Acknowledgements

Folding Architecture - Spatial, Structural and Organizational Diagrams, comprises a case study of folding as a generative process in architectural design. The case has been built on observation, documentation and analysis of the standard educational procedure of design studio D10. Het Lab - Proeftuin voor Ontwerpen en Nieuwe Theorieën that I have been instructing in the Faculty of Architecture, Delft University of Technology, with the status of guest teacher since 2000. Hans Cornelissen the D10 design studio course director has supported this research in the course of three academic years and contributed essentially to the design investigation and the publishing of this book. This publication has been granted the permission of Professor H. Beunderman, Dean of the Faculty of Architecture T.U. Delft. I would like to primarily thank all the students that seriously engaged with the studio research and especially the ones contributing to this publication: Trine Bang, Sofia Bényay-Sierf, Mattieu Beccoux, Paul-Eric Bonnare, Robert Bov, Marcus Butlerweg, Johan Cedefol, Fokke van Dijk, Moniek Havikhoord, Andreas Leblon, Frederik Luyt, Daniel Neme, Tijia Palle, Bas Reutenhoek, Thys Schreve, Joost van Boeckhoud, Christian Vedeler, Bas Vosgeloed, Cindy Wouters and Jerome Zwier.

The visual essay in Folding as a Morphogentic Process in Architectural Design - D10 Design Studio Case Study primarily consists of photographic documentation of working models in all phases of the studio process. Hans Kruza, Hans Schooten, and myself, as well as several students are responsible for the photography. Joost van Boeckhoud and Gabriel Pena assisted me in the studio documentation of D10-2003. Joost Berkhout provided precious graphic design consultancy. Prina Avsdar sustained the further development of the research inviting me to apply this explicit design method in the analysis and design studio In Gewikkeldhe Roimte at Tilburg Academy for Architecture and Urbanism in 2002. Marc Schoonderbeek, Olga Vazquez-Ruano and Paul van der Vloot contributed to additional development during our collaboration in The Hand Stays in the Picture workshop that took place in spring 2003 under the MSc-Studio Border Conditions at the same faculty.

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Prologue

The D30 design studio project is an example of an architectural design process with a circular nature. In contrast to a linear process, it allows one to encircle a problem and understand and confront it in all its relationships - in other words, it is a kind of exploration. It results among other things in an expansion from logical to associative coherence. The effect is investigative design and attitude formation. In this context, the fold is more important for the development of methods to arrive at a new architecture, than it is for the development of an individual architectural form.

Folding is relatively unknown to students, folding is a challenge with great individual possibilities. Opening a fold in a surface creates spaces, which in our minds are filled with volumes. Thus, the technique of folding makes it possible to re-approach every step. Each step is looked with potential. Folding and the associated development of hand-eye co-ordination liberates the design thought-process from preconceptions and removes any existing architectural images. The limitation that the technique of folding brings, with it sharpens the mind and stimulates creativity. Folding also implicitly allows accidental and unknown outcomes for a relatively long period of the design process.

The enormous number of possibilities makes a choice necessary. Lines must be drawn in sometimes chaotic, yet remarkable, folding models. The scope, suitability and significance of these will be subject for discussion. There are two observations to be made here: folding is not concerned with creating a new style but rather with searching for links. Forms bring up the problem of human scale, as they can unconsciously display monumental characteristics. Working on a larger scale makes this problem visible. This way of folding is more radical than original because it includes no narrative element. The fold is a sort of affectation of space. More than just reason, meaning and function are involved here. The fold alters the traditional viewpoint. The incisions are no longer concerned with aesthetics or meaning but with a different type of color. Observing them can confuse the knowledge-hungry student.

Folding is more important for the development of techniques to derive new architecture than for the development of an individual architectural form. It is therefore, as Gilles Deleuze claims, an absolute internalisation. The ambiguity, which characterises the folding project, is unmistakable in the end result. These possibilities can be differently interpreted, accentuated and combined by each individual; that is to say, a great difference between equally valid designs is noticeable, because everyone is different.

Folding produces a language of architecture. It is the strength of the architectural language that speaks out and determines the quality. The first folds must thus be viewed as sounds that only much later become words.

It is a new language, at least for the student, which must be learned.

Hans Cornelissen, D30 design studio course director
Folding as a generative process in architectural design is essentially experimental: agnostic, non-linear, and bottom-up. Our interest lies on the morphogenetic process, the sequence of transformations that affect the design object. Considering this an open and dynamic development where the design evolves with alternate periods of disequilibrium, we can appreciate the function of folding as a design generator by phase transitions, that is, critical thresholds where qualitative transformations occur. Cut off from the continuum of the studio process, four phase transitions are presented further illustrating the case with a visual essay: matter and functions, algorithms, spatial-structural-organizational diagrams and architectural prototypes.

Transition 1: Matter and Functions

Ivy Carter is introduced as quintessential foldable material given the paper's weight and structural capacity. The task is to extensively explore transformations of a single paper surface into a volume, with one constraint only, maintaining the continuity of the material. The paper's transformative origins are simple actions, intuitive responses, delivered here as a list of verbs: fold, press, crease, pivot, score, cut, pull up, rotate, twist, revolve, wrap, pinch, hinge, knot, weave, compress, unfold. In the early folding performances, we can appreciate the paperfold as a diagram in Delouizian terms, an abstract machine knowing nothing of forms and substances; operating purely by matter and function. Reading the paperfold as a diagram, that does not represent but rather constitutes a new type of reality introduces architectural research into a field of actualization.

Transition 2: Algorithms

The paperfold is a dynamic artifact, unstable and evolving. It bears the traces of the activity that brings it into being: scores, creases or incisions drawn in the surface of the paper. The paperfold unfolded, becomes a map of its origination process. Receptive paper folding performances evolve initial intuitive responses into primary techniques: triangulation, stress forming, concentration of folds, folds within folds, or patterns like strips, spline curves, spirals, or meanders. Manipulation of paper surface in order to produce volume constitutes a curriculum of activity, a program. Paperfold generative transformations are structured in sequencies. We consider the succession of transformations resulting to the paperfold artifact as a genetic algorithm of form. The task in
this phase is to decipher the paperfold algorithm as a morphogenetic mechanism. Generative sequences, augmented techniques, unfolding, transformation mappings, instructive plans and inventories of transformation are submitted here as definitions of the paperfold algorithm. Understanding and developing the paperfold algorithm transgresses the singularity of the object spanning a series of similar but varying artefacts. This re-introduces the problem of documentation, reposing notation as a set of instructions that include time as a variable. Thus the paperfold can be considered an event, defined by Leibniz as an extension, where the object expands into an infinite series of variability containing neither a final term nor a limit.

**Transition 3: Spatial, Structural and Organizational Diagrams**

Space emerges in the paperfold during a dynamic volume generation process. The void bounded between the folds of the paper manifests a curvilinear form that cannot be exactly defined. Like its delimiting surfaces it manifests increased continuity with its fragmentation. Mapping the paperfold as a spatial diagram requires an abstraction of spatial relations. Geometric characteristics are initially irrelevant. Topological properties are crucial to describe the space emerging in the paperfold artefact: proximity, separation, spatial succession, enclosure and contiguity.

The task in this phase is to perceive and configure the space between the folds as actual space. Not yet as the virtual form of a possible building or as an abstract geometric space but as space accommodating an abstract program. A smooth space, that needs to be occupied in order to be calculated.

We introduce the itinerary of a human body, a succession of movement and stasis as abstract program. Accessibility is the essential operation. Connectivity is consequential performance. Loops and Crossings are emergent space concepts. Given the consistency of every carton, the crease, the pleat and the hinge acquire structural preservation in the paperfold artefact. In the meting processes of surface warping creases receive and distribute tension and compression. Structural patterns mostly encountered in the development of paper folding techniques are triangulated surfaces of increased variability. The fishbone is a major structural pattern deriving from the domain of origami paper folding, a regular structure susceptible to maximum variability.

Paperfold derivative organizational diagrams are entanglement, interlacement and stratification. Serial variation of strips has been observed as a folding technique that can evolve into an organizational system. Due to the warping of the surface, the dominance of the oblique plane is expressed through a series between horizontal and vertical. Blurred boundaries between spaces indicate constant transformations in conditions of enclosure.

**Transition 4: Architectural Prototypes**

In a design generative process by folding, the architectural object is not an a priori target to be achieved. Given the educational context, the spatial, structural and organizational diagrams emerging in the process are developed into architectural prototypes. The task here is to attribute architectural properties to the diagram introducing parameters of material, program and context. Thus we can define here as architectural prototype the spatial, structural or organizational diagram that has acquired ‘architectural substance’.
A concise account of the prototypes developed in the studio course illustrated here includes the warped surface skins, the wrapped interior, the ethereal, intertwining tubes, life-pods for urban nomads, the living-working machine, the hollow dike and the urban camping. Unlike disjunctive notions of cross, trans, or dis-programming, attributing architectural substance to the paper-fold diagram is a research project that seeks reciprocity between spatial properties, organization of program and structure. Nevertheless this reciprocity goes beyond deterministic interdependence into a multiplicity of possible associations. Through the evaluation of these prototypes we could verify the discursive claim of folding in architecture as a strategy that manages complexity by integration of dispersed elements into "a heterogeneous yet continuous system".

Sophia Vayzdut, June 2003

Footnotes
1. Any cartoon is direct translation from the Dutch word sappere; thin, weak but easy to cut white paper available from 90 to 300 g.
2. Paperfold's definition here as the result of the process of folding paper, ex- prodact of a folding performance.
3. The argument for diagrammatic architecture comes in accordance to Oeckler: A diagram's notion of the diagrammatic being an intrinsic property of the existent machine: "We define the abstract machine as the aspect or residua at which nothing but functions and matrices remain. A diagram has neither substance nor form, neither content nor expression." From A Thousand Plateaus: Capitalism and Schizophrenia, translation Brian Massumi, University of Minnesota Press, Minneapolis, 1988.
score - crease - fold - unfold
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Transition 4
Architectural Prototypes

Warped surface series
Wrappedhouse
Niche
Intertwining tubes
Lifepods for urban nomads
Living - working machine
Hollow dike
Urban camping
F

CAMP
SLEEP
EAT
WALK
TALK
CLEAN
SWIM
FUCK
RELAX
SIT
DIVE
CLimb
SUN
LOOK
BAR-B-Q
COOK
COME
LEAVE
PICNIC

WATER
GRASS
ROCK
SUNFLOWERS
TULIPS
APPLE TREES
TREES
SAND
STONE
CONCRETE
Folding Architecture, Concise Genealogy of the Practice

Sophia Vyzovtii

Folding emerged as an architectural discourse working to become the new architecture of the end of the 20th century. In the perspective of a concise genealogy we can consider the Architectural Design Profile, guest-edited by Greg Lynn. Folding in Architecture: Its early manifesto. The issue released in 1993 comprises an anthology of essays and projects by a group of architects seeking an alternative to the contradictory formal logic of Deconstructivism, and includes among others Cobo, Eisenman, Gehry, Kipnis, Lynn and Shindel. Featuring an excerpt from Deleuze's, at that time recent English translation, The fold. Leibniz and the Baroque: Folding in Architecture, draws philosophical substance from the work of Deleuze, a radical reinterpretation of Leibniz, employing the Baroque as a theoretical tool to analyze contemporary architectural movements.

Greg Lynn, in his contribution to the above issue, titled 'Architectural curvilinearity’, the folded, the plant and the supple’, introduces folding as a third architectural response to complex and disparate cultural and formal currents, operating neither by conflict and contradiction as Deconstruction nor by unity and reconstitution as Neo-Classicism, New-Modemism and Regionalism. Eternologically relating complexity with pliancy, the architecture of the fold is considered a cunning tactic for intensive integration of difference within a heterogenous yet continuous system, working beyond addition by smooth layering, a concept demonstrated with analogues from geology as mineral sedimentation, and culinary mixing techniques. Forms of viscosity and pliability are considered its new instruments: forms that are sticky and flexible, where things tend to adhere to. For Lynn curvilinearity is the formal language of 'plant architecture'. Hussel's unstuck geometries are essential for the comprehension of plant forms; rigorous geometries that in contrast to exact geometries, cannot be reproduced identically, are irreducible to average points of dimensions but can be determined with precision. As a paradigm for geometry of multiple proven relations Lynn introduces the supple topological surface of Rene Thom's catastrophe graph.

In the fold, Leibniz and the Baroque Deleuze submits a set of Baroque traits that stretching outside its historical limits are contributing to the appreciation of contemporary art. Considering them crucial for the understanding of the evolution of the discourse on the fold into a peculiarity of folding architecture these traits are summarized:
Deleuze regards inflection as the ideal generic element of the variable curve or the fold. Quoting his student Bernard Cache, he defines the point of inflection as an "intersec-singularity" involving three transformations: vectorial, projective and infinite variation. In this frame Cache argues for a new definition of the technological object, the "objective" as an event-assuming place in a continuum by variation where industrial automation or serial machineries replace stamped forms. This new status of the object no longer refers to a spatial mould but to a temporal modulization that implies as much the beginnings of a continuous variation of matter as a continuous development of form. In Earth moves, the furnishing of territories, published in 1995 Bernard Cache proposes to re-define architecture as a folded practice of interior and exterior relations and as the art of the frame. Cache sets the conditions for the new in architecture by the "inflection image" focusing on furniture as hinges between geography and architecture.

Perhaps the most influential unexecuted project of the '80's and probably the earliest to transcribe Deleuzian traits in an architectural design are the Bibliothèques at Lesceux, Paris by OMA in 1993. In this competition entry for the public library on the university campus, inflection is employed both as organizational diagram and a spatial device that produces density. Koolhaas uses the metaphor of the 'the social magic carpet' addressing the continuous floor surface of the building. The floors slats are sloped to coincide with the superceding and underlying ones, producing a continuous path, a warped interior boulevard that exposes and relates all programmatic elements thus transforming the library experience into that of an urban landscape. Folding as a spatial device abolishes the 2,5 meter human occupation height constraint while instigating a flânerie through the library interior. In S,M,L,A,N the paperfold is not only illustrated as a concept model but also introduced into the practice as a new architectural strategy and imagery. The design exemplifies architecture neglecting the idea of the façade, rather concentrating on the floor as a catalyst of spatial connectivity and social interaction.
In investigating the origins of Juselius's continuous sloped floors we should acknowledge as presidencies Virilio's concepts of the oblique and habitable circulation, Paul Virilio and Claude Parent published in 1981 Architecture Principe, a series of architectural and urban manifestos. Here Virilio develops the theory of the 'oblique function', an angular plane that constitutes the 'third spatial possibility for architecture' subverting the norms of horizontal and vertical oriented space. The oblique plane is considered the instigator of a tactile relationship between building and body primarily activated by disequilibrium. The oblique is idealized as the field where the computed by the static architecture of horizontal-vertical intense spatial perception is regained, by a kind of exorcism of the ground. 'Architecture will no longer be dominated by the visual, the facade, but will relate to the human body as a receptive totality'. The oblique plane alters the relationship of space and weight: gravity affects perception since 'the individual will always be in a state of resistance—whether accelerating as going down or slowing down as climbing up, whereas when one walks on a horizontal plane weight is nil'. Virilio claims the origins of the theory of the oblique in his childhood explorations. Interiors of upturned or tilted bunkers on the coast of Normandy provided his first experiences of 'unstable spaces'. The oblique plane, as third axis in the Euclidean system, offers the opportunity for habitable surface and circulation to become one continuous space. The allocation of human activities on sequences of oblique surfaces, cannot be exactly defined but require a geometry of multiple probable relations, including zones of predictability of activities as in Thom's catastrophe curves that are constrained by percentage of inclination and material texture.

The oblique plane as habitable circulation will prove to be one of the most fertile concepts in the evolution of innovative Architecture in the nineties, admittedly a prolific decade in respect to folding. The Juselius library project fertilizes the folding discourse into architectural practice, spawning a series of single surface projects in a generation of architects worldwide. Particularly in the Netherlands the oblique floor acquires tectonic substance in a number of projects becoming a simulation of a landscape. Since an exhaustive inventory of such designs would exceed the limits of a cohesive survey only a few references will proceed. The continuous sloped surface evolves within OMA's practice into the folded floor.

Kunsthalle, Rotterdam 1993, comprises a land of paths, circulation spaces involving different kinds of movement: exhibition visitors, passers-by and vehicles. The folded concrete floor manifests tectonic mastery in the Educational, UWE, 1997, a central facility shared by the faculties of the
University of Utrecht. Described by Mart Lootsma the Educationium brings about an entirely new kind of spatial experience in which is hard to tell where the exterior ends and the interior begins. Passing through doors without noticing the transition, you do not observe any stairs or even thresholds- visitors glide into the building. Once inside, movement is imperceptible from one level to another, even though staircases are here and there, where vertical distance to be bridged is sufficient to warrant one.1

If we consider saw as a precursor of a continuous surface, the garage as well as the Guggenheim Museum of Modern Art would qualify as architectural prototypes of inhabitable circulation. Vehicular movement as an overriding architectural program is the ideal brief for a folded organization. Avoiding repeated reference to the car, another paradigm of the original continuous plane as a superseding architectural element would be bicycle parking. The bicycle-flat or fietsenbal, as designed by Amsterdam based VMX Architects in 1998 and completed construction in 2001, is conceived as a continuous-enclosed bicycle path. In the process of infrastructure upgrading, the Amsterdam municipality decided to free the entrance place of its Central Railway Station from the mass of bicyclists, by installing temporary storage for 2500 bicycles. VMX architects proposed a three level self-supporting, de-mountable structure consisting of a continuous strip unfolding in length to 110 meters. Bicycles can be stalled on both sides of the track. The architects state that the design is based on a very functional storage: 'Using the existing height difference along the station square of 1.25 meters a system of slpes (3 degrees) has been created on which the bicycles can be stabled. Road asphalt will be laid over the strips like a carpet. Short rail for going up do exist in a number of bicycle stairs, but undoubtedly cyclists will prefer to go down using the ramp. The expression of the building will be made by an efficient detailing and material choices, but chiefly by the sculptural form of the slopes.'2 Despite this, the building in its performance appears to be transcending the infrastructural efficiency of the bicycle-storage to become a new kind of public space and a contemporary icon for the city of Amsterdam. Besides the mass of commuters, the bicycle-flat hosts a number of other vehiciles: tourists, cyclomakers and bike-and-skate riders, whose presence supports Virilio's claim for inhabitable circulation as an instigator of social interaction.

Having elaborated on the continuous oblique surface, a major feature of folding architecture, a new notion will be exemplified further through the folded texture: the fabric revealing its form. A reference to the work of Diller + Scofidio serves as an example of this note.
In Bad Press folding materializes as a process resulting in the re-configuration of the mainstream shirt as a critique to standardization and a subversion of the constitution of contemporary self-image. In the winning competition entry for EleyKishimoto: Museum of Art and Technology in New York completed in 2002 the folded strip is deployed both as spatial and organizational diagram.

The new EleyKishimoto building will house a museum of art and technology, artist-in-residence studios, education center, multimedia classrooms, state-of-the-art theater and digital archive. The facility will provide unprecedented production and exhibition opportunities for artists exploring new media in video, film and moving image art, DVD production, installation, 2D/3D digital imaging, net art and sound and performance art forms. The double folded strip displays the buildings formal determination; it provides the interface for the digital media space and encloses its supporting infrastructures. The pleated section of the EleyKishimoto building computes. It is a plexus of technological infrastructures and their interfaces, into an intelligent architectural smoothly layered skin.

The final reference in this survey embraces an emergent architectural paradigm of a folded organization, considering the projects scale and influence: the Port Terminal at Yokohama Oceanic Pier, completed in 2002 by Foreign Office Architects.

In their 1995 winning international competition entry, Yokohama Port Terminal, architects Asymptote Zaha Hadid and Farshid Moussavi delivered a single surface prototype where folding tracts permeated all scales of the design. The urban proposal introduces the continuous ground as a mechanism for the permeation of urban space on the terminal’s roof and an insinuation of a public space at the interface of terminal functions and city events. It has been described by the architects as “a public space that wraps around the terminal, neglecting its symbolic presence as a gate, de-occluding the rituals of travel and a functional structure which becomes the mould of an archetypal public space, a landscape with no instructions of occupation”.

The cruise terminal program, consisting of a bundle of diffuse and directed movement including the flows of citizens, passengers, visitors, vehicles and luggage, is organized by the layering and intersecting of paths. The building’s formal determination manifests a topological surface concept in sequences of inclined curvilinear spaces that accomplish smooth transitions between programmatic elements. The structural and construction principles intensify the overriding spatial concept by assigning the entire folded steel plate as the structural principle thus demolishing the traditional separation between building envelope and structure.
visible on the roof of the terminal's halls. Origami structure can be appreciated as regional reference supporting 'the introduction of context as a process of material organization rather than image'. Even though the fishbone comprises a regular generic structure, every unit in the specific folded plate is differentiated. Following the terminal's geometric guidelines that are themselves inflected; the geometry of the pattern is tangential to the circles regulating the complex curvilinear grids, constantly varying in a lesser degree. Thus the structural pattern extends through an infinite series of variability.

In conclusion, Folding Architecture - Canonic Genealogy of the Pholidic has registered the effect of the discourse of the fold in the practice of architecture focusing on a small number of landmark projects that have essentially contributed to its evolution in the 10 years following 1993. The purpose of this survey was to ground the studio research Folding as a Morphogenetic Process in Architectural Design in a theoretic and professional framework. This genealogy has, however, omitted a line of work intersecting Delkadian discursive traits with computer generated design, narrowing the perspective to end of 20th century techniques. Given the opportunity of an extensive survey an update on the recent work of Bernard Cache and Fang Lynn would be fundamental.

The traits introduced by Delkauze stimulated the thinking of a generation of architects. Consequently the fold has acquired architectural substance, manifested tectonic properties and can be delivered now as design knowledge. The attributes of the new architectural object emergent in the re-definition of the practice are contended below in a set of propositions:

1. Extent: the object as an infinite series, serial variability
2. Multiplicity: the object as a plexus of elements, potential interactivity
3. Contiguity: inflection, obliqueness, warping of surfaces and non Euclidean geometries
4. Stratification: layering and interfacing between contradicting architectural factors
5. Continuity: topological properties of surfaces and organizational principles
6. Fluidity: intermeant of boundaries, fuzzy demarcations and zones of probability
By which I can submit the field, Deluze and the re-definition of
the practice, as an alternative title which may further the
research presented in this essay Folding Architecture - Conrilce
Genealogy of the Practice. Given the fact that a new generation
of architects is being educated on the foundation of this
discourse we can only expect an even more rigorous and
innovative performance in the future.

Footnotes
1 "Folding in Architecture", Architectural Design no.63, Academy Editions,
    London, 1993
2 Gilles Deluze, The Fold, Lebiris and the Baroque, trans. Ted Cordy,
    Le Pli: Lebiris et le baroque. 1981
3 "Folding in Architecture", Greg Lynn, "Architecture consistently -
    the folded, the plant and the envelope". The unforeseen connections possible between differentiated ideas and this programme require continuity, connection, plant, foldable and other curving
    facades. Presently numerous architects are involved with the heterogamy of
    determinants and differences inherent in any cultural and physical
    concern by aligning formal flexibility with ecomonic, programmatic and
    structural pliability. A mixture of all these words: foldable, plant, super-
    flexible, planted, plating, plating, complicity, composite, curving, connected,
    connected, complexes and multiplicity to name a few can be involved to
develop the changing urban sensory of interscal connections. (p 11)
4 Biol. Gilles Deluze, The fold, Lebiris and the Baroque
5 Bernard Cauche, Earth memore: the memory of terrillos, trans.
    Anna Boyars, ed. Michael Specken, MVR/MVVR Institute of Technology,
    1995
6 Ran Kaufmann, A Years, Max, S.M.L.L. 018 publishers, Rotterdam, 1995
7 Enrique Lucero, "Interview with Paul Virilio, "Paul Virilio and the Oubique."
    in Sime and Stark, Postmodern Utopias, S. Allen and M. Park ed...,
    Laurence Press, New York, 1995
8 Ben Levelten, SUPERBUTON, Thames and Hudson, London, 2000
9 "Finn juhl","Retrospective Architect Institute, Rotterdam, 2000
10 www.mvverm.org/retrospect/archiv.min
11 Foreign Office Architects - "Yokohama International Port Terminal",
    AA Plans no.29, London, 1995
12 Alejandro Zefra-Alan, "Trash container construction", writ,architecture dodgsons, Actar, Barcelona, 2001
About the author
Sophia Vezzoli, born in Thessaloniki in 1971, is an architect practicing in Greece and the Netherlands. She is a guest lecturer and scholar at the Faculty of Architecture, Delft University of Technology, Tilburg Academy for Architecture and Urbanism and the School of Architecture, University of Thessaly. Her work has been exhibited at the National Pavilion of Greece, Venice Biennale 2000 and more recently, en architecture of International Architecture Biennale Rotterdam 2013. Sophia Vezzoli received the Diploma of Architect Engineer at the Faculty of Architecture-Aristotle University of Thessaloniki in 1996 and a Master in Architecture of the Design Institute in 1997. Since 1996 she has been research associate at Design Knowledge Systems, Faculty of Architecture- Delft University of Technology.