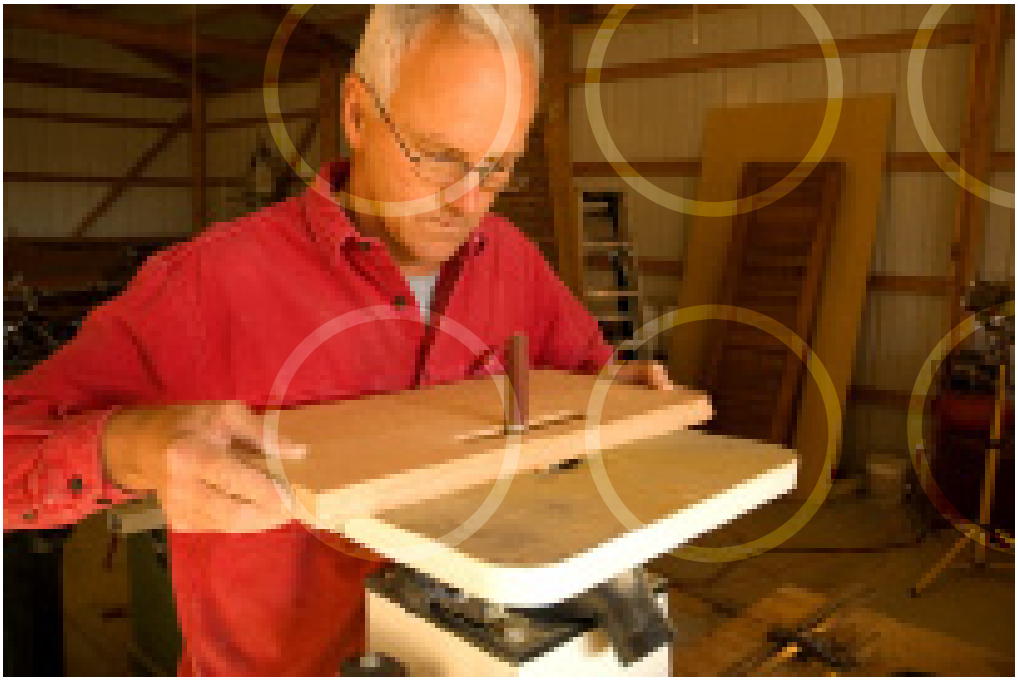
Flow is therefore a richer concept than it may first appear. It encompasses mastery not only of external materials or ideas but of the self. It is also about creating meaning by ordering and integrating the different elements of ideas, activities or creative processes so that they become part of a coherent experience, unified within an absorbing sense of Flow.

2. Care: The way of the craftsman and caring for things done well

> *Craftsmanship is an enduring, basic human impulse, the desire to do a job well for its own sake. Richard Sennett, 2008. P.9*

Craftsmanship requires both a desire for quality and the skills to deliver it. As Richard Sennett argues, there is no art without craft, no expression without technique. The ways of the craftsman combine a material consciousness with a willingness to commit to years of practice and a strategic acceptance of ambiguity, rather than an obsessive perfectionism. Such appreciation of work well done for its own sake is, we contend, in no way contrary to play. By combining skill, commitment, and judgment, the craftsman establishes an intimate connection between his head,

eyes, hands and tools (or machines). As he then perfects his art, the materials speak back to him through their resistances, ambiguities, and by the ways they change as circumstances change. An enlightened craftsman is one who enjoys such dialogue and, in so doing, develops an "intelligent hand" and a "playful mind".



> ***"Every good craftsman conducts a dialogue between concrete practices and thinking; this dialogue evolves into sustaining habits, and these habits establish a rhythm between problem-solving and problem-finding. There is nothing inevitable about being skilled, just as there is nothing mindlessly mechanical about technique itself" (Sennett, 2008: 9).***

To Sennett, the skills and "techniques" of a craftsman are anything but the mindless application of written rules or procedure. They are about caring. All craftsmanship is founded on skills perfected to a high degree, and at its higher reaches, technique is no longer a mechanical activity. It is the intimate connection between hand, head, and tool that matters.

3. Mindfulness and a beginner's mindset

Understanding mindfulness is perhaps most simply achieved by first defining its opposite: mindlessness. Mindlessness refers to the human tendency to operate on autopilot, whether by stereotyping, performing mechanically, working by rote, through expertise, or simply by not paying attention. At its core lays the paradoxical notion that the more we know, the more likely we are to act "mindlessly". Ellen Langer (1989) mentions three main sources of mindlessness:

1. looking at things through pre-established categories;
2. acting or thinking from a single perspective;
3. keeping with habits and repetitive tasks.

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Experts, Langer suggests, are especially prone to mindlessness whenever they blindly rely on acquired skills or apply standard routines. Anyone who favours end result over process and ceases to look at what they know as potential obstacles in disguise also risks this condition.

Underlying mindfulness, however, is a continual and active quest for novelty and, as Langer points out, this is novelty not as the pursuit of new stimuli, but as the capacity to find new ways of looking at familiar things. To develop mindfulness, one might strive to adopt a beginner's mindset when engaged in familiar activities. A beginner's mindset involves adopting an attitude of openness, eagerness and lack of preconceptions when engaging in any activity—even at an advanced level—just as a beginner would. Beginner's mind does not negate one's experience, but accommodates it to fit new circumstances. It involves focusing on questions rather than answers, staying in the present and not being afraid of failures.

The main difference between mindfulness and playfulness is that the latter implies a non-literal attitude, where beyond getting immersed, tweaking things and shifting gears, players enjoy incongruities for their own sake. In other words, a person could be mindful but lack playfulness.

4. Provocation and the 'trickster'

Play does not always mean fun, co-operation and harmony, of course. It can have a sharp challenging edge, in that it may disturb convention and perhaps mock the foundations and assumptions of 'serious' society. The disruptive or unsettling side of human imagination is epitomised in the figure of the 'trickster'. This archetype of disruptive playfulness is discussed at length in Lewis Hyde's book, Trickster Makes This World (1998). The trickster is intriguing and fascinating in the way that he crosses boundaries and confuses distinctions. For our purposes, it is worth noting that the trickster is a spirit or position which any of us can adopt – he is an outsider, but any of us can assume the playful outsider role. Hyde makes it clear that the challenge of the trickster is unsettling but also essential to human cultures:

> *"I not only want to describe the imagination figured in the trickster myth, I want to argue a paradox that the myth asserts: that the origins, liveliness, and durability of cultures require that there be space for figures whose function is to uncover and disrupt the very things the cultures are based on." (1998: 9)*

Huizinga (1955) emphasises that play often occurs in a "space" that is distinct from the constraints of a person's everyday life. Catherine Garvey (1990) builds on this further to suggest that the very idea of play depends on its contrast with non-play. In essence, play is not just an isolated state of mind, but requires our ability to swiftly move in and out of context and notice the differences between that which is make-believe and that which is not.

> *"We can only speak of play when we can contrast it with other orientations or states (of mind); we can only identify playful behaviour when the actor can and does engage in corresponding but contrasting non playful behaviour." (1990, p.4)*

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Garvey's contribution highlights the intricacies between freedom and constraints in play. Through play, people can stretch and bend reality. We can exaggerate, modify, abbreviate or change a sequence of events. We can dream up new outcomes, pretend to be someone else at another time or in another place. Decoupling what we expect to happen, and inventing entirely new outcomes using humour, drama or make-believe, enables us to take risks on safe grounds and then move on.

We can also note from D. W. Winnicott, author of Playing and Reality (1971), that the suspension of rules makes possible the creation or invention of fresh meanings. Play is linked to creativity in the sense that, as for the trickster, in play no holds are barred; all rules can be broken, and all kinds of new rules can be invented. In play we do not have to aim at 'literal truth'. We are free to invent non-existent entities and treat them as existing for the purposes of the play.

Engaging play as a cycle between immersion and mastery

As was illustrated in Fig. 5 above, the four qualities of a playful mind are that which fuels immersion leading to mastery and mastery that results in further discovery and immersion.

Gaining mastery over attention is a prerequisite for the ability to engage in Flow. Experiencing Flow enables us to increase our competence in an area, and caring for things well done will propel us further towards mastery of a medium. Not being content with a higher level of competence, instead being mindful and adopting a beginner's mindset, enables us to explore ideas further, unconstrained by all that we already know. Lastly, provocation helps us to disrupt known ways of seeing the world, discover adjacent areas of interest and propel us back into an immersion orientation, but a step further along than where we began.

Children's play, less inhibited by self-criticism and concerns about the judgement of others, is more likely to have these qualities, whereas adults often learn to suppress their playfulness and capacity for joy out of a fear of embarrassment or looking 'silly' in the eyes of others.

Designing for engaging play

Play and flow

Csikszentmihalyi's notion of Flow, discussed above, is not just description of an experience, but has deeper implications for those who wish to foster meaningful and engaging products or experiences. Csikszentmihalyi makes it clear that Flow is not wholly dependent on an individual's ability to master their own mental processes and attention. Experiences can be designed to foster a Flow experience. This can be achieved, for instance, by requiring the appropriate level of challenge (so that the individual is neither too anxious nor too bored) at all stages of a process which grows in engagement and complexity, and by enabling the meanings of a process to be open, rather than fixed from the start, so that they can be created as part of the process by the individual themselves.

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Csikszentmihalyi's research on Flow and optimal experience leads him to list the 'elements of enjoyment' – that is, the things that make enjoyable activities gratifying (2002: 48-67):

- A challenging activity that requires skills
- The merging of action and awareness in complete concentration
- Clear goals and feedback
- The sense of complete control over the task in hand
- The loss of self-consciousness
- The transformation of time (losing track of clock time)

For the design of play experiences, we may wish to note the findings which come under the category 'clear goals and feedback'. Feedback means being able to see immediately the results of your actions, and to be able to modify the activity in response to the unfolding process, connecting back to the earlier points about our need for autonomy. This is an important part of the Flow experience. Meanwhile, the findings on goals illuminate the distinction between play and games: play is defined by meeting goals you set purely for yourself, which are therefore especially meaningful and rewarding, whereas in games the goals are typically set by others and are less personally meaningful.

Play is Flow, then, on more than one level. The simplest understanding of Flow – the experience of being enjoyably immersed in a challenging task –-is a good description of what play is. But the richer detail offered by Csikszentmihalyi regarding what Flow means, why human beings seek it out and why we find Flow experiences to be our most enjoyable moments also adds to our understanding of play.

Play, like Flow, is about working towards a sense of unity and wholeness. It necessitates being stretched and taking an active role in making an impact on something; this may be a 'trivial' object (a toy, model, or website) but may represent something greater. Play, like flow, centres around achieving mastery, which heightens self-esteem, as well as creating and integrating meanings, bringing a sense of wholeness and unity. This is why, when a person reflects on the events of their life, they often remember the greatest pleasures as being moments of Flow or moments of play – the sense of total engagement and of everything making sense because it is unified in a positive experience of unlimited possibility or unlimited pleasure, rich with social or personal meaning even if it is 'just' a fun, playful activity.

Therefore it makes sense to see the desire for a sense of Flow as being what drives much play; and it follows that play experiences can be optimised by enabling and encouraging as much of the 'Flow' experience as possible.

Materials and platforms

Different kinds of materials, technologies or platforms each have particular qualities which will encourage or discourage different kinds of use and engagement. The craftsperson or artist knows that the choice to work in wood, clay or oil paint, leads to both different kinds of creative experiences and different kinds of outcomes. For children, a construction toy opens up avenues of possibility which are different to those suggested by, for example, a family of dolls or a handheld

electronic game. The point here is not merely the practical fact that certain kinds of equipment enable people to do certain kinds of things, but rather that different tools lead to different emotional responses and so have a fundamental impact on the experience and the output.

In our previous report, Systematic Creativity in the Digital Realm (2009), we discussed how online platforms support and foster certain kinds of behaviour. YouTube, for example, has become a massively used and popular platform because it offers a clear and structured framework for participation yet is almost completely open about what users do in response to that opportunity, and because it then fosters community around that content. Its simple but functional and well-organised interface has meant that YouTube has been adopted as a platform for communication, education and self-expression by an incredibly wide range of people from varying professions and social groups, from teenagers to musicians to doctors or architects and so on. In terms of play, one might say that YouTube has encouraged playfulness with online video not by having an extravagantly 'playful' and showy interface, but by carefully not getting in the way. It enables people to set their own goals, and meanings – a formally quiet approach which leads to a much more playful environment.

Similarly – and again with reference to technology, but applicable more widely – Jonathan Zittrain has coined the notion of 'generativity' to describe products which seem to naturally 'expect' their users to be playful and creative in what they do with them. His archetypal example is the Apple II computer, launched in 1977. Like other home computers of the late 70s and early 80s, a genre in which the Apple II was a pioneer, the machine did not 'do' anything when you switched it on. Rather, it just sat there waiting for the user to program it. Computer users of today might find this strange and frustrating, but Zittrain makes the case that at least it was ripe with possibilities. It was designed to enable people to do things which its own designers had not dreamed of (Zittrain contrasts this sharply with the Apple's iPhone and iPad, which cannot be freely programmed just by switching them on, and are consumer products which do not assume that the typical consumer would want to be that creative).

Materials which encourage play and playfulness are likely to be:

- attractive in design, so that we want to work with them;
- well made, so that we can see that the producer respects our need for tools of good quality;
- pleasing to manipulate, and offering immediate feedback;
- easy to pick up, but growing in complexity as the user becomes more experienced – the idea of 'low floor' and 'high ceiling';
- ripe with possibilities to be explored and taken in new directions – a concept which Resnick and Silverman (2005) has called 'wide walls';
- open in meaning and open to possibilities: 'Does it want you to do your own thing, or does it want you to do its thing?', as David Gauntlett has put it (2011: 176).

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Emotions that drive sustained engagement

In Systematic Creativity in the Digital Realm (2009), we noted the research of economist Edward Castronova, which suggested that online participation is driven by the desire for emotional rewards. The most coveted emotional responses, according to Castronova, are pride, curiosity, love and feeling smart.

He argues that people deliberately turn to computer games to produce the emotional high associated with accomplishing something concrete, feeling capable and being recognised or their successes.

The desire for feelings such as pride, curiosity, love and feeling smart can apply to play more generally. These are emotions which would keep individuals engaged and continuing on the circuit between immersion and mastery and back again, illustrated above.

The gifts of engaging play

Castronova (2007) has further determined to analyse the complex relationships between fun, gaming and virtual worlds in his book Exodus to the Virtual World. As for where happiness specifically comes from, Castronova quotes biopsychologist Kent Berridge, who asserts that pleasure, rather than being distinct, is actually a 'gloss pained on top of underlying brain functions' and that engaging this gloss is more complex than we might realise'.

Csikszentmihalyi argues that the greatest happiness, represented by the Flow experience (active engagement with an absorbing task), comes from intense activity, not restfulness. This is supported by recent research on happiness, which is emphatic that significant happiness and well-being is something that must be worked towards – it does not merely arrive as a consequence of pleasing circumstances or passivity (Lyubomirsky, Sheldon, & Schkade, 2005; Sheldon & Lyubomirsky, 2009; Boehm & Lyubomirsky, 2009; Layard, 2005).

Following the argument above, it appears that engaging play offers distinct 'gifts', experiences that are valuable and pleasurable to participants of all ages. There are, of course, many motivations for play, and therefore many gifts.

- **Reflection, awareness and integration:** The player is immersed in ideas, feelings and relationships, reflecting on and becoming aware of what they know. Play makes sense of previous experience and enables rehearsal of future experience. Play is an integrating mechanism, which brings together everything we learn, know, feel and understand.

- **Flow: The pleasure of Flow:** the deep engagement in a task, oblivious to distractions, which is both challenging and relaxing in its purity. This includes a sense of control, where the player sets their own goals and their own process, free from external rules or demands.

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- **Self-expression:** The individual is able to make their mark on an imaginative world, and express themselves within it.

- **Positive emotions:** As mentioned above, play enables the individual to feel proud of their imaginative and creative powers, building self-esteem through 'feeling smart', satisfying personal interests, and by creating and integrating new meanings throughout the cycle.

- **New ways of seeing:** Play unlocks new perspectives and reveals hidden truths for the individual.

- **Mastery:** Technical expertise, broad understanding of a domain and complete control.

- **Innovation:** as the player operates at a level of heightened engagement and creativity he generates ideas and things that are surprising and valuable for the self and others.

- **Connecting with and learning about others:** Through play, we share others' imagined worlds and possibilities, learning about them at the same time. Play is a rich process of relating to and coming to understand other people.

- **Self-realisation:** Play helps to develop the impulse to make the best of what one is capable of given one's strengths and limitations to reach towards self-realisation – the fulfillment of one's potential. It is at once a condition and outcome of personal growth and societal well-being.

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Introduction

By bringing together findings from a number of different disciplines, we show how current and future economic developments are likely to affect societies differently depending on their economic maturity, and how this will influence the cultural and societal perceptions of play in different parts of the world.

We outline how play is manifested physically, virtually, socially and culturally depending on the economic maturity of a society and propose four scenarios of what the future of play might look like. We conclude by highlighting a set of influencers, each of which will have a significant role in determining which of the scenarios will become dominant in the 21st century.

The global mega-trends driving societal change in the 21st century

Malnight and Keyes of IMD (2007) have proposed a set of 12 global mega-trends driving change in the 21st century. It is helpful to first understand them separately, before moving into assessing how they collectively are likely to influence how the role and value of play may be perceived in the future. The 12 global mega-trends are:

1. **Economic power shifting –** the focus of economic power is shifting to Asia and BRIC (Brazil, Russia, India and China) in terms of investment and output.

2. **Shifting market landscape –** While developed countries will remain the largest consumer and industrial markets, the rise of a massive global middle class in rapidly developing economies will shift consumer demand radically.

3. **Changing consumer landscape –** in more diverse and mobile societies and economies, new consumer groups are emerging.

4. **Fracturing global social fabric –** Globally, populations are becoming older, more urban, more Asian, and more mobile. Traditional social structures are fragmenting, shifting the notions of personal identity.

5. **Changing labour landscape –** a raging global war for talent competing for both skilled and low cost jobs is increasing.

6. **Changing industry landscape –** Power is shifting along the value chain and the competition to create and capture value – and profits – is intensifying.

7. **Growing stakeholder demands on business –** More stakeholders – public and private – are actively demanding transparency and accountability from business.

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8. **Changing technology landscape –** A global technology revolution is gaining pace, crossing national borders and scientific disciplines. Communications will evolve from closed to open, sensors and sensing from simple to smart, and sense-making from formal to informal.

9. **Changing economics of information –** Rapidly expanding connectivity and channels for information are making knowledge creation a global imperative.

10. **Changing geopolitical and security landscape –** Globalisation is driving new dimensions of power beyond military might, including economics, resources and technology.

11. **Changing nature of capital –** Global financial flows are accelerating, new power brokers are emerging, reshaping market dynamics and potentially raising tensions.

12. **Growing pressure on natural resources –** Basic resources are under threat, including water, energy, food, habitats and climate. Public and institutional activism is rising, demanding action.

From a play perspective the trends seem to build on each other to produce not only a more multilateral world in the coming decades, but also one where on the one hand the role and value of play could potentially be more significant, but on the other hand also profoundly influenced by growing connectivity, a changing technology landscape and a fragmenting social fabric.

Growing connectivity and the changing technology landscape may lead to a greater social and technological dimension to play, whilst rapid urbanization and mobility means traditional social structures are fragmenting and being replaced by communities of like minds online, who may never have met physically but are strongly connected virtually. This will likely change the ways we play and who we play with.

It also appears that the recent financial crisis has served to accelerate certain trends and slow others down due to the very different speeds of recovery around the world. A survey by IMD with global business leaders in September 2009 shows the higher priority placed on changes in the consumer landscape, market landscape, technology landscape and economic power shift. A slow economic recovery in the West, likely to continue into the next decade, will further accelerate the shift in economic power, consumer and market landscape towards emerging markets.

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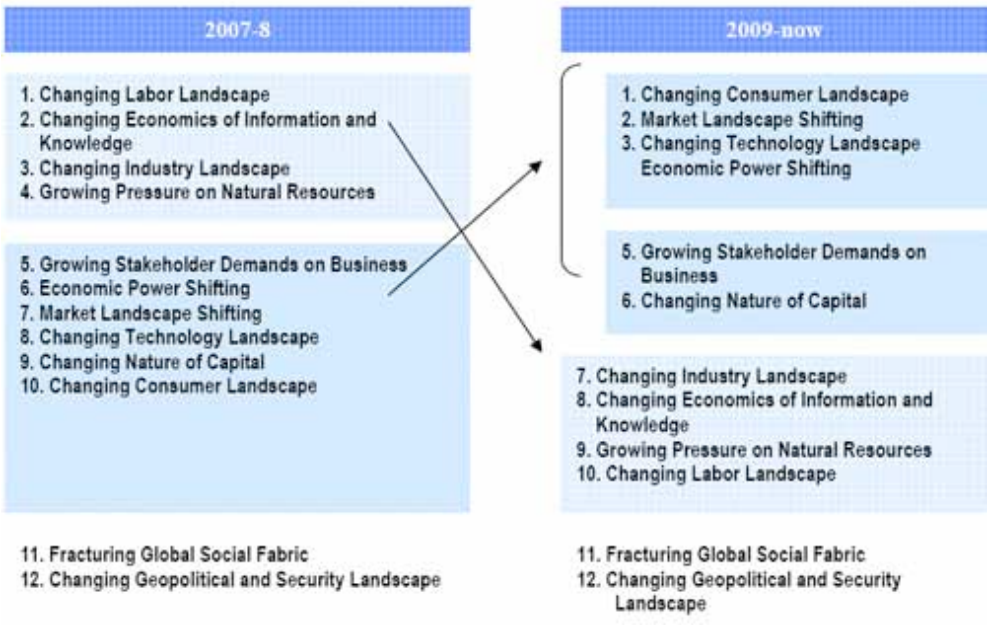
Figure 2



Emerging markets will dominate the evolution of play in the 21st century

Today the term 'emerging markets' covers 28 countries in the world, with China and India considered by far the two largest economies. Emerging markets are experiencing "stronger secular economic momentum, lower consumer, government and corporate debt, healthier demographics with much higher worker-to-retiree ratios than in developed economies" (Ghosh, 2010).

McKinsey estimates this decade to be "the tipping point in a fundamental long-term rebalancing that will likely leave Western economies with a lower share of global GDP in 2050 than they had in 1700" (Bisson, et al., 2010). However, the shift in economic power, although accelerated by the differences in the speed of recovery, has deeper roots than the current recession.

Two major socioeconomic trends are behind the shift of economic power to emerging markets, according to Bisson et al. First is the declining dependency ratios, where the size of the labour forces are growing, while birthrates are declining. In simple terms "there will be more workers, with fewer mouths to feed, leaving more disposable income" (Bisson et al, 2010). Second, the largest urban migration in history is under way, and according to the authors, "nearly one-and-a-half million people move to cities each week, almost all in developing markets" (Ibid, 2010). The economic impact translates to dramatic increases in output per worker as people move from subsistence farming to urban jobs. Equally, the accelerating pace of urban migration will result in fragmenting social structures and significant cultural change, especially in rapidly growing cities.

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The sheer number of "high-quality, high-productivity labour that will be mobilised over the next decade in Brazil, China, and India (not to mention Mexico, the Philippines, and Thailand) is likely to be measured in the hundreds of millions of people" (Bryan, 2010). As two of the most significant emerging markets, India and China exacerbate this further by maintaining artificially low exchange rates, making the cost of labour cheap and likely to result in the continued displacement of jobs that would otherwise exist in Europe, Japan and the United States. The resulting slower GDP growth and generally softer consumer demand driven by higher rates of unemployment will have far-reaching consequences for Western societies.

Cultural change and the evolution of play

Overall, these two socioeconomic trends may have significant implications on the expressions of play, as well as the cultural perceptions of it. It is also evident that these implications will be dramatically different in the mature economies of Europe, United States and Japan, facing slow GDP growth, higher unemployment and ageing societies overall, as opposed to the newly prosperous and demographically younger emerging markets.

While all the types of play we have identified in this report are found in all cultures, as societies undergo cultural change the forms of expression of different play types change. The changes in play can be seen as an adaptive response by individuals to the demands of living in the changing cultural milieu. Cross-cultural studies of children's play have established that the relative balance of time and expression of each play type vary considerably between cultures and even subcultures. By observing how these have changed historically, we are also able to outline how the role and value of play is likely to change in societies in the future.

Four scenarios for the future of play

Building on the findings above, it appears that urbanisation will be the single greatest influence on cultural change in a society, and with increased urbanisation follows growth in connectivity and spread of technology. The scenarios for the future of play thus describe four distinct alternatives, all of which can be observed in the world today. This is because although globalisation is rapidly gaining pace, the world is still far from sharing a single view on the role or value of play in society. Furthermore, as societies undergo development from pre- to post-industrial urbanised societies, the perceptions around the role and value of play also change.

Barnes (2006) has provided a very useful review of the elements in children's play which appear to stay constant and those that change over time due to cultural and historical change within cultures. She observes that throughout history and across all cultures children have engaged in all the 5 types of play identified earlier in this report. These appear as constant

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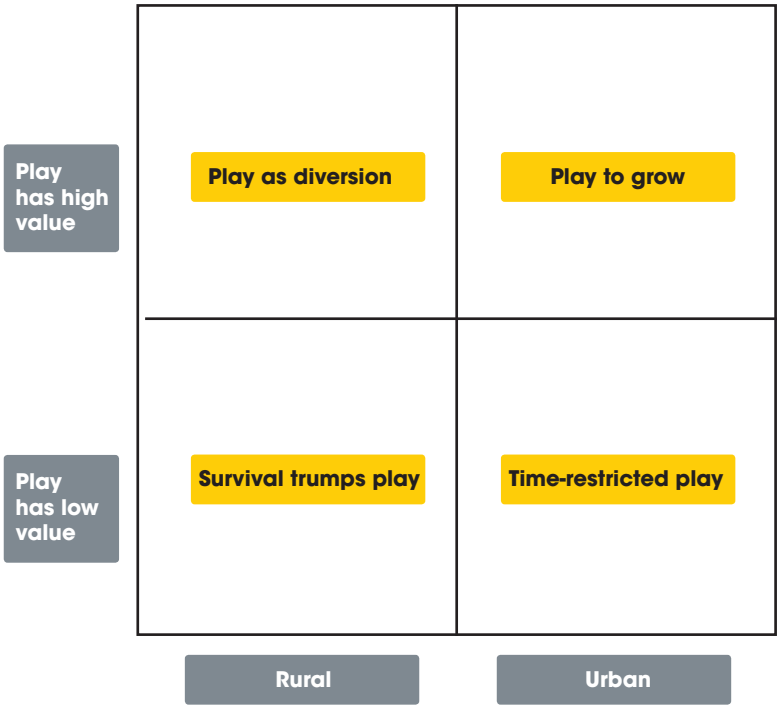
throughout and will presumably stay constant into the future. What changes are the culturally determined expressions of these types of play.

Therefore the four scenarios are built around Bornstein's (2007) ecological model of play, where the influence of the economic/technological environment, the length of perceived childhood, the cultural beliefs about the nature of childhood, and the cultural values towards play help explain the differences in the ways of playing in different cultures.



The cultural perceptions around the length and nature of childhood have been folded in under the value of play on the Y-axis, reflecting the patterns of involvement in children's play by parents and carers. The patterns, as identified by Gaskins, Haight & Lancy (2007) are: culturally curtailed play as described in the 'Survival Trumps Play' scenario, culturally accepted play as described in the scenario 'Play as Diversion' and culturally cultivated play as described in the 'Play to Grow' scenario. The 'Time-restricted Play' scenario describes the last, and perhaps missing, dimension from Gaskins' list: a world where pressure to perform overtakes the perceived value of play for children, and instead is resurrected later in adult life through the rise of hobby culture and play as therapy.

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Survival trumps play

(value of play: low | setting: rural)

Children in rural or agricultural societies have less time to play as they are required, from a very early age, to help with domestic chores. Childhood in such societies is a relatively brief affair, as it is in any society struggling in the grips of war, famine, the aftermath of a natural disaster or generally trying to make ends meet. In such circumstances, play invariably has to give way to children helping their parents in whatever ways they can. In some pre-industrial societies play is tolerated but viewed as being of limited value and certain types of play are culturally discouraged. For example, in Gaskins' (2000) study of the Mayan people in the Yucatan she found that pretence involving any kind of fiction or fantasy was regarded as telling lies.

Play as diversion

(value of play: high | setting: rural)

In pre-industrial societies where play is culturally accepted, parents expect children to play and view it as useful to keep the children busy and out of the way until they are old enough to be useful, but parents do not encourage it or generally participate in it. Consequently the children play more with other children unsupervised by adults, in spaces not especially structured for play, and with naturally available objects rather than manufactured toys. Furthermore, in these societies co-operative and practical skills are valued and thus cooperative games and play involving physical skills are predominant.

Cultures vary in their views about play which is appropriate for boys and girls. This varies also across class differences within societies, with lower income and more rural families having clearer distinctions between male-appropriate/masculine and female-appropriate/feminine play than those in middle-class families in cities. Children living in more rural societies have far more opportunity to observe the whole range of adult work and leisure activities and represent these in their play.

Play to grow

(value of play: high | setting: urban)

Middle-class Euro-american families tend to view play as the child's work; play is encouraged and adults view it as important to play with their children. The children also often spend time with professional carers, who view it as an important part of their role to play with the children to encourage learning. The style and content of this involvement varies, however; a study of mothers in Taiwan found that they directed the play much more than Euro-american parents and focused on socially acceptable behaviour, rather than encouraging the child's independence (Haight et al, 1999).

There are strong culturally determined differences in the places provided for children to play and in the objects they are given to play with. So, in modern 'Western' societies, children are often given dolls, action figures, and toys which are intended to stimulate cognitive, symbolic or linguistic skills. As children see a far more restricted range of adult activities, but have far more access to

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manufactured toys and media, their pretence play consequently includes imitating adult activities, but also includes more fantasy. There is also a gender difference here as often girls see more of their mother than boys see of their fathers; girls consequently engage in more realistic role-play than boys. Furthermore, childhood is vastly extended beyond puberty and adolescence. Play in general is more socially acceptable and the rise of computer games, multiplayer online games and hobby culture are ways adults continue to engage in play.

Time-restricted play

(value of play: low | setting: urban)

Values of free play and the importance of learning differ among separate cultures, especially evident in Asian societies where school and after-school learning occupies a significant amount of children's time. In the West, the revolution in connectivity has served to blur boundaries between work and personal time, and time=poor parents struggle to balance family, work and outside interests, paralleled by an increase in structured activities for children. Access to media appears to further limit play as children who have access to a television spend less time playing than children in similar circumstances, without TV access.

Rapid technological developments and the increasing access of children to computers, gaming and the internet lead to more sedentary lifestyles, and coupled with the rising risk-aversion in Western cultures means overall children's play is becoming more contained and supervised. This is a greater issue in urban environments and is likely to affect children's independence skills and their resourcefulness.

In the West the role and perception of play is likely to be further torn by greater pressure on children to perform in school at an ever earlier age, coupled with earlier and increased frequency of testing, demand for learning content in play and more structured activities for children, at odds with the demonstrated value of free play in improving children's learning and creative capacity.

If children can be said to be growing older more quickly as a result of all the demand on them from an early age, the counter-trend to this is the 'staying-younger-longer' trend among adults, where computer games, hobby activities and online communities are offering more avenues than ever before to engage in play. Slower economic growth and rising unemployment in the West may contribute to more individuals pursuing their passions, setting up small local businesses yet reaching millions through the internet and growing connectivity, enabling the long tail of economic activity as envisioned by Chris Anderson (2006). Ageing societies may also further strengthen the trend of play as therapy or as an activity to ward off decline in mental agility, as already evidenced by the popularity of various brain training games and activities especially in Japan.

The fork in the road: Play to grow versus Time-restricted play

What becomes clear is that as societies evolve, they follow a trajectory from the 'Survival Trumps' play scenario, to 'Play as Diversion' and towards the two competing views of 'Play to Grow' and

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'Time-restricted play'. What is not clear, however, is which will dominate in the future. In the event that the 'Play to Grow should become dominant, attitudes towards play are likely to become more positive, giving children more time to play and encourage the shift from adults tolerating children's play to them being actively involved in playing with their children.

Although globalisation will likely spread the value and lifestyle associated with middle-class income to an ever broader and more multicultural audience, growing urbanisation may mean more children will be living in a social and physical environment which is risk-averse and in which their play is organised and supervised more by adults. This would point to the 'Time-restricted Play' scenario becoming dominant in the long run, where children's play will increasingly happen despite adults, rather than supported by them.

However, as each culture undergoes this transformation, they bring to it their own cultural value systems and contexts. Thus globalisation, urbanisation, and connectivity will have a great influence on the role of play in society, but not necessarily skew the consensus in either direction. What is alarming, however, is the lack of understanding and appreciation of the value of free play among many parents and decision-makers in the West, busy trying to reform educational systems at odds with the requirements of the knowledge economy by eliminating the very quality that prepares children for self-directed learning: free play. A much more profound and far-ranging debate is required in this regard, and should be coupled with the discussion on how we best nurture the skills and abilities in people of all ages that the knowledge economy requires.

Charting the next 20 years: significant influences on the future of play

Whilst the four scenarios can all be observed in the world today, how certain societal variables manifest themselves will further influence which scenario(s) will become predominant in the 21st century. These are generational traits and preferences, educational reform, the growing social dimension of play and. lastly, the rise of game mechanics to influence wide-spread behaviour change.

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Generational traits and preferences

Research by Howe and Strauss (2007) suggest that events and circumstances shape entire generations according to which phase of life its members occupy at the time. As each generation ages into the next phase, e.g. from youth to young adulthood to midlife to old age, attitudes and behaviours mature and contribute differently to public mood, and individuals appear to have more in common with their own generation than with individuals of the same age through history.

Looking at the next 20 years it appears that the so-called Millennial generation, individuals born between 1982 to roughly 2005, will play a significant role in defining the role and value of play in society. Howe and Strauss describe the Millennial Generation as the product of bounding fertility rates, also defined as children who were "wanted." Influenced by the hot topics of child safety in the 1980s and emphasis on family values,

> ***"educators spoke of standards, cooperative learning, and "no child left behind." Millennials as a generation have seen steady decreases in high-risk behaviors. As the oldest of them graduate into the workplace, record numbers are gravitating toward large institutions and government agencies, seeking teamwork, protection against risk, and solid work–life balance. Their culture is becoming less edgy, with a new focus on upbeat messages and big brands, and more conventional, with a resurgence [in popular culture] of oldies and remakes. Their close relationships with their parents and extended families are carrying over into their young adult lives." (Howe and Strauss 2007)***

On the one hand this generation appears to gravitate towards the family and aspiring towards a healthy balance of family life with work, potentially leading towards a 'Play to Grow' scenario. On the other hand, growing aversion to risk suggests an orientation towards organised and structured play, leading towards the 'Time-restricted Play' scenario. This would suggest a tension where both scenarios would play out simultaneously in societies, possibly exacerbated by growing inequalities in income. In such a world those wealthy enough could afford a 'Play to

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Grow' view on life, whereas those under pressure to juggle their lives and increasingly demanding work, as well as individuals with lower income, could drift towards either the 'Time-restricted Play' or 'Play as Diversion' scenarios.

Educational reform

Governments across the developed and developing world are currently engaged in massive efforts towards educational reform, especially in the Far East, including China, and in the Middle East. Decision makers and educators alike realise the significance of a well-educated population in the new 'knowledge' economies, where natural resources are less significant for economic progress, and human resources are more important. These reforms are particularly focused on developing problem-solving and thinking skills, and on the early years of education, seen as crucial in establishing children's abilities as learners and thinkers.

Many also embrace the notion that learning is no longer a stage that occurs early in our lives, but increasingly is a lifelong process of adaptation and growth in societies where none of us can expect a job for life. What remains undecided, however, is how best to accomplish the changes required. An increased emphasis on measurable standards and testing would likely result in more structured activies for children at ever younger ages, thus skewing the future towards a 'Time-restricted Play' scenario.

Increased recognition of the importance of problem-solving and thinking skills in educational systems worldwide, however, as opposed to basic skills and knowledge, will increase demand for educational toys and games which support the development of these abilities. If coupled with an improved understanding of the role and value of free play, widespread educational reform could indeed pave the way for a more broad adoption of the 'Play to Grow' scenario globally

Growing social dimension of play

The social aspect of play is essential as, through play, children connect with others and explore social relationships. In the discussion of adult play in chapter 2, we saw that communities of common interest and social connections become especially important as a fruitful dimension of the play experience. In particular, the internet has helped to bring together like-minded individuals who previously would have been isolated. In this way the internet is not merely a magnifier of previous behaviour, but furthermore enables social relationships to develop where previously this would not have been possible.

As connectivity grows further and migrates from computers onto portable devices of all kinds, play is likely to become ever more social and augmented. Findings in the Systematic Creativity in the Digital Realm (2009) report already speak to the fact that children see their play as 'one reality', i.e. as a blend between the qualities of the virtual and physical realms.

Chapter 4:
Future scenarios of Play

In terms of the future of play, the greatest influencer is likely to be the exponential increase in social connectivity and in tools that enable more forms of play to be socially magnified. Whereas many current tools and platforms celebrate sharing of the end-products of play and creativity, growing connectivity would suggest that more phases of the play and creation process will become connected socially, massively increasing the opportunities to learn and receive feedback from other like minds both near and far.

The greater social dimension of play is likely to not only extend play and playful behaviour far into adult life, and into old age, but also increase emotional and physical well-being associated with play, supporting the 'Play to Grow' scenario becoming more prevalent.

The rise of game mechanics to drive wide-spread behaviour change

Some observers, such as Jesse Schell (2010), have argued that the future of play will involve the structures and mechanics of games becoming increasingly embedded in everyday life. Others have also not only highlighted the power of game mechanics, as a tool for designing well-functioning and dynamic social systems in online games (Castronova, 2007), but also suggested that this approach be relevant for reforming government in general. This vision of the future sees citizens as players collecting 'points' and completing 'levels' across all kinds of activities, from eating breakfast to doing homework and their civic duties such as participating in elections. This is seen as playful for consumers (which it might be), but the primary motivation appears to be that of marketers or decision makers who wish to influence behaviour through a real-time version of carrots and sticks, a points system.

Individuals and societies benefit when people come together to play. However, playful engagement cannot simply be manufactured in a 'top down' way. In The Well-Played Game, Bernie DeKoven (2002) argues that human beings need to play together – and have 'deep fun', as he calls it – but that this need is often subverted when we establish overly organised games, including the 'games' of much paid employment and everyday life. When a play community becomes a game community, DeKoven argues, its members become overly concerned with the pursuit of a particular game, measured in their success or failure as players of that game. The game becomes an end in itself: "As a game community, we have abandoned any authority to determine

whether or not the game we are playing is, in fact, fun. That decision depends on who wins". Games, whether played individually or socially, enrich life by offering fun, stimulation, and often warm social connections. However, a perversion of gaming and game mechanics which invades all of life can potentially reduce opportunities for Flow by depriving us of our autonomy and imposing a purpose determined by others. Katie Salen has explored this in her Quest to Learn school in New York City, which opened its doors Autumn 2009.

> *"[Quest to Learn] is a new 6-12th grade public school that [uses] game-inspired methods to teach both traditional and critical 21st century skills and literacies... Quest aims to foster the type of learning that is possible today, based on access to online resources and tools from around the globe, learning that supports customized content for every student on demand, learning that is game-like in its ability to inspire and motivate" (Davidson, 2009).*

An interesting example, the long term implications of which still remain unclear. Further research will be required to show whether the game mechanics deployed here will support children in moving from a situational or context-driven interest in a subject towards being intrinsically motivated to learn beyond the points system in school.

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