



NATIONAL TECHNICAL
UNIVERSITY OF ATHENS



«SUSTAINABILITY vs ARCHITECTURAL DESIGN»

ECO-SUSTAINABLE PLAYGROUND: growing design creativity

case studies and didactic experience

prof. arch. Antonella Violano

Architecture and Industrial Design "Luigi Vanvitelli"
Second University of Naples

Experimental research



Laboratory of Sustainable Technologies
(Prof. A. Violano)



Laboratory of Epistemology and practice of education
(Prof. MR Strollo)

PHASES

1. REQUIREMENTS

classification of cogent and voluntary requirements

2. MATERIALS

analyzing the market of materials with medium-high environmental performances

3. DESIGN

70 students - experimental work according to the rules of the "Environmentally Friendly Construction", only using eco-friendly materials (natural, recycled and bio-based materials)

4. USE

classification of the main uses of materials

5. TOOL

three-dimensional **Decision Support System** interfacing requirements, uses and materials

no-quality urban square

ECO-COMPATIBLE PLAYGROUNDS

a smart use qualifies the space



The Concept Design

AN EXPERIMENTAL DESIGN OF URBAN WRECK OR UNUSED AREAS

The scenario is the city

Urban “non places”

*A complex network of interactions
between citizen and built environment*



anonymous area
becomes

PLAYGROUND

DIRECT USERS

Children between 2 and 7 years old

Children playing can also learn the best practices of

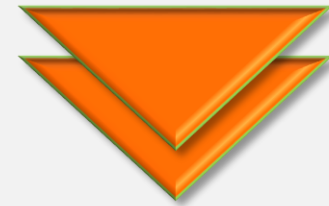
ENVIRONMENTALLY FRIENDLY BEHAVIOUR

The sustainability for children

According to the interviewed children, the Sustainability is...

- ... like a circle- it goes around and all is re-used
- ...taking care of the planet and its creatures
- ... using the renewable energy of the sun
- ... knowing what the time is and giving it the right value
- ... making rules we can all follow
- ... don't forgetting that before to be a table that wood was a tree
- ... doing many discovery useful to the humanity
- ... a spider web that traps all the bad things
- ... making the world a better place for the future.

SUSTAINABILITY DEFINITION
GIVEN BY A GROUP OF
CHILDREN



each definition becomes the slogan of a design
coherent with the eco-oriented messages



THE SUSTAINABILITY IS MAKING THE WORLD THE BETTER PLACE FOR THE FUTURE

education through the environment

PLAYGROUND

place for



physical activities

creatively think

creatively search

creatively discover

creatively learn

ACTIVE MAIN ACTORS

children

WATCHWORDS

- ✓ Competitiveness
- ✓ Attractiveness
- ✓ Creativeness
- ✓ Wellness

Criteria of eco-friendliness, recyclability and renewability become real constraints for technical provisions for the technological performance choices

The design of a playground is an opportunity to create places that allow children in developing their creative potentiality, their physical abilities and their curiosity through exploration, alone or in groups.

According to Protocol ITACA, the valuable macro-criteria are:

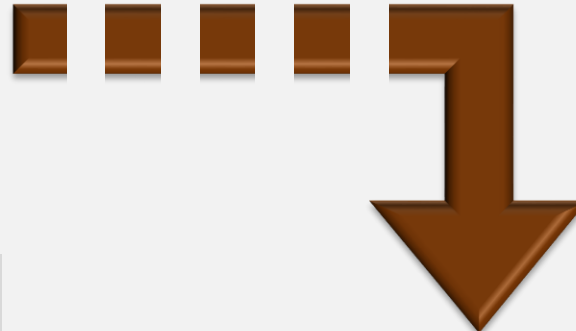
National Protocol ITACA for
Schools (2011)

SITE QUALITY

RESOURCES CONSUMES

ENVIRONMENTAL WEIGHTS

SERVICE QUALITY



evaluation criteria
for materials

Protocols including a certificate of the materials used in architecture in the evaluation of the performances of sustainability of the building are several and consider the different phases of the life-cycle of the material

Life **C**ycle **A**ssessment



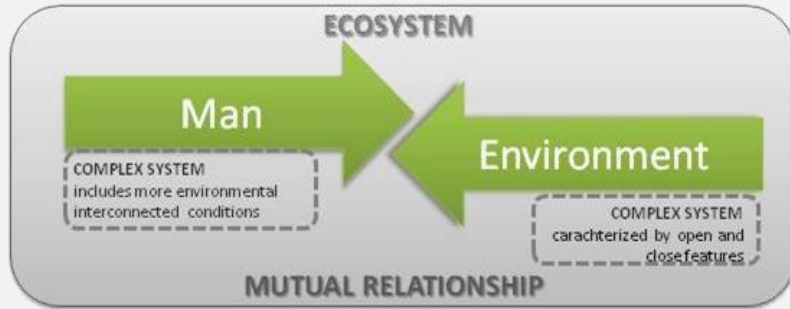
Renewable materials

Recycled materials

Reused materials

- Origin of the material
- Use of recycled materials
- CO2 emissions in the working phase
- Pollutant emissions and possible disposal of waste.

ecology of human evolution



The learning system is made by an educative setting preparation, following the principles:

- ✓ *child centrality and his learning, wellness, sociality, love and good meeting rights;*
- ✓ *child-oriented surrounding environment, sized for them who live there;*
- ✓ *design flexibility;*
- ✓ *child as main actor, who builds in first person his own knowledge;*
- ✓ *educative space as a place and community for children, educators, parents and local community learning;*
- ✓ *centrality in learning process and not in teaching one.*

Children learn not the results of linear cause-and-effect teaching processes, but mainly learn from their experiences, from their activities and from the use of their resources

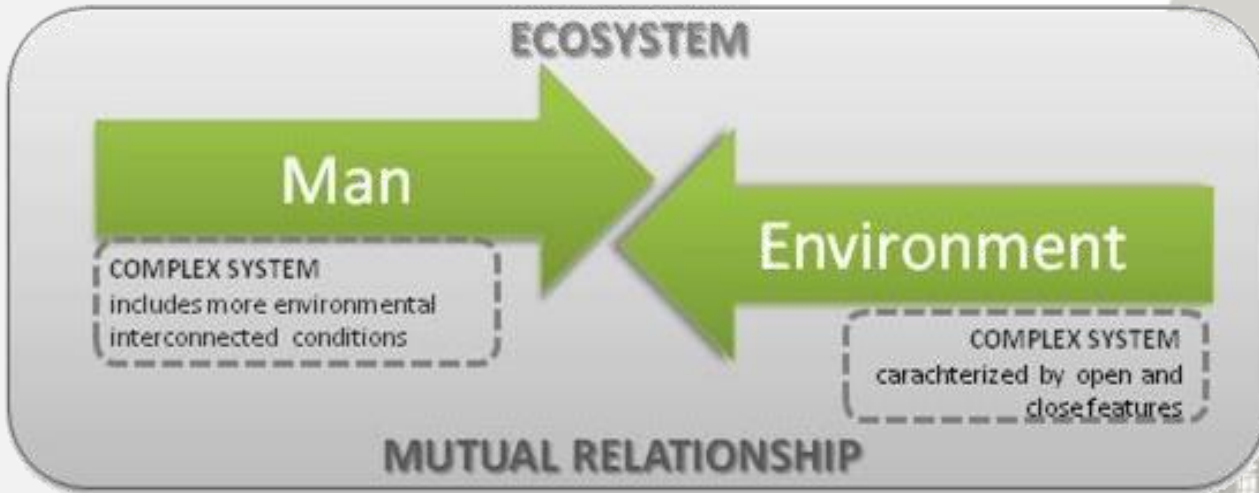
Edwards, Gandini, Forman, 2010





ecology of human evolution

Children learn not the results of linear cause-and-effect teaching processes, but mainly learn from their experiences, from their activities and from the use of their resources
Edwards, Gandini, Forman, 2010



The learning system is made by an educative setting preparation, following the principles:

- ✓ *child centrality and his learning, wellness, sociality, love and good meeting rights;*
- ✓ *child-oriented surrounding environment, sized for them who live there;*
- ✓ *design flexibility;*
- ✓ *child as main actor, who builds in first person his own knowledge;*
- ✓ *educative space as a place and community for children, educators, parents and local community learning;*
- ✓ *centrality in learning process and not in teaching one.*

Violano
"Vanvitelli"
of Naples





before RULES than SUGGESTIONS

RICYCLED MATERIALS

Old truck tires on a playground for kids



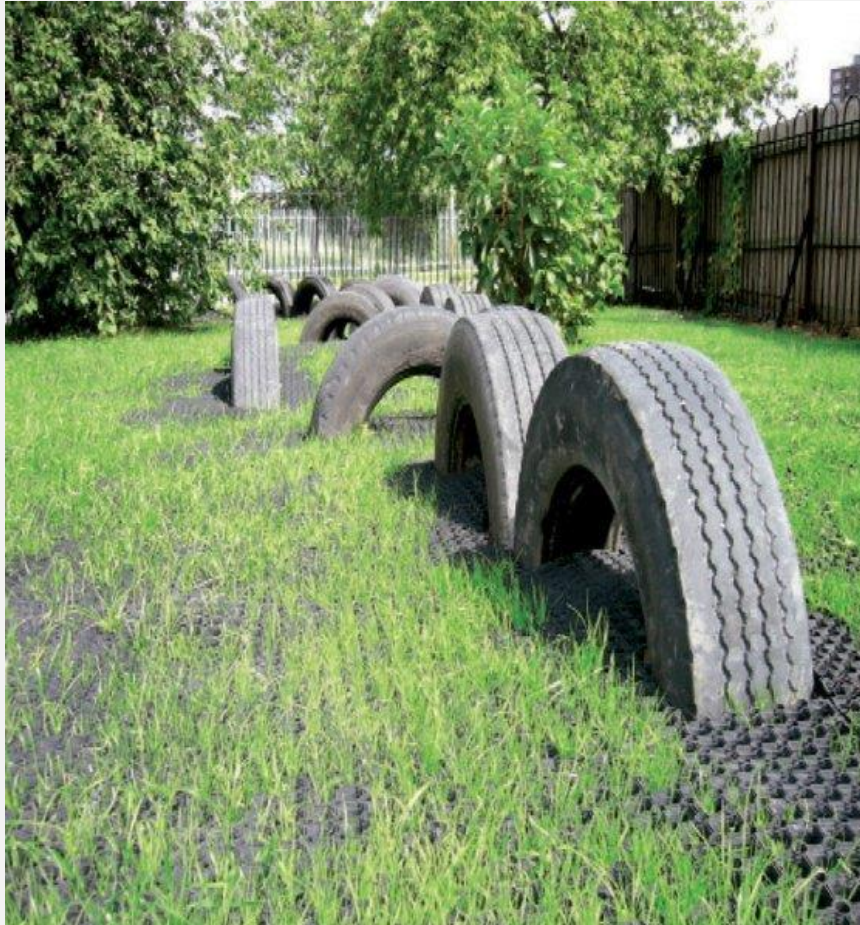
This recreational space will be built exclusively with the use of recycled and sustainable materials



RICYCLED MATERIALS

Old truck tires on a playground for kids

Kids jungle gym, made out of wood and tires



Rubber Tree, Tak, Thailandia

the tires will be joined by ropes and bamboo, without the need for metal components.



Rubber Tree, Tak, Thailandia

The designer conceives the use of these discarded tires as *cradle to cradle*, as products with latex rubber tree and also because now give shape to a sculpture reminiscent own this tree.



Lions Park in Greensboro, Alabama, USA



Lions Park in Greensboro, Alabama, USA



To create the playscape, Rural Studio welded together hundreds of metal drums, creating a maze that kids can wander through and climb on.



Playgrounds/playscapes

In the work of Danish firm Monstrum, surreal "storyscapes" of shipwrecks, beasties, and tilted houses provide a sense of thrill and danger that kids crave but it usually lacks in the playgrounds



Playgrounds/playscapes



Playgrounds/playscapes



Playgrounds/playscapes

A playscape can be a sport place.

Julien de Smedt
Architects turned the roof
of a boat storage facility
into a skating and sliding
landscape for play.



CONTEMPORARY DESIGN

Play Local – an article you can repost or republish



CONTEMPORARY DESIGN

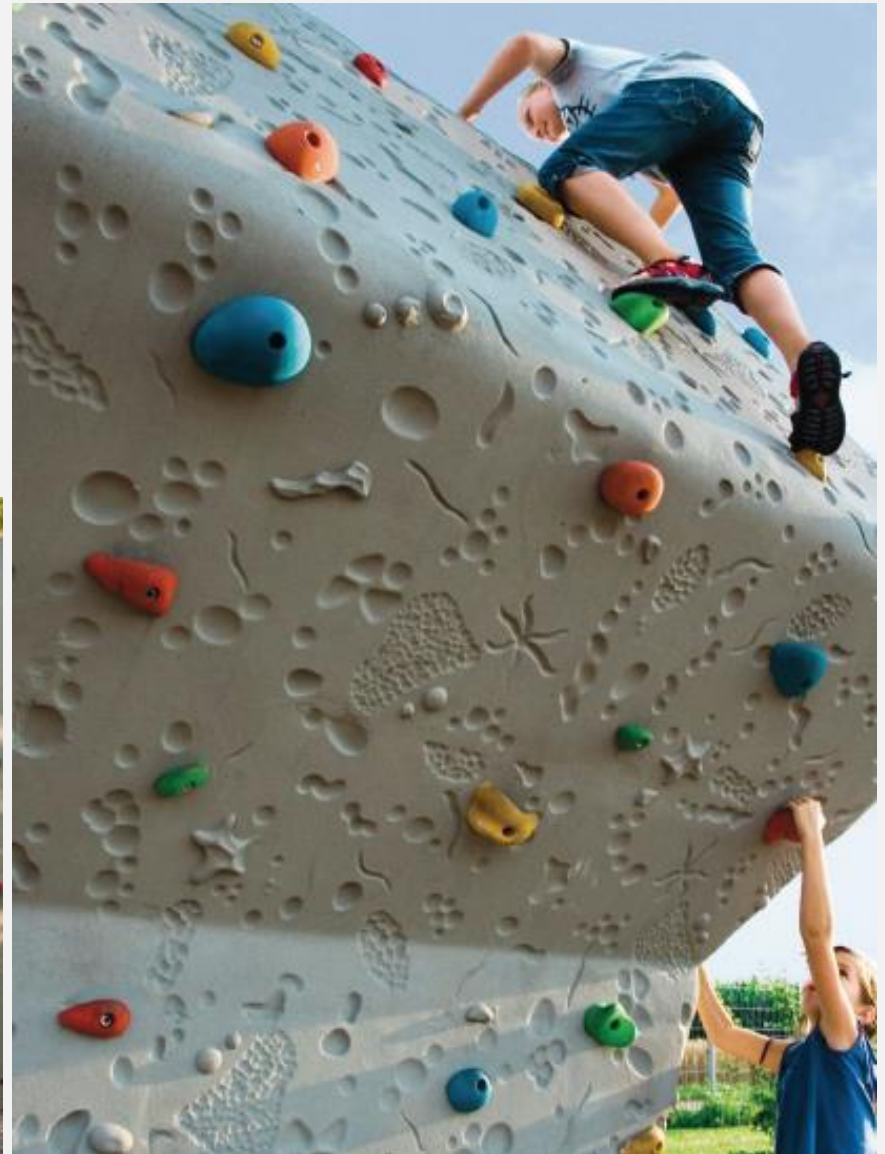


CONTEMPORARY DESIGN Concrete-Walls Image, Germany



CONTEMPORARY DESIGN

Karlsruhe, Baden-Württemberg (DE)



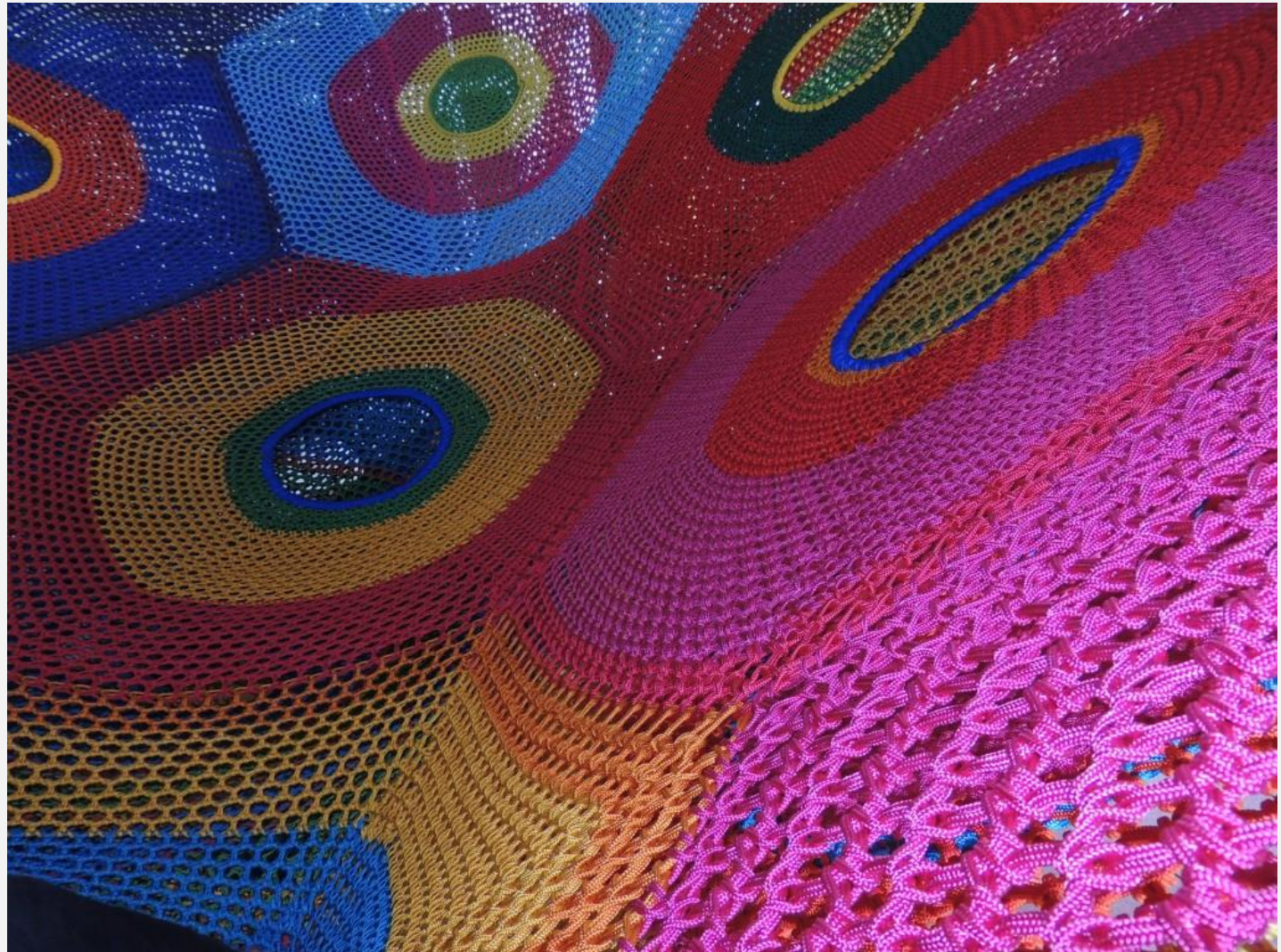
Playgrounds/playscapes

Playscapes are an incredible place for artists. Toshiko Horiuchi-MacAdam constructs large, interactive crochet nets that provide a totally unique play experience at several sites in Japan.



Play in Museums – Toshiko Horiuchi MacAdam at The Children’s Museum of Winston-Salem

This is an installation at the Hakone Open Air Museum.



Play in Museums – Toshiko Horiuchi MacAdam at The Children’s Museum of Winston-Salem



The game involves all the senses.
in particular, the appearance gives valuable
information to the child

an colorful, fragrant, beautiful object is reassuring
and in some cases also suggests a positive
message of edibility



Sculptural Playground in Schulberg by ANNABAU_ Wiesbaden, GERMANY



Kensington International Kindergarten Plan Architect

in this playground, a child can learn the rules of the driving code



Playgrounds/playscapes

A natural addition to the idea of pop-up stores.

It lets kids do what they love: making their own spaces for play!

this self-construction stimulates the imagination and creativity



A transparent labyrinth



Genialith Playground, Julien Amouroux, Lyon France, 2013

A meteorite playscape as part of a series of artist and architects' works along the banks of the Saone River.



Genialith Playground, Julien Amouroux, Lyon France, 2013

the meteorite fell in the park has dug a crater that becomes a playground

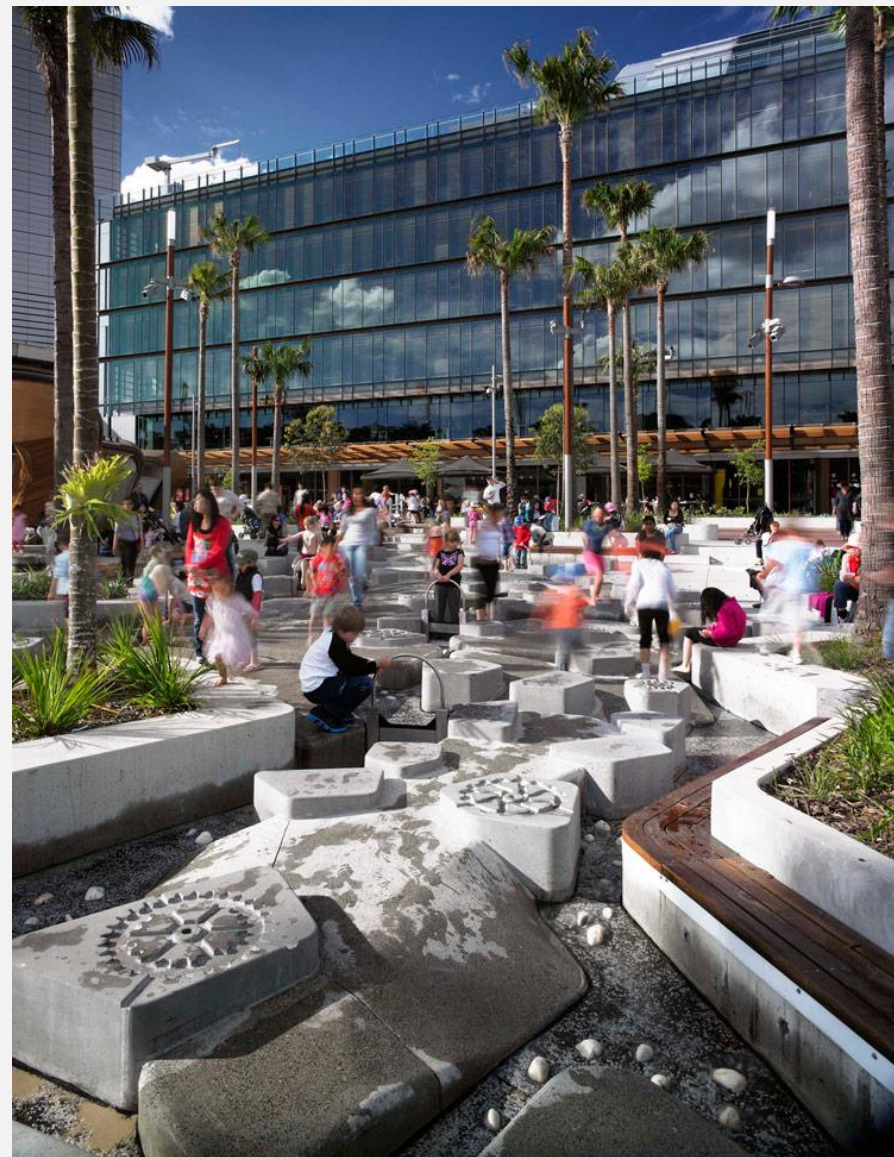


Genialith Playground, Julien Amouroux, Lyon France, 2013



Darling Quarter Playscape, Sydney Australia, Aspect Studios, 2011

this is a play area where water is the main element. The water has carved rivulets, puddles...



Darling Quarter Playscape, Sydney Australia, Aspect Studios, 2011



Switzerland, brienz – Ludo crea partner



Switzerland, brienz – Ludo crea partner



Switzerland, brienz – Ludo crea partner



Playground, living spaces play spaces: a social need

Richter Spielgeräte GmbH
The original, for more than 45 years!



Playground, living spaces play spaces: a social need



Playground, living spaces play spaces: a social need

Richter Spielgeräte GmbH
The original, for more than 40 years!



Playground, living spaces play spaces: a social need

Richter Spielgeräte GmbH
The original, for more than 40 years!



Playground, living spaces play spaces: a social need

Richter Spielgeräte GmbH
The original, for more than 40 years!



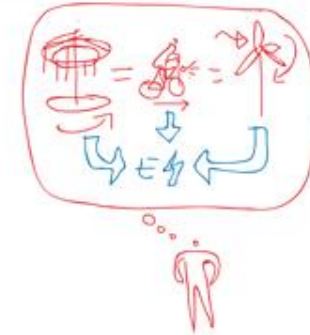
Energy Carousel, Ecosistema Urbano, Dordrecht Netherlands, proposed



the carousel produces energy by turning around
this energy is used to generate light



the mechanism of energy production
and lightning is so simple as a bike
dynamo



education:
the users of the carousel can easily
understand how it works
this way, citizens get concerned
about renewable energies and
sustainability



when the carousel is not moving
there is no light



when the users start to make the
carousel go round the light starts

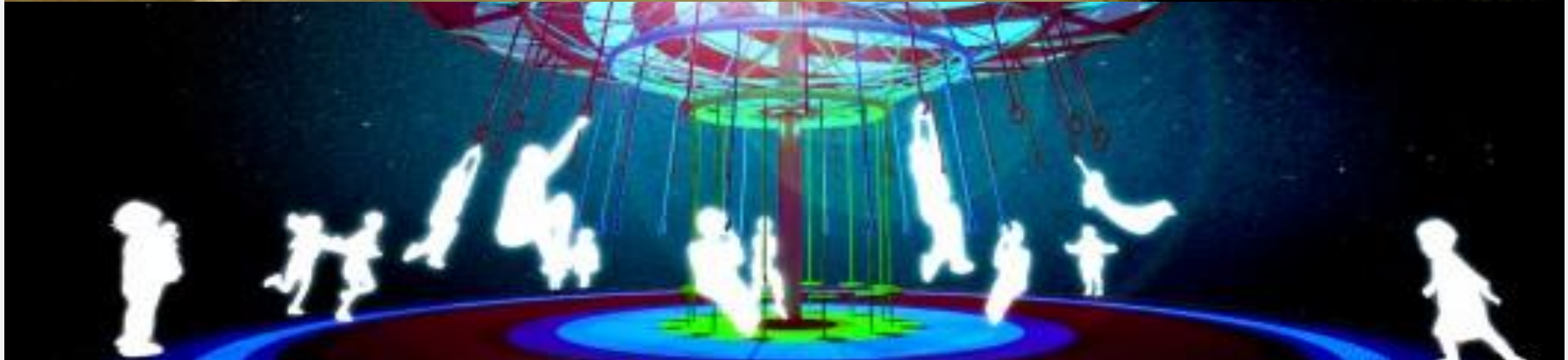


the colour and intensity of the light
change with the speed of the
carousel



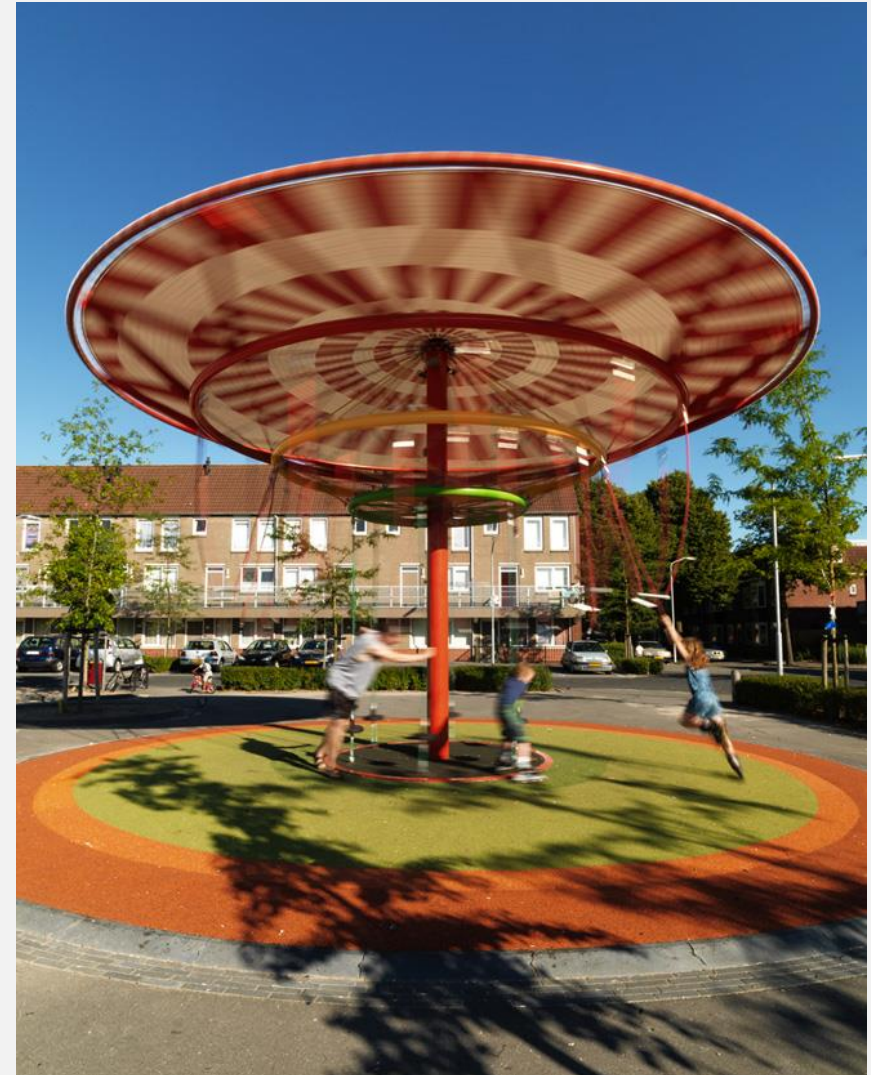
after being used, the light keeps
working for a while

Energy Carousel, Ecosistema Urbano, Dordrecht Netherlands, proposed



Energy Carousel, Ecosistema Urbano, Dordrecht Netherlands, proposed

The mechanism of energy production and lighting is so simple as a bike dynamo



Energy Carousel, Ecosistema Urbano, Dordrecht Netherlands, proposed

Education:

The users of carousel can easily understand how it works this way, citizens get concerned about renewable energies and sustainability



NATURAL PLAYGROUNDS Barefoot Parks and Sensation Paths



NATURAL PLAYGROUNDS Barefoot Parks and Sensation Paths



NATURAL PLAYGROUNDS Barefoot Parks and Sensation Paths

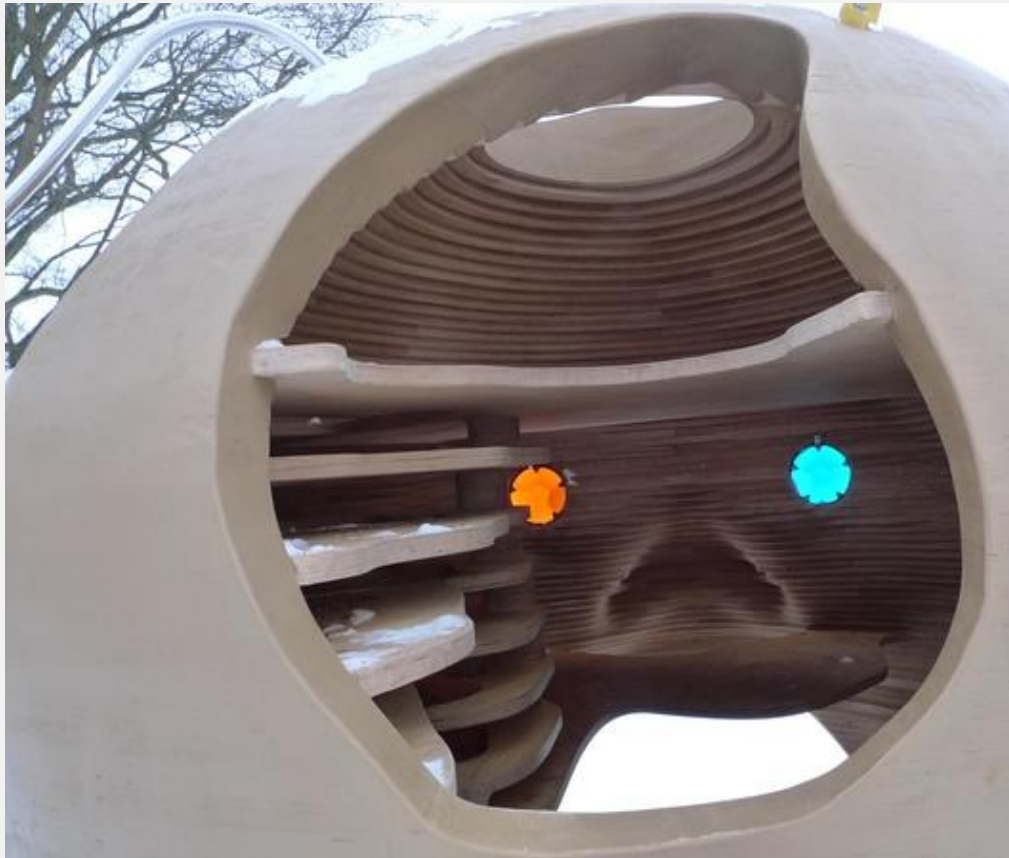
sounds, noises, fragrances, touch,
colors ... all the senses contribute
to the experience



And this is what it looks like when you let the artists design the playgrounds...

Art Playgrounds

the human body is an object to explore
the dream of all children is being small and going for
a trip in our body in order to see what's inside



Hargreaves Mall Dragon Play-space

this playground is an interesting play-space in Bendigo, a major regional city about 150km north-west of Melbourne

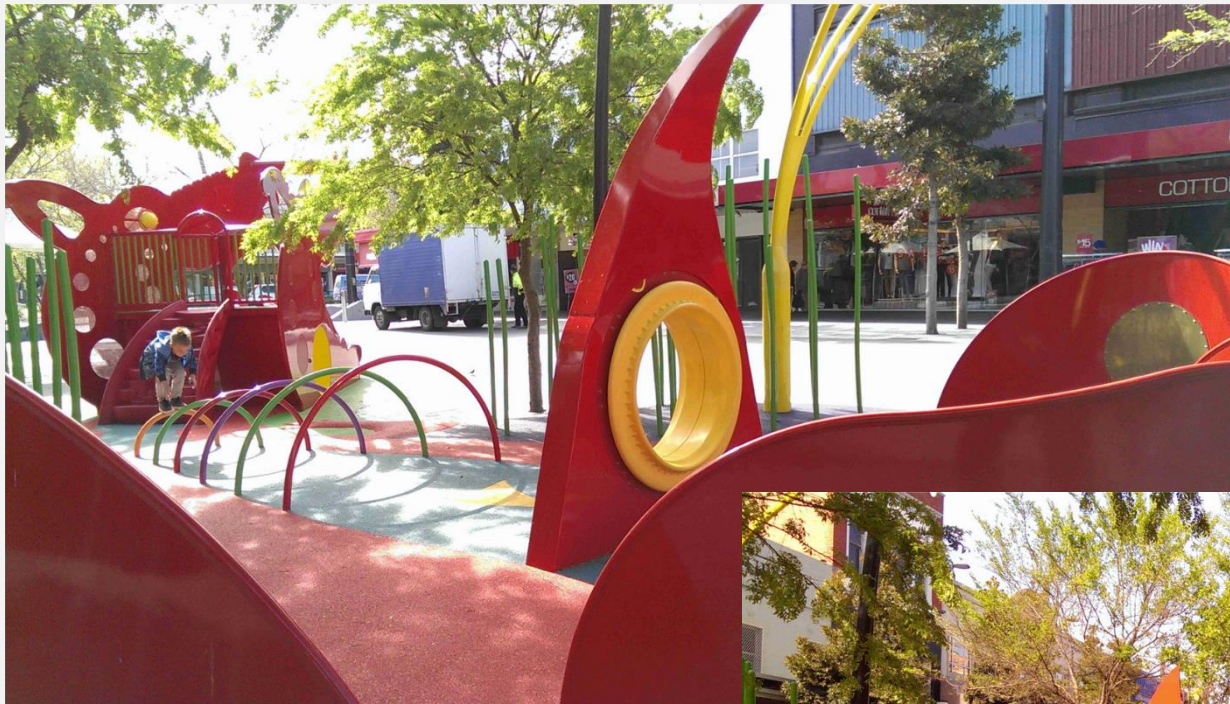


Hargreaves Mall Dragon Play-space

It's exceptional its location within the existing Hargreaves Shopping Mall. The play-space has been carefully sited in the existing mall, integrating existing trees into its overall footprint.



Hargreaves Mall Dragon Play-space



Play integrated within the 'street' and public realm, in areas traditionally reserved for other activities, unsuitable for 'fun' and 'play' projects

Potgieterstraat _ AMSTERDAM



Crocker Park



Crocker Park isn't a playground, it's not even a park. It is a new outdoor shopping center.



an oversized chess board.

Crocker Park

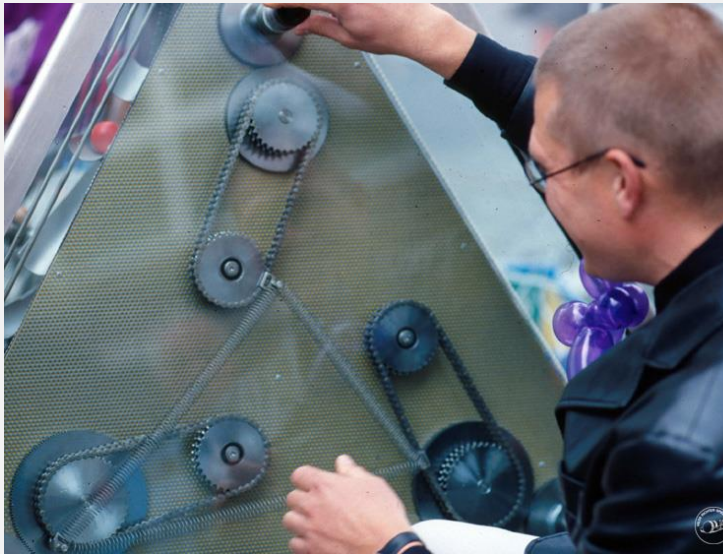


And this is what it looks like when you let the artists design the playgrounds... Art Playgrounds of Copenhagen



Germany, Mulhei an der Ruhr

Playing in urban areas



Germany, Mulhei an der Ruhr



Germany, Mulhei an der Ruhr



Germany, Mulhei an der Ruhr



Madrid RIO, Spain

Playing in urban areas



Open Hearth Park Freenotes Outdoor Musical Instruments, Cape Breton, Canada



The ABC recreation realize different thematic solution to learn trough playing, also with sounds and instruments. This company works expecially in Canada and realized different playground.



A Giant Music Box!



Aquatic Playscapes, Queensland, Australia

Nothing brings a smile to a child's face like an exciting world of unpredictable Interactive sprayers, oversized water cannons and larger than life creatures, dripping with imaginative fun. Zero depth design offers the added advantage of splash play requiring minimal supervision, allowing parents and caretakers to relax a little and join in the fun.



City airplane Museum, St Louis, USA





Objective: to build a community — including parents, educators, caregivers, researchers, and leaders — united by a belief in the importance of creative free play to help our children grow up happy and healthy.



Imagination Playground, Rockwell Group, New York (frist installation)

the game is built by the children themselves

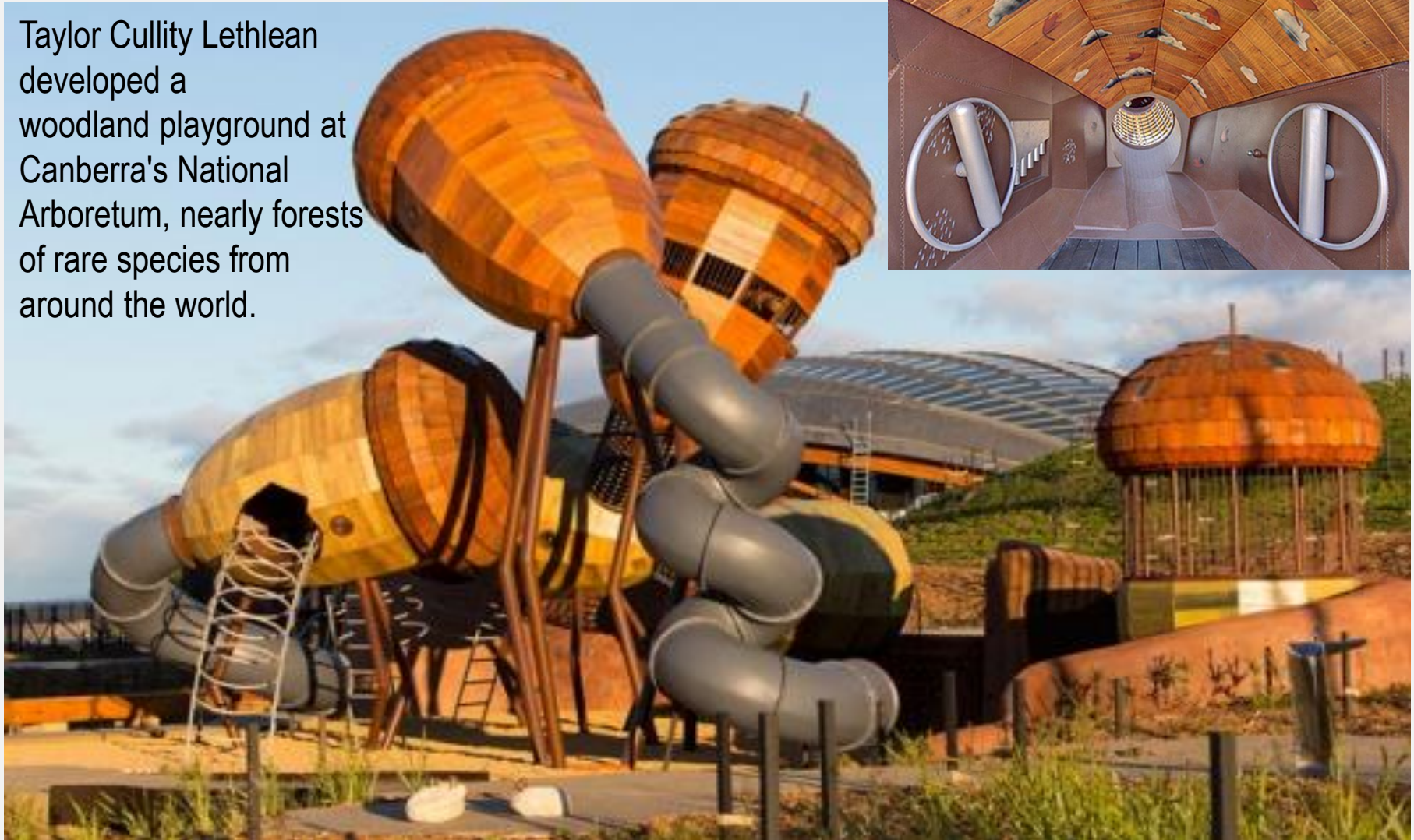


Terra 28th, Bonifacio Global City, Taguig., Philippines



Pod Playground , Canberra, Australia

Taylor Cullity Lethlean developed a woodland playground at Canberra's National Arboretum, nearby forests of rare species from around the world.



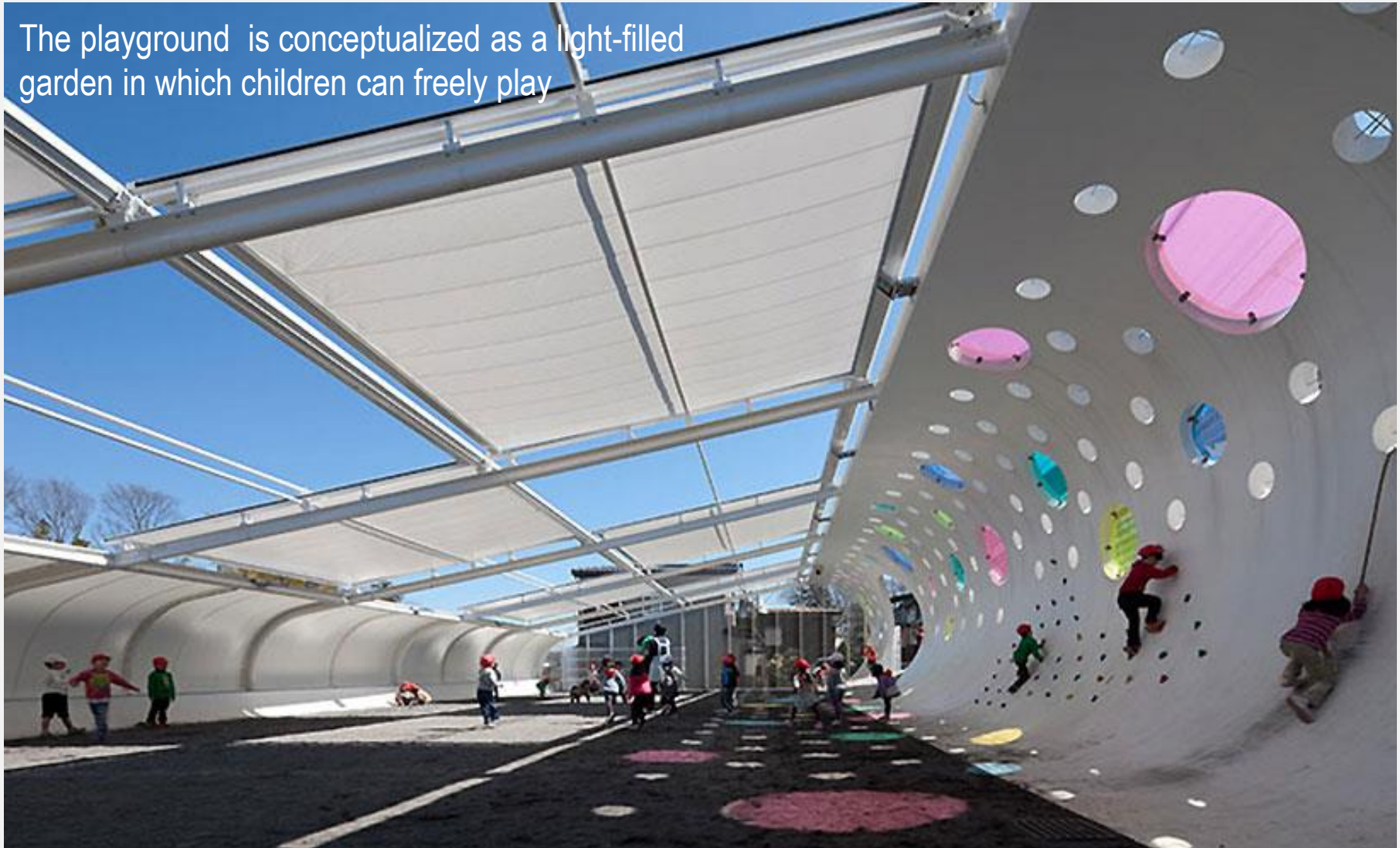
Pod Playground , Canberra, Australia

Giant wooden acorns, fruit trees, are a far cry from the conventional plastic playgrounds of our cities. This park is built entirely from local wood, and both its organic shapes and use of eco-friendly materials beautifully pay homage to the surrounding environment.



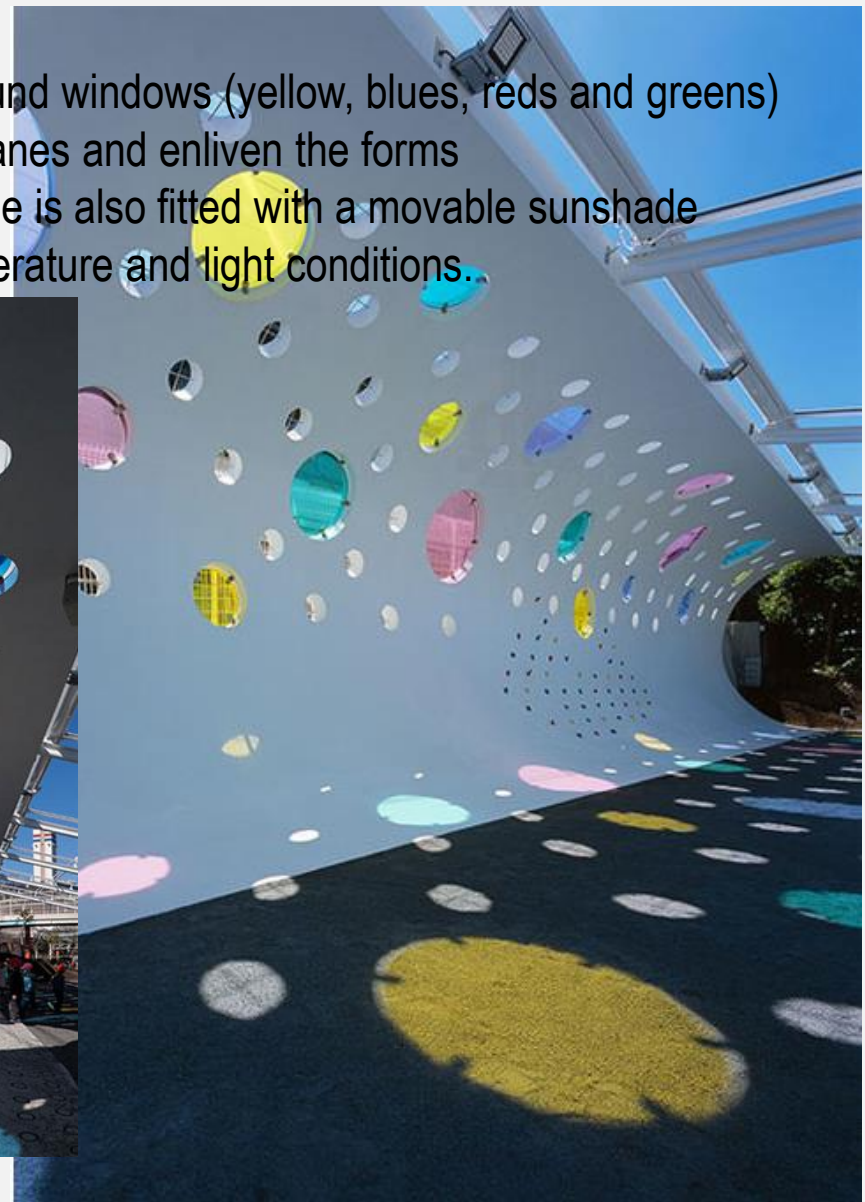
Playground, Tokyo, Japan

The playground is conceptualized as a light-filled garden in which children can freely play



Playground, Tokyo, Japan

It is a concrete undulation punctured with colorful round windows (yellow, blues, reds and greens) that create shafts of light among the curved white planes and enliven the forms children can slide down, climb or run along. the shape is also fitted with a movable sunshade tent that can response to changes in weather, temperature and light conditions.





“Shadows are a particularly intriguing phenomenon for creative explorations...creativity is inspired when children are offered a new way of looking at the world”

Jan White

RainbowCity, New York City Highline , USA



RainbowCity, New York City Highline , USA

Temporary installation for June 2011 inauguration of second trance of High Line in NYCity. The Playground create a amazing and creative foot play to interact with big intsallations and ballons in which are promoted art and commercial initiatives.



Glossy Cube Tree House in Swedish

This spectacular and creative tree house design around the world inspiration has a connection with nature and use of reclaimed or salvaged materials can inspire an environmentally sensitive process of building.

This structure is built as a temporary escape from the rat race and the pressure of busy lives and can be fitted out with beds, wood burning stoves, solar powered lighting and handmade stained glass windows.

This spectacular and creative tree house design is strong and safe because those created in mature trees.

This tree house respects the tree, allowing it to move in the wind and to grow with minimal restriction.



Tree House

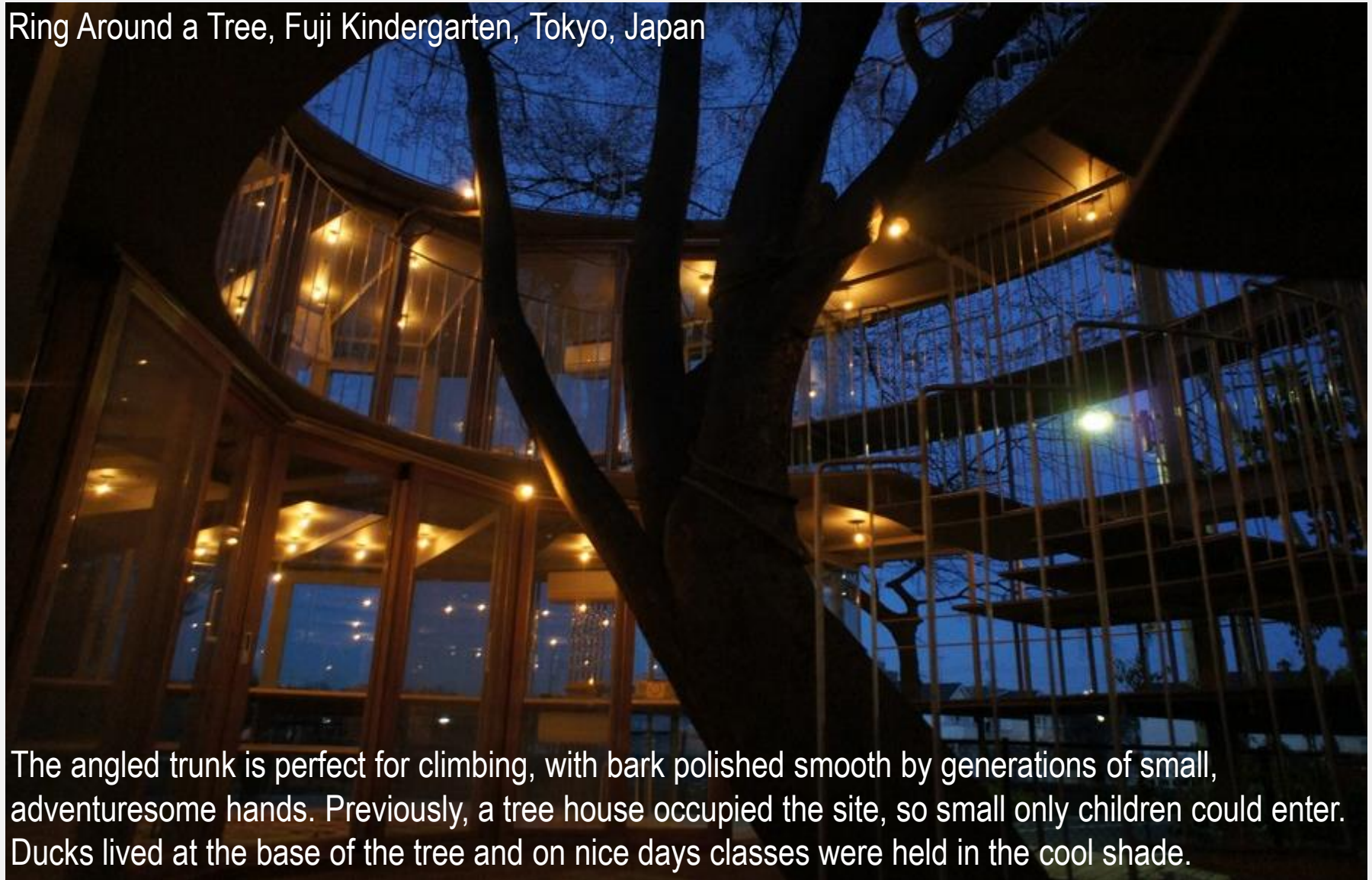


Ring Around a Tree, Fuji Kindergarten, Tokyo, Japan

Ring Around a Tree is a small contribution to a historically complex space. Nearly fifty years ago the Zelkova nearly died by a typhoon. Not only it survive, but the tree has grown so large that two adults cannot clasp hands around its base.



Ring Around a Tree, Fuji Kindergarten, Tokyo, Japan



The angled trunk is perfect for climbing, with bark polished smooth by generations of small, adventuresome hands. Previously, a tree house occupied the site, so small only children could enter. Ducks lived at the base of the tree and on nice days classes were held in the cool shade.

SUSTAINABLE TREEHOUSES FOR GROWN-UPS TO TRANSFORM LONDON'S PARKS

The implements for this idea are ingenious biophilic structures constructed from a creative combination of sustainably sourced timber 'ribs' and a range of eco-friendly 'skins'. They use elements found in nature to create constructions that camouflage into their surrounds. These organic architectural works thus mimic the natural world and Invisible Works hopes to plant them in Central London parks in the upcoming summer, pulling people out of urbanity and into nature.



The PlayHive: From Your Backyard to the Austin Children's Museum | Thoughtbarn



“the REAL estate”_ BAT-YAM, Israel



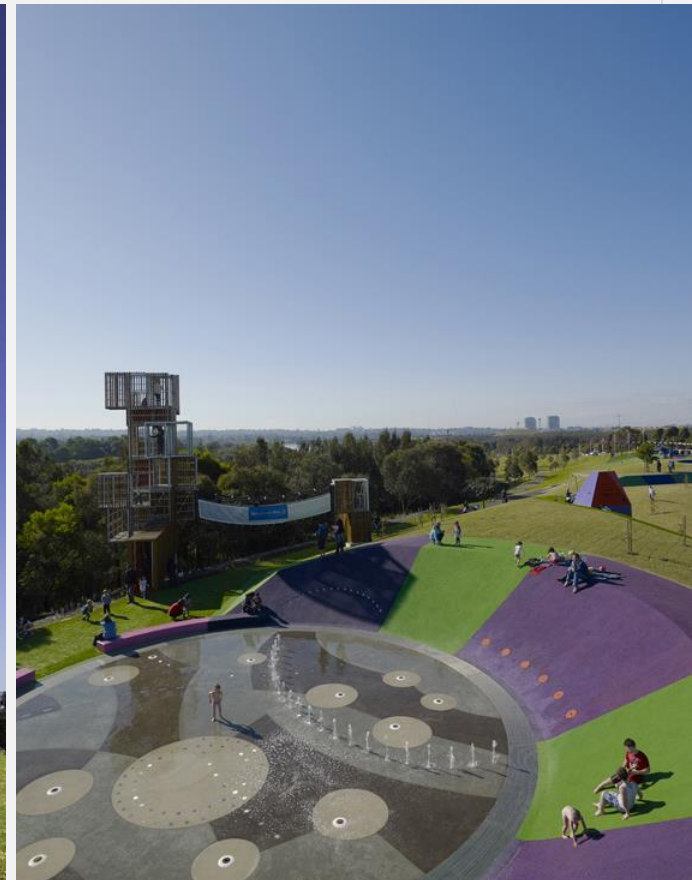
The surface of the park is laid with a continuous fabric formed concrete “blanket” that wraps over the existing acoustic barrier wall. The continuous surface starts on a man-made horizontal landscape and changes gradually to a sloped vertical wall. In this surface are seven cut-out wood niches that perform as intimate private spaces in the public urban landscape. Each niche takes the form of the human body as a single, couple or a group.

Billie Holiday Playground_ NETHERLANDS



Carve designed an organically shaped play hill with three 'heads', which curls around an existing tree like a stretched piece of elastic. The sculpture merges, because of its fluid forms and continuous skin, into one large play object that attracts all ages and ability levels. Because of its shape and colour the object is an important functional addition to this part of the park, which in a short time span has become the new meeting place for the whole neighbourhood.

Blaxland Common Playground_ Sydney, AUSTRALIA



Osdorp Oever_ AMSTERDAM



Playground with used windmill parts_ NETHERLANDS

This playground, built in the Netherlands by architecture firm 2012Architecten repurposes used windmill parts to create a playground complete with slides, towers, and tunnels. It's great to see a project that reuses materials on such a large scale.



Energy park, il parco giochi educativo

Progettato da un team della Hyundai, tra scivoli e altalene i bambini potranno imparare divertendosi come l'energia fa funzionare gli oggetti



Queste sono le “attrazioni” presenti nel **Natural Energy Park**:

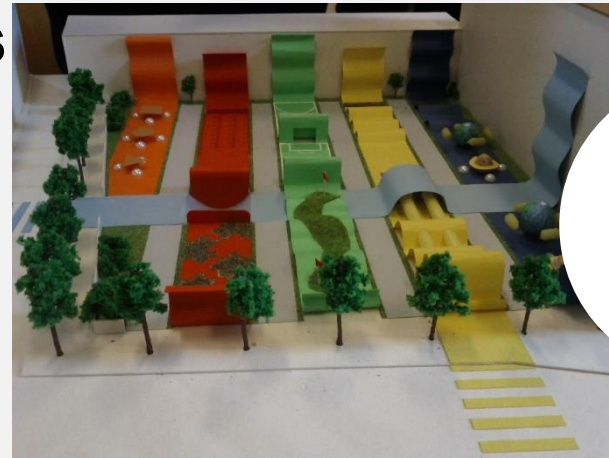
- l'aquilone di **Benjamin Franklin**, che si libra dal tetto del laboratorio: sarà illuminato da una luce a **LED** quando verrà azionato il generatore a manovella presente alla base dello stesso;
- un'illusione ottica alimentata dal sole, ovvero che sarà visibile solo se verrà correttamente allineato, tramite manovelle, un **pannello solare**, che genererà la corrente elettrica necessaria per far funzionare l'effetto ottico;
- una girandola e un cartello stradale attivati pedalando su una bicicletta: la girandola girerà, mentre il cartello si illuminerà mostrando al bambino l'effetto energetico della pedalata;
- un'altalena basculante, che col suo movimento farà girare una **ruota idraulica**. Uno scivolo, posto sopra la ruota, simulerà una cascata d'acqua;
- un foro **stenopeico** dal quale sarà possibile inquadrare i dintorni e metterli a fuoco regolando le lenti interne;
- un **videocitofono/periscopio**, che collega il primo col secondo piano e permette ai bambini di vedersi in faccia e parlarsi;
- una radio a pedali, per far capire fin da piccoli come l'energia può essere utilizzata e in che modo è possibile alimentare un apparecchio di uso comune che solitamente non funziona con l'**energia cinetica**;
- un aeroplanino a **lievitazione magnetica**, generata da due potenti magneti al neodimio, manovrabile grazie a delle leve che daranno ai piccoli piloti l'impressione di volare.



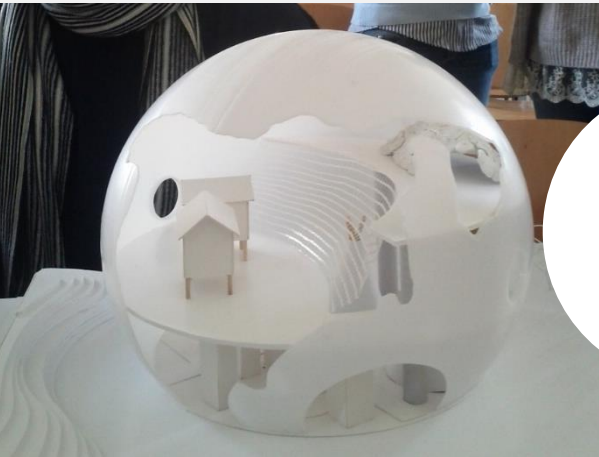
before RULES
than SUGGESTIONS
now DESIGN

child centrality in design solutions

thematic colourful stripes



«B.A.B.A.»



"Creatures
of the
world"

historical journey



recycling labirinth

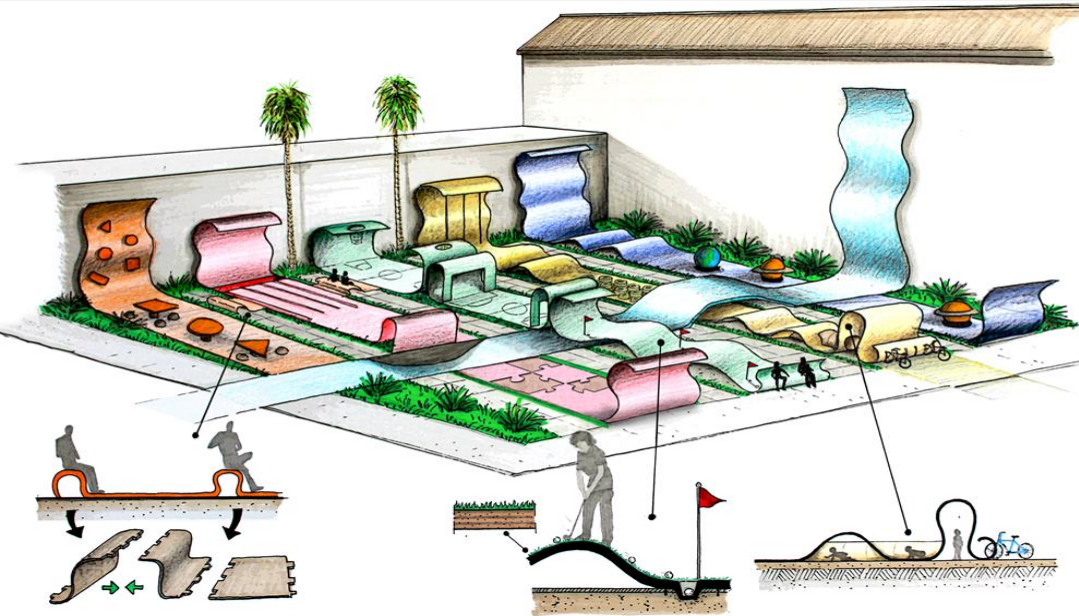
«T-riciclo»

child centrality in design solutions



thematic colourful stripes, one for each activity, allow to play and to develop abilities precisely differentiated, from education to languages, passing by the puzzle to learn the meaning of time, until the small team games.





Five "stripes" plays

are in

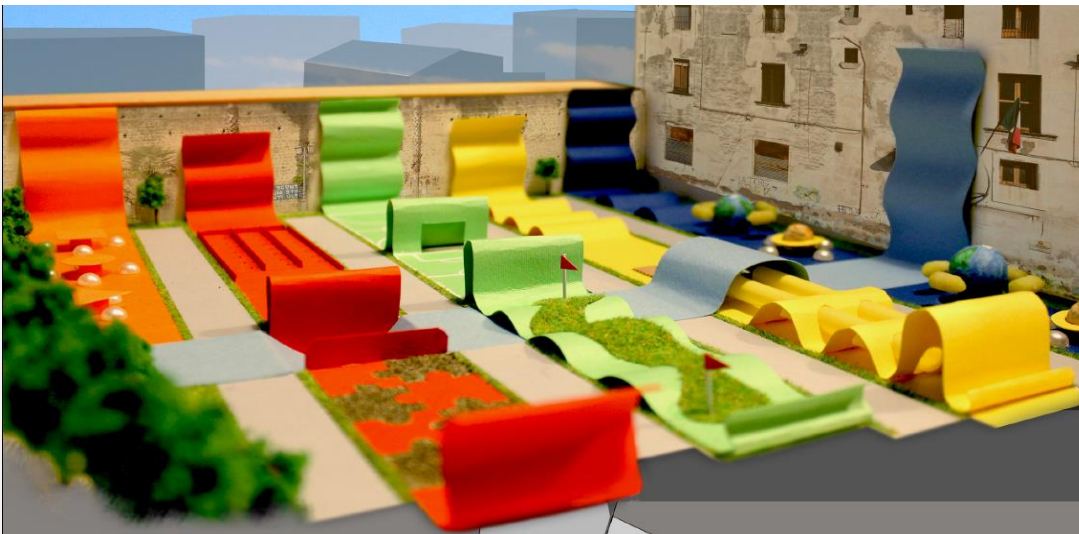
Bio-resin

e

playlastic

Bioresin is a bio-based plastic from plant fibers, thus CO2 neutral and biodegradable. The colouring is done by biological or organic dyes.

Playlastic is a material for flooring, completely non-toxic, resulting from natural and recycled raw materials. It is still recyclable at the end of its use and gives rise to a product durable, resistant to various weather conditions, ensuring on the entire surface a level of constant elasticity.



child centrality in design solutions

"Creatures
of the
world"

*A historical journey, from the origins of human being to contemporary civilization across the games that lead the child to the achievement of proposed steps.
Playing, children find themselves in a completely structured space-time dimension and identify themselves in different historical periods, becoming the main actor.*

child centrality in design solutions



«T-riciclo»

the message of recycling is transmitted through the achievement of a central goal, which is the appropriate placement of material at the end of the path.

the material takes shape and becomes a game, without losing its message of eco-compatibility which is intrinsic in its material characteristics

Calcestruzzo

- Riciclaggio efficace da elementi costruttivi in capofila sotto il passato trionfante e raffinate con materiali nella costruzione moderna.
- Durezza e resistenza. Durezza di un materiale capace di resistere non al calore del tempo, ma al peso specifico in proprio risultando con conseguente riduzione dei costi.
- Resistenza ai funghi: non brucia e non fonde. L'umidità della terra, derivata in ogni stagione a sostanzialmente invariabile con tempo, gli dà un naturale di costruzione.
- Protezione anticorrosione: grazie al suo peso specifico il calcestruzzo può reggere efficacemente dal tempo.

Legno

- Elemento essenziale per ecoedificazioni riciclate, rinnovabile, riciclato, durevole.
- Resistente.
- Durabile nel tempo.

Alluminio

- Poco contropeso rispetto a ottenerne ricami aggrahativi di peso in quei tutti tipi di applicazioni industriali meccaniche.
- Capacità di sviluppare una pellicola impermeabile di ossido sulle superfici esposte, non è suscettibile di corrosione elettrolitica, e non richiede alcun tipo di verniciatura di protezione.
- Materiali plastici utilizzati per contenere elementi e componenti.
- Facilmente riciclabile con un ciclo energetico contenuto, può essere a sua volta riciclato indifinitamente.

Acciaio

- Elemento di prim'ordine, che nel tempo stesso ha trovato una nuova vita in un'industria, la sua presenza in molte applicazioni è indispensabile per la vita e l'equilibrio per la struttura.

Polietilene espanso

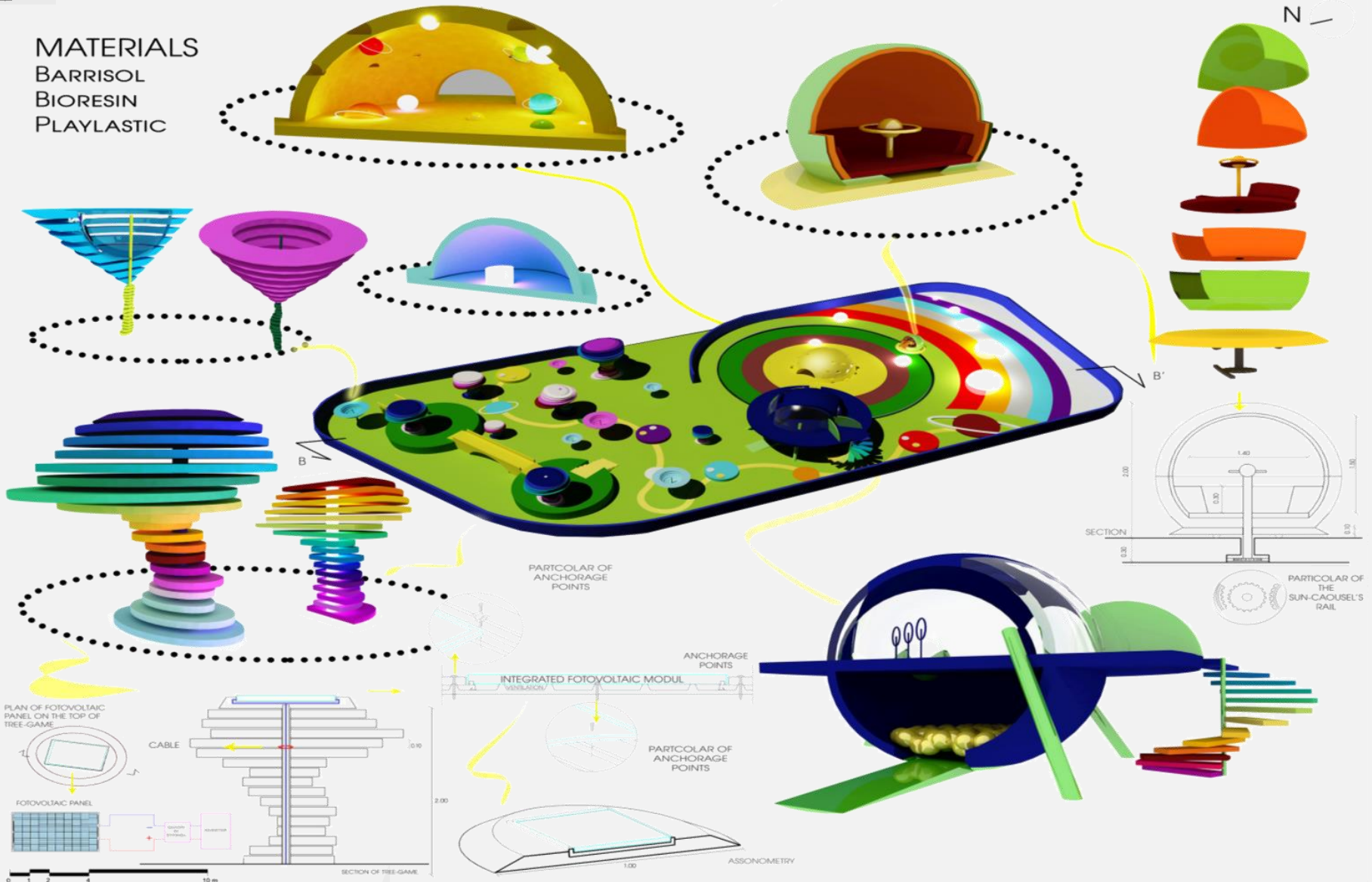
- Condotto in un tempo molto breve dalla sua produzione cellulare (che si forma per il 99% di aria, all'aria superiore rimane).
- Riciclabile al 100%, offrendo nuovi impieghi.
- Poca di colori naturali in grado di sostenere la crescita di piante, lunghi alla vita in ogni giorno, non marcano o graminificano.
- Atossico, inerte e non contiene carcinogeni (CFC) né idrocarburi aromatici (HCA), idoneo per uso medico.
- Permeabile al vapore acqueo che lo rende un materiale "respirante", ma non allo stesso tempo è impermeabile all'acqua.

Polyurethane espanso

- Realizzato tramite uso di gomme riciclate. Caratteristiche:
 - Basso permeabilità.
 - Superficie elastica con appoggi cilindrici con alta potenza di ritorno.
 - Spugna a granulato.
 - Elevata uniformità delle caratteristiche dimensionali.
 - Basso spessore dimensionale.
 - Impiego diretto sul piano tramite utilizzo di appoggi rotanti (CDO, CDO).
 - Sistema di riciclaggio su tutti i tipi delle plastiche che consente di ottenere uno polimerizzazione stabilmente collegata.
 - Disponibile nei colori Grigio, Verde, ed altri a richiesta.
 - Nei formati di mm. 30, mm. 40, mm. 50.



MATERIALS
 BARRISOL
 BIORESIN
 PLAYLASTIC



AHP Method

THE ROLE OF MATERIALS IN CONTEMPORARY DESIGN PROCESSES

Multicriteria Decision Support System



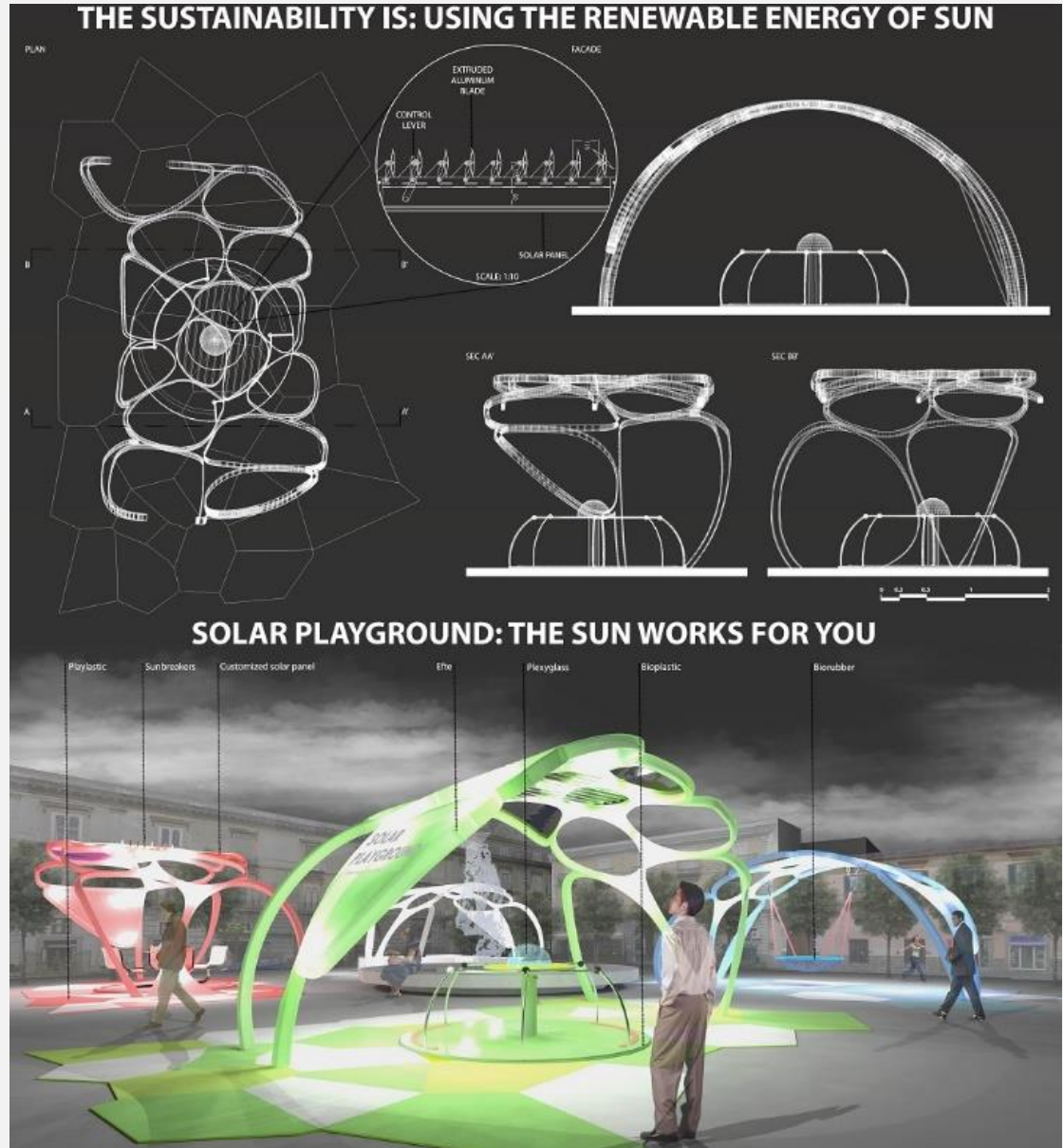
The tool is implementable and dynamic.

New categories of evaluation can be introduced and a wide range of materials can be evaluated.

AHP Method

Multicriteria Decision Support System

the evaluation process uses a qualitative approach to define the requirements weights, in order to orient the designer in the choice of a more adaptable material for the x element realization in the playground, such as paving, fence or play in itself.



A H P Method

Multicriteria Decision Support System

The requirements were selected according to the LCA approach and, especially for the operational phase, following the best practice rules, as well as binding obligations.

The experiment was tested at the University of Studies of Florence, with the student of Master A.B.I.T.A. (in Italian: Architettura Bioecologica ed Innovazione Tecnologica per l'Ambiente), during my course on "Multi-criteria Analysis".

MATERIALI :
 - LEGNO DI NOCE;
 - BARRISOL;
 - POLIETILENE;
 - PLAYLASTIC.

NAVE :
 - LEGNO DI NOCE;
 - BARRISOL.

ANCORÀ (altalena) :
 - LEGNO DI NOCE;
 - RETE D'ARRAMPICO;
 - PANNELLO LUCE LED.

BUSSOLA :
 - LEGNO DI NOCE;

TIMONE :
 - LEGNO DI NOCE;

ALTALENA PER DISABILI :
 - LEGNO DI NOCE;
 - ACCIAIO;
 - ALLUMINIO;
 - PANNELLO LUCE LED.

BARRISOL :
 I feli Barrisol sono conformi al 100% alla normativa "CE", sono prodotti con plastificanti senza ftalati e sono garantiti per essere, senza cadmio, senza mercurio e arsenico.

POLIETILENE :
 è una resina termoplastica, si presenta come un solido trasparente (forma amorfa) o bianco (forma cristallina) con ottime proprietà isolanti e di stabilità chimica, è un materiale molto versatile.

LEGNO DI NOCE :
 Juglans regia, Juglans arguta. Appartiene alla famiglia delle Juglandaceae. Questo legno si essicca bene, anche se lentamente. Si lavora, vernicia e lucida molto bene. La grana è diritta o talvolta ondulata, con tessitura media.

COSTELLAZIONE :
 - LEGNO DI NOCE;
 - RETE D'ARRAMPICO: nylon con anima in acciaio con stere e redance in PE e cablaggi in alluminio.

FARO (scivolo) :
 - POLIETILENE;
 - LEGNO DI NOCE.

TORRETTA :
 - LEGNO DI NOCE;
 - RETE D'ARRAMPICO;
 - PANNELLO LUCE LED.

PLAYLASTIC :
 Il materiale con cui la pavimentazione viene realizzata è assolutamente atossico, derivante da materie prime riciclate e naturali, riciclabile ancora al termine del suo utilizzo e da origine ad un prodotto longevo e resistente alle più svariate condizioni climatiche, garantendo su tutta la superficie un livello di elasticità costante. È facilmente lavabile all'occorrenza con un semplice getto d'acqua a media pressione per garantire l'effetto ottico e condizioni igieniche adeguate.

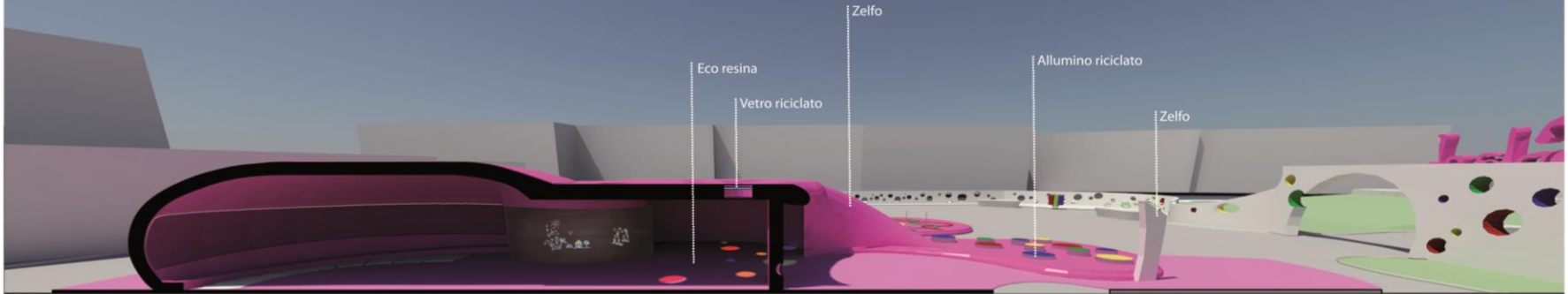
CANNOCCHIALE :
 - LEGNO DI NOCE.



USES	PLUS VALUE REQUIREMENTS							REQUIREMENTS															PLUS VALUE REQUIREMENTS							MATERIALS					
	PRE-Environmental safeguard							Safety		Wellness		Aspect			Inte gra tion	Management			POST-Environmental safeguard																
	CRADLE																		GRAVE																
	RENEWABLE	RECYCLED		REUSED		WASTE PRODUCTS		IMPACT RESISTANCE	NO DANGEROUS EMISSIONS	FIRE RESISTANCE	ROUGHNESS CONTROL	ANHYGROSCOPIC	SOUND-ABSORBENT	NO ODOUR EMISSIONS	WASHABLE	TRANSPARENT	COLOURABLE	UNALTERABLE	PLAN INTEGRABLE	DRAINAGE CAPACITY	CLEANABLE	ORGANIC RESISTANCE	FREEZE RESISTANCE	REPAIR SUITABLE	TOTAL	PARTIAL	PARTIAL ELEMENTS	FINISHED PRODUCT	WASTE PRODUCTS		BOLOGICAL DECOMPOSITION	SEPARATE COLLECTION	LANDFILL		
Play Combined		●		●			●	●	●	●	●	●		●	●	●	●	●		●	●	●	●	●	●		●					●	ALUMINIUM		
				●				●	●	●	●	●	●								●	●	●	●	●	●			●				●	ARBOFORM	
				●					●	●	●	●	●									●	●	●	●	●	●			●					BARRISOL
				●					●	●	●	●	●									●	●	●	●	●	●	●						●	BIO FOAM
				●					●	●	●	●	●									●	●	●	●	●	●				●				PHAs (BIOPLASTIC)
		●							●	●	●	●	●									●	●	●	●	●	●	●						●	CONCRETE (High Class)
		●							●	●	●	●	●									●	●	●	●	●	●		●						JUTA
									●	●	●	●	●									●	●	●	●	●	●			●					NATURAL WOOD
									●	●	●	●	●									●	●	●	●	●	●				●				PVC
									●	●	●	●	●									●	●	●	●	●	●					●			ZELFO (High Density)



“The Stain”



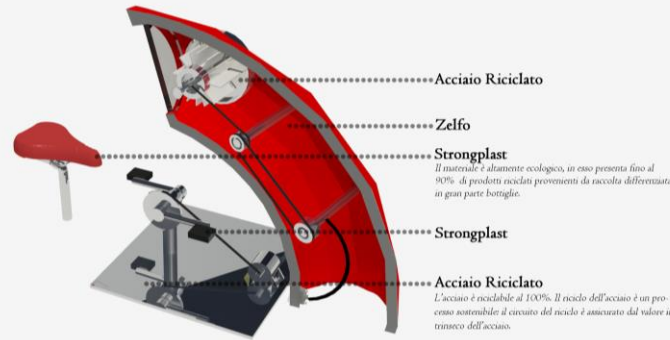
	PLUS VALUE REQUIREMENTS							REQUIREMENTS													PLUS VALUE REQUIREMENTS				MATERIALS											
	CRADLE							SAFETY			WELLNESS		ASPECT			INTEGRATION	MANAGEMENT				GRAVE															
	RENEWABLE	RECYCLED	REUSED																																	
VEGETAL	MINERAL	ANIMAL	BIO-DERIVED	POLYMERS	PARTIAL ELEMENTS	FINISHED PRODUCT	WASTE PRODUCTS	IMPACT RESISTANCE	NO DANGEROUS EMISSIONS	FIRE RESISTANCE	ROUGHNESS CONTROL	ANHYGROSCOPIC	SOUND-ABSORBENT	NO ODOUR EMISSIONS	WASHABLE	TRANSPARENT	COLOURABLE	UNALTERABLE	PLAN INTEGRABLE	DRAINAGE CAPACITY	CLEANABLE	ORGANIC RESISTANCE	FREEZE RESISTANCE	REPAIR SUITABLE	TOTAL	PARTIAL	PARTIAL ELEMENTS	FINISHED PRODUCT	WASTE PRODUCTS	BIOLOGICAL DECOMPOSITION	SEPARATE COLLECTION	LANDFILL				
USES																																				ZELFO (High Density)
PLAY																																				NATURAL WOOD
GROUND																																				PLAYLASTIC
Fence																																				
Paving																																				

Zelfo: eco-friendly material for combined play

Natural wood: eco-friendly material for fence

Playlastic: eco-friendly material for paving

NON È SOLO PULIRE LA PROPRIA STANZA, MA È TENERE IN ORDINE UNA STANZA ANCORA PIÙ GRANDE CHE È DI TUTTI



Acciaio Riciclato

Zelfo

Strongplast

Strongplast

Acciaio Riciclato

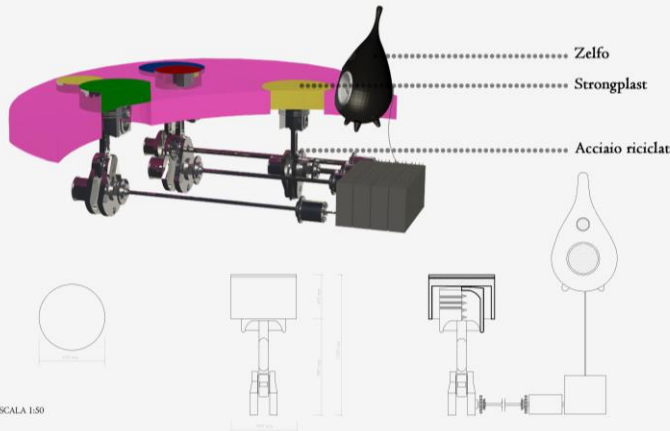
L'acciaio è riciclabile al 100%. Il riciclo dell'acciaio è un processo sostenibile il cui costo del riciclo è assicurato dal valore in rimbalzo dell'acciaio.



SCALA 1:50

PEDALANDO S'IMPARA

Un gioco che s'ispira al vecchio cinema è stato associato ad una semplice pedalata attraverso la quale i bambini attivano il movimento di diverse "immagini fumanti" grazie alle quali essi apprendono semplici insegnamenti del vivere civile in modo divertente.



Zelfo

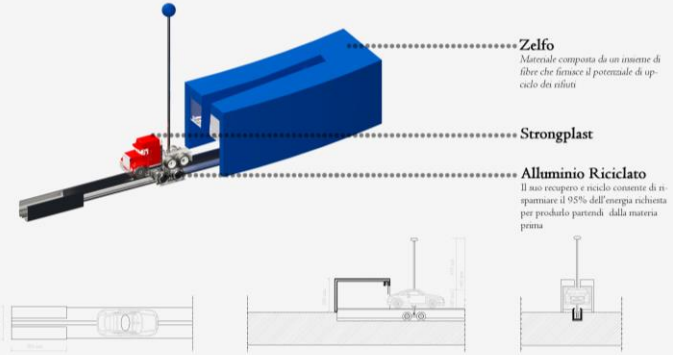
Strongplast

Acciaio riciclato

SCALA 1:50

PISTONI MUSICALI

Il gioco dei pistoni musicali consiste in una grande pedana sulla quale il bambino può divertirsi a saltellare, provando a spingere verso il basso dei pistoni morbidi e colorati che, conseguentemente alla spinta riprodurranno il rumore del materiale appartenente al colore della raccolta differenziata scelto. Il bambino attraverso questo semplice gioco imparerà a distinguere i vari materiali, da poter differenziare, non solo attraverso il tatto ma anche attraverso l'udito.



Zelfo

Materiale composta da un insieme di fibre che finisce il potenziale di up-ciclo dei rifiuti

Strongplast

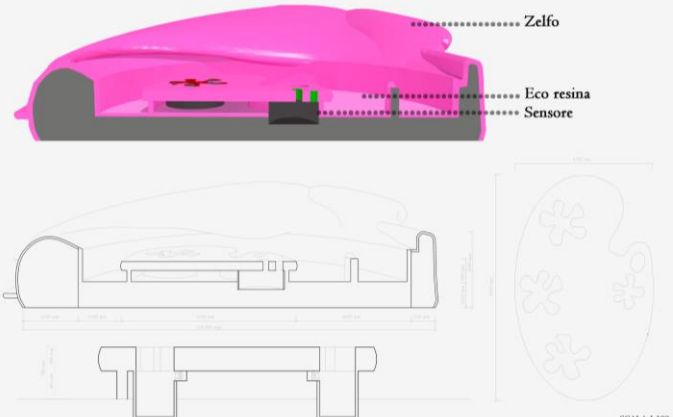
Alluminio Riciclato

Il suo recupero e riciclo consente di risparmiare il 95% dell'energia richiesta per produrlo partendo dalla materia prima

IL LABIRINTO DEL RICICLO

Il gioco del labirinto del riciclo consiste in varie piste colorate secondo i colori della raccolta differenziata. Le suddette piste possono essere percorse da varie macchine, il cui movimento si attiva attraverso un sensore posto all'interno dei recipienti del tavolo della raccolta. Quando il bambino guida un rifiuto nell'apposito recipiente, il sensore si attiva, permettendo alla macchina corrispondente di essere guidata dal bambino lungo il percorso giusto. Attraverso questo gioco, il bambino non solo riuscirà a memorizzare i colori esatti per il rispetto della raccolta differenziata, ma comprenderà che se ci si comporta nel modo giusto verso l'ambiente ci sarà una sorta di premio, che nel caso della giostra in questione sarà rappresentato dalla possibilità di poter attivare il gioco del labirinto.

SCALA 1:50



Zelfo

Eco resina

Sensore

SCALA 1:100

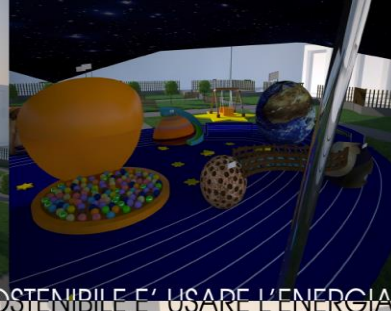
TAVOLO DELLA RACCOLTA DIFFERENZIATA

Esso è un vero e proprio tavolo del quale sono posizionati dei grandi fori a forma di macchie di colore diverso che rappresentano i recipienti per i vari rifiuti della raccolta differenziata. Ogni recipiente è munito di un sensore, che si attiverà quando il bambino getterà il rifiuto, e contemporaneamente metterà in moto il gioco del labirinto del riciclo. Attraverso il tavolo della raccolta il bambino imparerà a dividere nel modo giusto i vari rifiuti rispettando i colori assegnati alle varie categorie che corrispondono effettivamente a quelli utilizzati dalla raccolta comunale della spazzatura.

“The Stain”



USES	PLUS VALUE REQUIREMENTS <i>PRE-Environmental safeguard</i> CRADLE							REQUIREMENTS															PLUS VALUE REQUIREMENTS <i>POST-Environmental safeguard</i> GRAVE						MATERIALS					
	RENEWABLE		RECYCLED		REUSED			Safety			Wellness		Aspect			Inte gra tion		Management			RECYCLABLE		REUSABLE		DISPOSAL									
	VEGETAL	MINERAL	ANIMAL	BIO-DERIVED	POLYMERS	PARTIAL ELEMENTS	FINISHED PRODUCT	WASTE PRODUCTS	IMPACT RESISTANCE	NO DANGEROUS EMISSIONS	FIRE RESISTANCE	ROUGHNESS CONTROL	ANHYGROSCOPIC	SOUND-ABSORBENT	NO ODOUR EMISSIONS	WASHABLE	TRANSPARENT	COLOURABLE	UNALTERABLE	PLAN INTEGRABLE	DRAINAGE CAPACITY	CLEANABLE	ORGANIC RESISTANCE	FREEZE RESISTANCE	REPAIR SUITABLE	TOTAL	PARTIAL	PARTIAL ELEMENTS		FINISHED PRODUCT	WASTE PRODUCTS	BOLOGICAL DECOMPOSITION	SEPARATE COLLECTION	LANDFILL
Ground Furniture		●		●			●		●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	●		●			ALUMINIUM	
				●					●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	●		●			ARBOFORM	
				●					●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	●		●			PHAs (BIOPLASTIC)	
							●		●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	●	●		●			CONCRETE (Low Class)
								●		●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	●	●		●			EFTE
					●				●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	●	●		●			PANELITE
					●				●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	●	●		●			PLEXIGLASS
					●				●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	●	●		●			PVC
					●				●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	●	●		●			RECYCLED GLASS
					●				●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	●	●		●			RUBBER TIRES
	●			●				●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	●	●		●			STEEL	
				●				●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	●	●		●			ZELFO (High Density)	



LO SVILUPPO SOSTENIBILE E' USARE L'ENERGIA PULITA DEL SOLE



*A creative playground is only half a creative space;
it's also a creative attitude.
And we're changing attitudes
as much as we're changing spaces.*

Jay Beckwith, 1973