Educating children in Architecture.

XXth architectural narratives through toys design

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Abstract

Teaching processes are, since renaissance, created and supported in order to develop specifically skills for a small part of the society. Otherwise, education can be considered as a larger type of processes that, according to E. Morin, “preserves, memorizes, integrates and ritualizes a cultural heritage of knowledge, ideas, values; it regenerates while reexamines, updates and transmits; create knowledge, ideas and values that return to the heritage”.

In this theoretical framework toys are considered as educational devices and a part of a materialistic culture that contains educational, artistic and ideological values. Through toys it is possible to map which part of each culture wants to be preserved and transmitted to the following generation.

From this point of view architectural toys are quite fruitful because represent not only architectural paradigms as languages and technics but also dwelling models and habits or, in some examples, urban design or territorial organizations.

This article attempts to organize the narrative lines that exist in the background of architectural toys production and design during the XXth century that are, according to the author, quite coincident with the architectural production changes.
In a theoretical framework it is possible to organize almost the entire material of culture of objects in two different categories: technical and symbolic. For technical objects their own utility is strongly connected with an use, an action or an operation in order to solve a real, material or immaterial problem. Some examples are tools like screwdrivers, hammers, pencils, can openers or saws. Even if it exists a symbolic value, this value will be strongly connected with its quality as tools.

Otherwise symbolic objects are useful because they mean something, because they carry a message or an image. Religious objects or even fashion accessories are, for example, symbolic objects because their utility is just to transmit some value or message using a specific code previously agreed between peers. The main value of this kind of objects depends from the environment where they are inserted; for amazonian people, for example, a Rolex watch doesn’t have any value (maybe just its brightness), because there does not exist all the cultural charge that usually follow it in others parts of the world.

In this framework toys are a particularly category of objects because they are useful in a very special way. Indeed when children play they need objects in order to create a simulated world, they need images for play activity. According to the french sociologist Gilles Brougère, play activity is not limited to act; it is a “pretending” activity with its own logic based on semiotic processes that allow the creation of images that will be meaningful for the actions. “Toys provide manipulable representations, images with volume: toys bring the third dimension to the world of representation.”

On this origin it is possible to stress main toy’s features in order to organize a theoretical framework that will stay at the base of the narrative that underlie the relationship between architectural education and toy design and consumption.

In fact, a toy is a selected representation of a real or a fancy world. It always refers to a specific universe as transportation, domestic life, rural world (country life and

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2. In truth a lot of the objects that surround the modern culture are both technical and symbolic. Cars or dresses, for example, are useful but their production and consumption is strongly based on aesthetics and symbolic values. They are not just tools; they really mean something both for who use and for who see them. Anyway, talking about toys, this shift can be stressed in order to clarify the argument.
lifestyle), past times, specific disciplinary or professional field, male or female world, etc. As Roland Barthes wrote in his famous book Mythologies, “(...) toys always mean something, and this something is always entirely socialized, constituted by the myths or the techniques of modern adult life: the Army, Broadcasting, the Post Office, Medicine (miniature instrument-cases, operating theaters for dolls), School, Hair-Styling (driers for permanent-waving), the Air Force (Parachutists), Transport (trains, Citroens, Vedettes, Vespas, petrol-stations), Science (Martian toys).”

This is the reason toys can be considered as disciplinary reproduction devices; because they really carry knowledge, values, forms, technologies, routines, etc.

But this representation action is possible because, once again, toys are expression media with volume, made by solid materials and tridimensional shapes. Their own symbology is connected with their materiality: shapes, colors, tactical characteristics, smell, etc.

If we accept that toys can bring a message, or provide a physical experience (as toys for babies based on sensitive knowledge), we can easily accept that they can be used and designed as educational devices. Mainly in an artistic framework, toys can also be considered as devices for creation, composition or formal abstraction; even in an informal way.

Already in the XVII century, the English philosopher John Locke (1632 – 1704) stressed in the essay Some Thoughts Concerning Education the main importance of toy in education activities. He created a list of the best educational toys and wrote that “dice and play-things, with the letters on them to teach children the alphabet by playing.” After that, several educators and pedagogics, declared the same principle. Among them, for example, Maria Edgeworth (1768 –1849), wrote that “we have recommended the use of plain, regular solids, cubes, globes, etc. Made of wood, as playthings for children, instead of uncouth figures of men, women and animals. For

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teaching arithmetic, half inch cubes, which can be easily grasped by infant fingers, may be employed with great advantage; they can be easily arranged in various combinations (...).\(^8\)

During the XIXth, Friedrich Fröebel (1782–1852) was one of the most important authors about the relevance of toys in education. He developed the kindergarten as a special space to educate child with a special environment and devices. In a large and complex project Fröebel designed some artifact that can be considered the template of all the educational toys that, since that, were produced\(^9\).

One of the main important aspects about Fröebel's toys is their ability to evoke tridimensional constructions and composition. The german pedagogist, that give-up a brilliant academic career in mineralogy, believed that child could understand the world through a leaded play activity with special devices. For that he created kindergarten materials called Gifts and activities called occupations. According to Fröebel, “The gift gives the child a new cosmos, the occupation fixes the impressions made by the gift. The gift invites only arranging activities; the occupation invites also controlling, modifying, transforming, creating activities. The gift leads to discovery; the occupation, to invention. The gift gives insight; the occupation, power.”\(^10\)

During the second half of XIXth century and all the XXth century, several companies both in Europe and USA started producing Fröebel toys for the growing middle class kids. An editorial in Playthings, the USA toy industry’s chief publication, pronounced in 1907 that “there is no doubt that children are perfect imitators; they want to do things their elders do any and all toys that will educate at the same time that they amuse are


The bourgeoisie was really making an effort in order to create better condition for who success to it and, more than that, for preserving the riches that it gain with its how work and pain; the child was a kind of investment. Indeed “The intended educational function of toys derived from the predominant middle-class aspiration for self-improvement. Once considered foolish baubles, toys increasingly came to be seen as instrumental to child’s intellectual development”.

In this framework some authors’ contributions were quite important because they created the theoretical bases for new processes and routine both in the education and familiar environment. Among them John Dewey book “Democracy and education” of 1916 created a solid connection between education and politics stressing the attention in the younger citizen in order to form a new society. Also the culture of project as educational device stressed by William Heard Kilpatrick in his essay “The project method, The Project Method: The Use of the Purposeful Act in the Educative Process” of 1918 center the educator attention on the action and not only on the knowledge transferring. Play is a central activity for learning and not only a waste of time, because that educator has to structure and organize play activities and do not leave it at random. This represents a strong connection with pragmatism philosophy and, also, with the architectural activity that is, certainly, based on design and project activity.

One reference can be done to the Sigmund Freud’s theories that since the beginning of the century started putting the childhood with a central role for the emotional and cognitive development of each person. This created a new consideration to what happens during the first years of existence and to the relationships between adult world and childhood as between children and peers. It is possible to say that since that time exist a cause-effect relationship between what we are and what we were as a

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15 Kilpatrick, William Heard. *The project method, the use of the purposeful act in the educative process*. New York city, Teachers college, Columbia University, 1919
child and, because of that, it exists a new attention to our behavior and conditions as a child.

So toys, considered as childhood devices, gain a new relevance between an already large and complex material culture for childhood. They are no more useless and superfluous objects used during a waste of time, rather than that are meaningful objects that can support a development and a transmission of knowledge.

Architecture, as almost all field of knowledge, found in toys one of the most efficient disciplinary devices. In this sense, architectural toys are readable in two ways: “as evidences of the relationship between adult world and childhood world”, but also as historical evidences about which part of each discipline adult world wants to preserve and reproduce; this means that they are historical and anthropological devices whereby is possible to read the different paths of architectural narratives.

So, during the second half of XIX century the steel architecture that produced building as the Crystal Palace, in London (1851) or, later, the Tour Eiffel in Paris (1889) is based on the same building technology and language that was recreated during several decades for European child playing with Meccano and for americam child playing with Erector Set. The first was invented and produced by Frank Hornby (1863–1936), an English inventor, businessman and politician that patented a metal construction set in 1901. Even if today Meccano is quite far from what was during the first decades of XX century, it has been one of the most important and influent toys since ever. Its American homologue, the Erector Set, originally patented in 1913 and produced by Alfred Carlton Gilbert (1884–1961), an American inventor, athlete, toy-maker and businessman. Looking at these two toys means to look at the architectural commitment with the modern and industrial society. The lightness of the steel architecture surprised in 1851, for example, at the first World’s fair exhibition of culture and industry in the same way

that the shining steel pieces of the Meccano and Erector Set construction kits were ever again surprising thousands of children during several decades.

These toys were involved in a larger educational narrative that was not only about play activity but also including a true knowledge spread. Meccano Magazine, for example, that was published by Meccano Ltd. between 1916 and 1963, was initially published for customers and builders, but quickly became a technologic and scientific magazine aimed at “boys of all ages”. Between several examples of models, famous architecture was often reported in order to show the potential of the sets to reproduce the brand new modern urban environment and building technologies.

During the decade of 20’s, the new pedagogic experiences connected with the artistic vanguards as the Bauhaus school in Dessau (1919-1933) or the dutch neo-plasticist also produced their own effect in the toy production. The Bauhaus school, for example, besides including toys in the normal design classes, the institution produced several articles for selling and gain money. Still today the swiss toy producer Naef is producing some toys design by Alma Siedhoff-Buscher in 1923 or by Ludwig Hirschfeld-Mack in 1924. Looking at the Bauhaus toys is, in fact, to look at the essence of a changing artistic paradigm; all is synthetized through primarie colors an basic shapes and always exist a real effort to remove the formal and direct connection between the real and the fancy world. It exist a clear will in order to transmit to the younger generation the new artistic values and the desire to create a break with the formalism of the past. In that period, both in arts and education, “psychologists began to place more emphasis on a child’s personality development and needs, the role of toys as instruments of joy and freedom shared prominence, and sometimes competed with, their role as educational tools. Parents follow advices for promoting their offspring’s self-expression and imagination (…)”

Also from Bauhaus, the chess set design by Josef Hartwig, master of works in the stone and wood sculpture workshop, in 1924, is an example of the “form follows the function” design rule; indeed the design transmit the pieces moving rules creating a

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real formal “grammar set” that show how to play to the user, a real affordance design relation between usage and shape in the 20’s.

If in Germany the Bauhaus school was creating an historical mark in the art framework, in Netherland the neo-plasticists were trying to change the formal paradigm. Among them Gerrit Thomas Rietveld, the famous wood carpenter and architect, designed some pieces with the same language he designed, for example, the famous Red and Blue chair. The charrette and the wheelbarrow are made by elementary solids painted with the classic neo-plasticists red, blue, yellow, white and black. The charrette is mentioned by Walter Gropius in a letter he wrote to J. J. P. Oud as a very interesting and meaning object. Later Rietveld also designed a dollhouse for the daughter of a friend, the doctor Hess, using the same scheme of a working class housing settlement he designed in Breda in 1941. Even if the dollhouse is quite similar to the designed for Breda, Rietveld changed some details in order to allow the child access to its interior providing a sensibility to the childhood thinking and play acting. Still in Netherland, also the designer Ko Verzuu injected the new poetics in several toys that are, still today, some amazing example of simple and efficient toy design. Shapes and colors demonstrate the author skills in simplifying the adult world for the play act keeping, for each object, the main meaning formal characteristics.

The same, but with more intellectual effort, happened with the toy Dandanah, designed by the German architect Bruno Taut in 1919. A construction set made by colored glass that symbolized the two main architectural themes of Taut: the glass architecture and the colored architecture. Indeed, in 1914, he designed the glass pavilion for the

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21 http://architoys.blogspot.pt/2010/05/casa-de-bonecas-de-rietveld.html
22 The toy is still produced by Vitra Company
Cologne Deutscher Werkbund Exhibition\textsuperscript{23}; the building was brightly a colored landmark of the exhibition made by a concrete basement and a dome made by colored glass. This building was a synthesis of the theoretical framework that the architect developed\textsuperscript{24} with the german philosopher Paul Scheerbart and his book \textit{Glasarchitektur} (glass architecture). Originally manufactured by Luxfer-Prismen-Gesellschaft, a company from Berlin that was producing glass bricks and other architectural elements made by glass, the toy was mentioned in a letter that Taut wrote to the Crystal Chain\textsuperscript{25} in 1920: \textit{“but there is an ever-changing life in it. It’s simply fantastic what effects the light produced, and yet within a fixed form. The vessel of the new spirit that we are preparing will be like this”}\textsuperscript{26}.

During the beginning of XXth century the growing cities also was a theme for toy design. The famous austrian architect and designer Josef Hoffman that was one of the founder of the artistic movement Vienna Secession, in 1897. In 1920 he designed a wooden construction set called Fabrik that really symbolized the new urban environment. Even if the pieces are quite small, the scale of the represented city is quite big, with large arcades and, as happens in several toys from that period, with the classic chimney that represent the industrial buildings. Indeed the industrial architecture was a powerful theme at the time; the vertiginous growth of the technology was, for most people, a sign of future and progress and, more than that, a real absolute social value. So it is comprehensible that several toys were designed in order to transmit the image of the growing and renewing society through the shapes of industrial architecture. One of the most important toys in this context is a construction set design by the Czech graphic designer Ladislav Sutnar in 1940. Even if the toy never been for sale, Build the Town is

\textsuperscript{23} Nerdinger, Winfried, Manfred Speidel, and Bruno Taut. \textit{Bruno Taut : 1880-1938.} Milano: Electa, 2001
\textsuperscript{24} http://architoys.blogspot.pt/2010/05/bruno-taut-da-utopia-aos-brinquedos.html
\textsuperscript{25} The Crystal Chain was a correspondence initiated by Bruno Taut with a small group of german architects and artists between November 1919 and December 1920.
\textsuperscript{26} Taut, Bruno. Letter to the Crystal Chain, April 15, 1920. In Whyte, Iain B., and Bruno Taut. \textit{The Crystal Chain letters: architectural fantasies by Bruno Taut and his circle.} Cambridge, Mass: MIT Press, 1985 p. 84.
a real piece of art. Made only by 3 solids with different graphical configurations, the toy is a great exercise of synthesis because it reproduces the absolute minimum needed information to understand the industrial environment.

In the USA the architectural toys development is quite similar, in some cases as happened with Meccano and Guilbert construction sets, curiously identical (there is a really coincidence between the producing and the ideas). Meanwhile in Europe collective housing produced several examples in the construction sets and in dollhouses, as the Tri-Ang ultra-modern dollhouse produced in 1930s, in USA the spirit and will of country life was growing up in a population that was increasingly concentrated in the large, noising and dirty cities. So when John Lloyd Wright, son of the famous architect Frank Lloyd Wright and educated in a Froebel Kindergarten (as his father), in 1925 designed the construction set Lincoln Logs, with a reference to Abraham Lincoln, 16th president of United States of America that was born in a wooden log cabin, this toy quickly became one of the most popular and best sold in the country. Lincoln Log was more than a house model, was a whole nation essence and soul, both in an architectural and political/social way.

Later, still in USA, another architectural toy will be representative of the historical period when Charles and Ray Eames designed The Toy, a large scale construction kit inspired in kite construction, a great passion of both architects. The Toy (there was also a small version called The Little Toy), was made by wooden sticks and plastic-coated resistant stiff paper, a new materials at the time. Whit vivid colors and the possibility create several shapes, the toy was a real architectural lesson for children strongly inspired in the Case Study

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27 http://collections.vam.ac.uk/item/O88603/ultra-modern-dolls-house-dolls-house-lines-bros-ltd  
House nº8, that was the Eames house in the neighborhood of Los Angeles. This couple of architects also designed several wooden tops and other objects for child, as the small elephant made by curved plywood and still produced by Vitra.

The theme of modularity that Eames used to design The Toy inspired a very large number of toys during the second half of century. When the precast technology started arising in large scale buildings, as happened in the decade of 60s, the correspondence between real building and construction sets was so strong that in some case the toys were a scale reduction of the real system. Also the spread of the plastic injection technologies allowed a huge increasing of shapes and connection system with high precision and finishing quality. The example of Lego system is the most famous because this company originally produced wooden toys and after a warehouse fire, in 1960, they decided to start producing plastic bricks. Several other companies, like british Airfix, german Philips or American Super City, developed several different plastic construction system with different technologies approach but all intended for building construction. Some was made by simple bricks, as Lego, other by architectural elements, as Airfix's Betta Bilda, other by large building parts, as Super City or the Baufix - Der moderne Architekt.

In the actual scenario it is still visible a strong parallel between real architecture and architectural toys. In several toys is possible to find the geometric freedom given by the new technologies and the new architectural aesthetics based on organic or irregular forms. Balancing Blocks or Geemo are two examples from USA. The first is wooden block set made by irregular solids that evoke Rem Koolhaas Casa da Musica architecture or the Seattle Library; the second is a plastic magnetic set that is more connected with the organic shapes inspired in the Peter Cook, Zaha Hadid or Frank Gehry's architectures.

Another tendency, strongly connected with the actual architecture production, consumption and communication, is to create toys that teach about a specific building, architect or city. Is the recent case of the new series Lego Architecture that reproduce
some of the most famous buildings in the world, since the Falling Water house by Franck Lloyd Wright to the Villa Savoye by LeCorbusier or the Farnsworth House by Mies van der Rohe. In other cases, as it happens with the Muji City in a Bag block sets, the connection is made with the best known landmark of some cities like London, Rome or Paris.

These are just some examples among a large quantity of toys that, in several different ways, guided during the XX century the relationship between Architecture and childhood. Some of them still show a strongly intellectualized effort, for others the connection with architecture is more explicit but nevertheless present.

In this sense architectural toys can be observed following a double direction: from the architecture to the toy recording the way the discipline tried to create educational devices and which part of the knowledge was conserved and transmitted; or from the toy to the architecture looking to a specific part of material culture that, in several ways, is representing the relationship between the adult world and the childhood world along the time. As Brougère wrote, “the toy is the materialization of an adult project for children”\(^{29}\), stressing the cultural and social vector that joins the two parts through toys. In a century that had creativity as an absolute value\(^ {30}\), and that transformed more and more adult life in a play activity\(^ {31}\), toys are a very meaningful category of objects and represent several social and cultural images reflected on them.

