

## My Workshop

“Invention over Imitation, Fantasia over Mimesis, Narrative over Description.”<sup>1</sup>



During open-ended play<sup>2</sup> children inhabit material and immaterial spaces with their bodies and minds. These spaces constitute children's wonder worlds, microcosms of play and exploration as well as retreats from the “out-of-scale” world of grown-ups. The following paper summarizes the theoretical underpinnings of a broader research project, titled *My Workshop*, which focuses on the spatial organization and the architectural support of such microcosms that nurture children's development.<sup>3</sup> Our proposal draws on two conceptual themes that should be considered when designing spaces for children. The first theme explores how bricolage and creative tinkering are integral to play worlds. The idea invokes the creative act of collecting and storing diverse objects and materials. It can be understood as a reflection of the technique for creating a *Wunderkammer* and engaging in imaginative explorations. The second theme addresses how “tactile intelligence” quite literally accompanies bricolage and should be encouraged in the activities of children. These two themes – tactility and bricolage – permeate our research and support the suggested recommendations on how carefully designed spatial configurations and carefully selected materials can broaden children's experiences in their personalized realms of experimentation.

When children play they occupy the central focal point, Husserl's *Nullpunkt*,<sup>4</sup> of their surrounding environment. They reign over this microcosm and fill it with diverse objects from explorations in and encounters with the adult macrosom. Children's fascination with physical objects lies in their ability to trigger imaginary play-experiments and in their role as fragments from the world at large. These traces of experience and learning become valuable for children's developmental

trajectory because the collection of objects stimulates both physically and mentally creative activities that unfold simultaneously on virtual, imaginary planes and in tangible, three-dimensional settings. Having a space for conceptualizing and manifesting ideas is crucial for children's development as it is for all creative endeavors:

*Even the most abstract mind is affected by the surroundings of the body. No one is immune to the impressions that impinge on the senses from the outside. Creative individuals may seem to disregard their environment and work happily in even the most dismal surroundings... But in reality, the spatiotemporal context in which creative persons live has consequences that often go unnoticed.<sup>5</sup>*

The concept of “workshop” encapsulates the essence of a stimulating environment and serves as a metaphor for the physical space in which children can store the physical components of their microcosms as well as engage in the activities these objects inspire. Workshops in general are personal, customizable spaces that adapt readily to various project needs. They can support both individual- and group-work and they are a safe space for exploring tangents. As a result, our project employs the concept of *My Workshop*<sup>6</sup> and emphasizes its importance as a physical space that enables bricolage and unstructured playtime.<sup>7</sup>

*My Workshop* encases the personal space and the materials a child engages during play which together can be likened to the early modern *Wunderkammer* (“Chamber of Wonders”). *Wunderkammern* were considered microcosms of the universe as they contained natural and artificial wonders that stimulated their owners “to become performers

handling the props to better understand the world.”<sup>8</sup> From this perspective, each child is a potential bricoleur. As a collector s/he assembles objects and raw materials for her/his own *Wunderkammer*-like space and classifies them in a spatially organized collection creating “a visionary prototype of future interconnective systems.”<sup>9</sup> All the diverse artifacts of a bricoleur’s collection are assembled and arranged with great care as part of “recognizable genres (...) linked by hidden assumptions and aims.”<sup>10</sup> As in the case of the *Wunderkammer*, despite the variety of collectibles selected by the child, *My Workshop* flattens possible hierarchies allowing for individual rituals of cross-referencing and for meaningful narratives that are entirely personal and independent though perhaps related to extraneous orders.<sup>11</sup> *My Workshop* acts as a “performative device full of secrets and surprises”<sup>12</sup> comprised of an inventory of objects that not only reveals the owners’ psyche but also allows the collector to develop make-believe scenarios through unlimited play sequences.

The process of selectively collecting, storing and retrieving components for building imaginary worlds captures the essence of the exploratory mode *My Workshop* seeks to encourage in children. This type of activity evokes the characteristics of bricolage, which are most apparent when the collector recognizes the inherent potential of an object for future imaginative explorations. Ready-made objects, malleable materials as well as computational materials are part of her/his repertoire and they are not necessarily collected to be reused in the same way they were initially intended. The bricoleur can diligently arrange and rearrange them within the spatial configuration that *My Workshop* offers, knowing every time the exact place where they are stored.

Bricoleurs move in and out of the space where they store their collection and experiment with their “precious” materials. In such creative endeavors, the workplace supports

the overall goal. Artists, scientists, engineers and architects, all rely on a repertoire of materials inside the protective shell of their workshop. In its capacity as a support for bricolage, *My Workshop* constitutes a platform for constructing micro-worlds whose vivid nature increases with the diversity and inherent potential of the materials they incorporate. Michael Eisenberg makes the case that more materials lead to richer micro-worlds as supported by construction-kit-like toys:

*The main purpose of providing this list [of materials] is to suggest the ways in which the notion of a “micro-world” may be profitably rethought as a (...) partly tangible entity. (...) The argument here has focused on construction kits as the foundational “objects-to-think-with”, as these provide plausible examples of children’s artifacts that can be, at the same time, simple, self-contained in the choice of primitive pieces and means of combination, rich in content, connected with languages and symbolic notations, and suggestive of comfort.*<sup>13</sup>

Construction kits of that kind are powerful because they relate to the importance of tactile sensations in human experience. Research connecting the human senses, the hand<sup>14</sup> and emotional bonds formed with materials emphasizes the importance of touch. Diane Ackerman discusses the emotional depth people experience through touch and its role in supplementing the human visual capabilities. The ability of fingers to fully replace sight in systems like Braille further highlights the power of touch and consequently of the human hands.<sup>15</sup> When collecting objects for the *Wunderkammer*, the tactile power of the collector plays an important role in “activating” the treasured objects. “These cabinets encourage (...) the construction of personal order through withdrawal into the sensory pleasure of handling. Absorption in solid objects temporarily stills the flux of consciousness as the

collector activates the collection by repeated handling (...)”<sup>16</sup> Undoubtedly touch is important for the collector, a fact that reinforces the need to provide as many developmental opportunities for the tactile sense as possible.

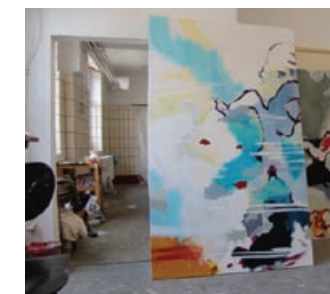
Even though children play with a variety of materials on a daily basis, their experiences, as those of grown-ups, are mediated by increasingly uniform and standardized surfaces. Research conducted by the Reggio Emilia Schools criticizes the relative homogeneity of many environments: “the coldness of metal, the linear cleanness of plastics and wood smoothed by machine precision, creating a material landscape in which contrasts are generally reduced or, at most, handled with difficulty.”<sup>17</sup> Inspired by the Reggio Emilia Schools, our project supports the tactile experience as an important basis for the child’s cognitive development.<sup>18</sup> Working on the same basis, Maria Montessori, the developer of the Montessori teaching method at the beginning of the 20<sup>th</sup> century, proposed tools for enhancing children’s sense of touch.<sup>19</sup> Montessori tools imply the deep-seated nature of tactility, which Aristotle interpreted as an amalgamation of many senses.<sup>20</sup> Children, more than grown-ups, use their hands to gain these tactile experiences through sensory stimuli: “Children touch, caress, rub, and play; with one hand or two, with their fingertips, palm, the back of their hand, the knuckles, the edge.”<sup>21</sup> *My Workshop* represents a child’s place for creative exploration with diverse materials, hard or soft, flexible or rigid, transparent or opaque, computational or non-computational. The design proposal consists of a system of containers that encloses a dual system of storage and workspace. Four main components constitute our design proposal, each one having different subcomponents that can be used either independently or together. The child is presented with a system of boxes waiting to unfold their hidden spaces. Inspired by the very first definition of architectural space as a shelter for life, we create

a variety of spaces by combining different packaging design techniques and materials. The containers can be deployed and utilized in many different ways depending on the problem at hand and the child’s personal preferences. In other words, the design deliberately presents a generic typology. The system of boxes is not defined in terms of its exterior material in order to encourage customization on the part of the child through add-on layers of materials, colors, and other forms of notation. More specifically, the suggested system of containers fulfills the following guidelines:

- It is portable, lightweight and compact.
- It is made out of cardboard which is a cheap and readily available model-making material.
- It utilizes space in a creative way without imposing a singular use.
- The microcosm of the workshop space comes into being as the system of containers explodes into its sub-components.
- The containers differ in size and material, facilitating that way customization of use.
- The assembly of the system encourages the user to develop her/his own organizational scheme.
- Each part of the system can be replaced individually.
- The system’s design logic is evident and each part is easily reproducible.
- It is an evolving system designed to have an expandable scale that can follow the child’s body scale as it grows up.
- Users can add new construction materials to their kits.
- Children can connect their workshops or parts of their workshops to immerse themselves in their explorations together.



Montessori school tools for enhancing tactile sensitivity.



Images of artists workshops in Duesseldorf, Germany.

1 PreLibri (The PreBooks), designed by Bruno Munari in 1979. Twelve books made of paper, cardboard, wood and other materials..







Prior to designing the containers, we analyzed existing construction kits. Most of them tout the child's potential to become an inventor and make almost anything. LEGO, for example, introduces its Inventor Kit by saying: "If you had the most amazing workshop of gadgets and gizmos you could imagine (...) then what would you make?"<sup>22</sup> However, the descriptions of the games included neglect the physical space of invention while none of the kits fully exploit the potential for the packaging to be a creative construction itself. A very characteristic example is the Playdoh Creativity Table, which is marketed as a place for creative activities: "The Playdoh Creativity Table is the ultimate all-in-one Playdoh play station. The huge workspace provides a place for lots of creative play with markers, crayons, and of course, Playdoh. Kids will enjoy endless fun in this contained play place, featuring (...) Playdoh favorites (...). This toy really gives Playdoh a home with lots of storage for tools and Playdoh cans in the table legs."<sup>23</sup> The vivid description of a "contained play place" approaches our idea of *My Workshop*; but it differs in essentials because it is product specific and thus cannot be customized or support other materials. Another example of a construction kit was developed at the MIT Media Lab and combines computational construction toys, called Crickets with non-computational everyday materials. Crickets have been used in group activities facilitated by the MIT Media Lab and the MIT Museum in after-school-programs and weekend workshops<sup>24</sup> and have yet to be available in kits like their predecessors, the programmable LEGO Mindstorms bricks.<sup>25,26</sup>

By proposing the idea of *My Workshop*, we wish to advance an ongoing conversation about shaping children's spaces for creative exploration. The proposed customizable spatial organization will allow children to adapt to their own style of bricolage. In the same system, materials perform an essential part as supportive and driving forces in all

forms of play. The arrangement of the materials ultimately selected should lead to a multifarious mix of computational and non-computational elements that encourages children toward open-ended activities. *My Workshop* presents a pilot proposal that introduces spatial organization and tactility into discussions around children's imaginative playtime; but this suggestion merely represents the tip of the iceberg when we consider the contributions architectural design thinking can make towards strengthening the relationship between the micro-worlds in children's minds and the physical environment in which they play.

### acknowledgements

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The Cricket workshop organized by the MIT Media Lab and the MIT Museum provides activities that range from chain reaction contraptions to doodling devices. The left image shows a workshop for creating kinetic sculptures. The image at the right shows a workshop for creating doodling devices.



## endnotes

- 1 Lorraine Daston and Katharine Park, *Wonders and the Order of Nature* (New York: Zone Books, 1998), 284.
- 2 The term open-ended is used to describe an activity that is not constrained by definite limits. In this case, open-ended play encourages child development by relying more upon the child than the toy/game for learning. Constructivist theory posits that "children have an inner drive to build an understanding of their world as they explore and interact with materials. Concepts about how the world works are built gradually and become increasingly complex as the child enters a rich learning environment and exercises his or her freedom to play." During open-ended play the children are free to use their imagination to define a game scenario and apply their own unique play patterns, actions and details. <http://dictionary.reference.com/search?q=open-ended>, <http://www.earlychildhood.com/Articles/index.cfm?A=62&FuseAction=Article>, <http://www.parentpages.net/arasmarttoys.shtml> [online], accessed 07 June 2005.
- 3 The project was initially developed for the MIT Media Lab course titled "Technologies for Creative Learning" under Professor Mitchel Resnick during the fall semester of 2004. An extended version of this paper can be found at: [http://www.mit.edu/~susannes/pdf\\_files/My\\_Workshop.pdf](http://www.mit.edu/~susannes/pdf_files/My_Workshop.pdf) [online], accessed 07 June 2005.
- 4 According to Edmund Husserl the body is always the *Nullpunkt*, the zero point of space and therefore the necessary origin or source of all cognition. "Thanks to the body, I am the center of things, an *Ichzentrum* with a body unlike any other, a *Nullkörper*." Kari Jormakka, *Flying Dutchmen. Motion in Architecture* (Basel: Birkhäuser, 2002), 76, and <http://www.husserlpage.com/> [online], accessed 07 June 2005.
- 5 Mihalyi Csikszentmihalyi, *Creativity* (New York: Harper Collins, 1996) in Mitchel Resnick, Robbie Berg, Michael Eisenberg, "Beyond Black Boxes: Bringing Transparency and Aesthetics Back to Scientific Investigation," *Journal of Learning Sciences* (2000).
- 6 In the MIT Museum's Cricket database, the activities are announced as taking place in the "playshop." The MIT Invention Studio on November 3 and 17, 2001, for example, was introduced in the following way: "Inventors of all ages can come to this playshop to build, create, and discover in the MIT spirit. Design and construct contraptions using a variety of building materials, including motors, sensors, and programmable bricks called 'crickets,' invented right here at MIT." For details on workshops see <http://learningtech.mit.edu/FX/index.php> [online], accessed 07 June 2005.
- 7 Researchers from the University of Maryland identified the following five elements of play as the most potent ones to carry learning opportunities for children: pleasurable, with no extrinsic goals, spontaneous, encouraging active engagement and some make-believe. Kathy Hirsh-Pasek and Roberta Golinkoff, *Einstein Never Used Flash Cards* (USA: Rodale Press, 2003), 205-243.
- 8 Barbara Maria Stafford and Frances Terpak, *Devices of Wonder: from the World in a Box to Images on a Screen* (Los Angeles, CA: J. Paul Getty Museum, 2001), 6.
- 9 Stafford and Terpak, 3.
- 10 Daston and Park, 260-273.
- 11 Stafford and Terpak, 5-9.
- 12 Stafford and Terpak, 12.
- 13 Michael Eisenberg, "Mindstuff: Educational Technology Beyond the Computer," *Convergence* (2003), p. 17-18.
- 14 In his book *The Hand*, Frank Wilson provides a vivid description of the hand as a source of human development: "The handyman's hand was more than just an explorer and discoverer of things in the objective world; it was a divider, a joiner, an enumerator, dissector, and an assembler. The handyman's hand could be loving, aggressive, or playful. Eventually, it found in the intimate touch of

grooming the secret to the power of healing. It may also have been the instigator of human language. (...) a new physics would eventually have to come into this brain, a new way of registering and representing the behavior of objects moving and changing under the control of the hand. It is precisely such a representational system – a syntax of cause and effect, of stories and of experiments, each having a beginning, a middle, and an end – that one finds at the deepest levels of the organization of human language." Frank R. Wilson, *The Hand: How Its Use Shapes the Brain, Language, and Human Culture* (New York: Pantheon Books, 1998), 59-60.

- 15 "Touch, by clarifying and adding to the shorthand of the eyes, teaches us that we live in a three-dimensional world. (...) Touch allows us to find our way in the world in the darkness or in other circumstances where we can't fully use our other senses. By combining eyesight and touch, primates excel at locating objects in space. Although there's no special name for the ability, we can touch something and decide if it's heavy, light, gaseous, soft, hard, liquid, solid." Diane Ackerman, *A Natural History of the Senses* (New York: Random House, 1990), 94.
- 16 Stafford and Terpak, 9.
- 17 The Reggio Emilia Schools in Italy are internationally acclaimed infant-toddler centers and preschools dedicated to building successful learning environments for children. Their research is specifically aimed at developing better physical spaces which they call "relational space" for children to flourish. G. Ceppi and M. Zini, eds., *Children, Spaces, Relations. Metaproject for an Environment for Young Children* (Milan: Reggio Children, 1998), 72.
- 18 "The richness of the sensory experience; investigation and discovery using your whole body. Sensory navigation that exalts the role of synesthesia in cognition and creation, fundamental to the knowledge-building processes and the formation of the personality. A complex environment made up of sensory contrasts and overlapping that are phenomenologically distinct: polysemy and balancing, negation of the patchwork effect or mélange, maintaining the perception of the differences between the parts." Ceppi and Zini, 16.
- 19 Thomas Müller and Romana Scheinder, *Montessori: Teaching Materials 1913-1935. Furniture and Architecture* (Prestel: Munich, 2002), 89-97.
- 20 "Aristotle himself doubted whether the sense of touch was a single sense or actually more than one, a sort of constellation of sense, giving it priority in the sensory hierarchy. According to the naturalist philosophers, in fact, a keen tactile sensitivity corresponded to a keener intelligence (...)." Ceppi and Zini, 72.
- 21 Ceppi and Zini, 76.
- 22 LEGO Inventor. <http://www.lego.com/eng/create/inventor/default.asp?x=x> [online], accessed 07 June 2005.
- 23 Play-Doh Creativity Table. <http://www.yenra.com/play-doh/> [online], accessed 07 June 2005.
- 24 MIT Museum, Emerging Technology. <http://web.mit.edu/museum> and <http://emergingtech.mit.edu> [online], accessed 07 June 2005.
- 25 LEGO Mindstorms. <http://mindstorms.lego.com/eng/default.asp?domainredir=www.legomindstorms.com> [online], accessed 07 June 2005.
- 26 The following description shows how challenging it can be to provide the right mix of materials for successful Cricket workshops: "Of course, Crickets are only one component of the construction kits that we provide for the BBB [Beyond the Black Box] projects. Many BBB projects make use of LEGO materials (including not only the traditional building blocks but also gears, wheels, and motors) for building structures and mechanisms. We provide a variety of different sensors that enable users to monitor everything from temperature and light to heart rate and galvanic skin response. (...) When organizing BBB activities, we make sure to supply a wide range of arts-and-crafts materials, including everyday objects such as pipe cleaners, popsicle sticks, and cotton balls. This blend of high-tech devices and art supplies makes possible precise explorations and investigations while simultaneously fostering a spirit of creativity, exuberance, humor, stylishness,

and personal experience." Mitchel Resnick, Robbie Berg and Michael Eisenberg, "Beyond Black Boxes: Bringing Transparency and Aesthetics Back to Scientific Investigation," *Journal of Learning Sciences* (2000).