

ELASTIC SPACE - PATTERN CHART, SURFACE FORMATION AND SPATIAL OCCUPATION

The paper unfolds the idea of elasticity in surface formations. In a cross-referencing of clothing and architecture, the impacts of control mechanisms for these surfaces are investigated. A resulting re-coding and re-contextualisation of user, occupation and space are explored.

Berlin, Sydney, Tokyo. Modern life renders the cultural framework of a shifting, temporal environment.¹ For the contemporary urban inhabitant, this change is formulated by means of a constant spatial adaptation. Consequently, space is re-negotiated. Rather than producing space as a stable set of architectural parameters, a defined entity, space is now understood as a potential, and consecutively, other notions become important: duration, behavioural patterns, appropriated use have become the new normative forces for the production of a spatial envelope. Change then emerges as both a re-contextualisation and re-territorialisation of the urban inhabitant through a spatial shift.

In these shifting environments, both the conditioning of time and individual negotiation has become the defining coordinates of spatial dynamics. Spatial occupation and spatial experience take place in a five-dimensional coordinate system. The three axes of surfaces form the environment, the fourth axis is described by time or duration, and the fifth axis is placed by movement or, more specifically, by the individual trajectory or personal narration. A complex change inscribed in a renegotiated spatial framework then delineates a number of possibilities or alternate versions. It incorporates a range of manifestations and defines a differentiated potential of space. A continued spatial adaptation respects the fourth and fifth coordinate as mechanisms of an expansion or dilation of space. An unhinged architectural space, the ultimate shifting environment, supports such a temporalization of space, established through a duration of occupation and negotiated through the behaviour of the enclosing surfaces.

Yet we are faced with a dilemma. Architectural space is a stable entity. While open for negotiation in the design process, a limitation emerges in the process of materialisation, and is finalized effectively after construction. Then, the defining frame of the spatial envelope affects its potential, its occupational pattern. Thus the possible is already inscribed in the real; therefore any spatial option is already preformed (if not yet performed, and actual), and therefore restricted. A solution to this problem can be found in a basic rule for change: the actual needs to diverge and differentiate itself through division and disruption, in order for the

¹ Shifting spatial parameters of a supermodern environment, coined by Marc Augé. Marc Augé, *Non-Places: Introduction to Anthropology of Supermodernity* (London: Verso, 1997), p. 35.

possible to be actualised in ways unforeseen.² In an architectural translation this would mean space has to incorporate change at different phases, but it also needs to remain partially diverse and differentiated. Only then can a spatial potential, a change, emerge and be processed as volatile and unexpected.

It thus might be both a program conditioning - through narrative trajectory and time - and the material formation of space itself that enable or restrict change. Elizabeth Grosz suggests that 'perhaps space also has loci of intensity, of compression or elasticity, perhaps it need no longer be considered as a medium...The very configuration of space may be heterogeneous, just as movements and configurations of duration vary. Perhaps, in other words, there is a materiality to space itself, rather than a materiality residing only with its contents.'³ If program conditioning and material formation of space are reflecting, initiating, or processing change, in which way do they have to be conceptualised? What role does a formation of surfaces play? What are architectural modes of intensity, compression or elasticity, specifically in a spatial context? How does the surface conditioning affect the change potential of architectural space? Which dynamic processes are described by flexibility or elasticity?

SPATIAL CONDITIONING/ STATIC, ELASTIC OR FLEXIBLE

In its morphological form, space is described by six adjacent surfaces belonging to an abstracted overall plane. This spatial envelope is in principle similar to the second skin of clothing. It is yet another extension of the human body, a third skin of larger scale. In the personalized configuration of inhabitation, it engenders a distance from direct exposure of disturbing influences.⁴ More importantly though, the enclosing surfaces indicate a cultural message of future occupation, use, or individual profile. These indiscernible properties are to an extent encoded in the formation of the surface, and predetermined by design and fabrication. Thus, more than establishing the literal presence of a boundary, or deploying structural or functional requirements, space inherits a non-physical, non-material potential of program and operation.

As indicated, space emerges through a formation of surfaces.⁵ And even though all surfaces of a spatial volume have, in the material world, specific directionality, properties and program distributions, they belong to and originate from an abstract overall surface. This abstract surface ultimately forms the volume and therefore needs to carry the information for a variation of the cultural message. This might be constituted as vagueness or layered specificity, and then space could be reconfigured as indeterminate, heterogeneous, non-

² Elizabeth Grosz, *The Future of Space*, in: Grosz, *Architecture from the Outside* (Massachusetts: MIT, 2001), p. 130.

³ Grosz, *The Future of Space*, in: *Architecture from the Outside*, p. 1127-128.

⁴ Malcolm Barnard, "The Functions of Fashion and Clothing", in *Fashion as Communication* (London/ New York: Routledge, 1996/2002), p. 51.

⁵ Andrew Benjamin, 'Notes on The Surfacing of Walls: NOX, Kiesler, Semper.' In: Lars Spuybroek, *Nox: Machining Architecture* (London: Thames And Hudson, 2004), p.342-351.

neutral, complex, and multi-relational. Thus, a flux is engendered that becomes the agent for an ongoing individual and spatial dynamic — as much a process of differentiation as of becoming.

A conditioning of space, or more precisely its enclosing surfaces, defines zones and levels of compression or elasticity, which can nourish the virtual potential of space. While compressed spatial properties are relatively easily assumed within programmatic insertions (such as functional pockets or core), notions of an elastic operation need to be discussed more precisely. It should be noted though that the paper uses the term 'elasticity' as a description of a strategy on multiplicity of levels, instead of merely limiting it to a specific context of clothing or physical behaviour.⁶

Generally, aspects of change require a differentiation of *elastic* as opposed to static or *flexible* performance criteria. Static determines a frozen form, which is in effect not negotiable. A flexible spatial envelope might be characterized as predetermined and pre-formed, a choice between estimated spatial options. Program, duration, occupation and movement are calculated, and incorporated in the design. The flexible is then programmed to fit; it establishes a limited series of options (A, B, C etc) in which a potential space condition can become actual. In a flexible constellation of possibilities, a number of connections between zones are for example enabled through an operative surface element, or a perforation of the spatial envelope (such as wall/ window/ sliding-/ door). The interior zones are again operated through distinct fields and corresponding boundaries that establish the required combination or separation of a territory. Finally, space can be coded through the insertion of functional objects that define a new programmatic differentiation.

In contrast, the 'elastic' allows a potential coding to become real in unexpected ways; it supports a development of time and trajectory that occurs as a dynamic process in a non-linear, non-optional manner. The elastic generates a surface condition that embraces unexpected characteristics, such as behaviours, memories, personalized histories, inflected trajectories, and learning modes. It engenders a space that shares phenomena of life. In elastic space, all areas of occupation are connected in one operational field. The overall field of surface formation includes also zones of compression, which derive from a larger area of spatial intersection or programmatic volumes, and zones of indifference, both of which

⁶A note on the use of the terms 'elasticity, elastic': In physics (solid mechanics), 'elasticity' describes the behavior of a material, which changes shape due to an applied load. When the load is removed, the material recovers its original shape. In the context of clothing, 'elastic' describes a material property of the garment's fabric. It defines the potential of stretching, and thus a deformation of the form depending on the shape of the customer. Both contexts frame the transformation of an entity from a formerly assumed solid state through a series of other states under the influence of an external force, and finally back to a departure point. Elasticity is in that sense close to the ideas of the interval, as it describes a wave, the dormant but potential extreme condition of a material, texture, or form. 'Elasticity' defines a principle, and thus might be applied as a strategy for surface conceptions in dress-making or architectural design.

interact with the elastic.⁷ Functional objects appear as detached from a spatial enclosure and are displayed in isolation, and thus become the subject of a new coding. They might initiate a re-programming of both the spatial envelope and the respective zones in which they are located.

An elastic space would be defined as responsive to the impact of the occupant. It enables simultaneous, parallel, and multi-directional relationships. At this moment, elasticity is a condition within the spatial organization that reframes space, objects, functional zones, and the user in an alternating, coextensive context. An elastic notion does not necessarily require a physical manifestation; it can be of a phenomenological, organisational, non-material character. Shifts take place as invisible forces, as behavioural patterns. When the enclosing boundaries of programmatic sections are blurred, an operative elasticity might result in an unforeseen conditioning of the spatial envelope, generating a sphere of interaction, reflection and communication between occupants processed through space — a third skin of a spatial surface as embodied architecture.

PATTERN CHART/ INTERSTITIAL SPACE/ OPERATIVE SURFACE

Methods of surface conditioning are integral issues to two professions whose role it is to equip the contemporary urban nomad: fashion and architecture. A mutual correspondence exists between these two. Both produce enclosing surfaces, incorporate coding and signage, both use (in) formation programs for textures, and employ a plan or pattern as a part of their form definition. Their surfaces are both dependent on volume outlines of cutting and construction schemes, on material characteristics and texture fields. A garment encloses the body of its owner with a number of layers, constituting a second skin. In a similar manner, architecture can be understood as yet another layer of programmatic skin. Both dress and spatial envelope is the projected environment of a perceived body; they re-contextualize the body of the wearer or occupant.⁸

A surface that generates an item of clothing, an object or a space is conditioned by a set of control mechanisms that prescribe and negotiate its properties: pattern chart, constructive line, field formation, interstitial space, and operative surface. Each of these control methods addresses capacities of a dynamic change, in phases and under the impact of data.

Generally speaking, three progressive stages are sensitive for a critical change impact. A first phase of surface conditioning is constituted in the design stage through the strategic device of pattern chart or plan. This is followed by the second phase of production with a selection of material properties and constructive line. A resulting third phase of occupation could enable a

⁷ A three-dimensional spatial continuum of such a kind is indicated in the Raumplan-Theory of Adolf Loos, which cannot be discussed in detail here. For description, refer to: Jara, *Adolf Loos's 'Raumplan Theory'* (Journal Of Architectural Education, Vol45, No3, 1995), p.185-201.

⁸ An interrelation of perceived and phenomenal body as forwarded (spatial) surface, constructive line and preferential plane has been discussed in my previous paper: Reinhardt, 'Surface Strategies And Constructive Line - Preferential Planes, Contour , Phenomenal Body In The Work Of Bacon, Chalayan, Kawakubo', published in: *Colloquy 9/ Monash University, Melbourne, May 2005*, available at: <http://www.arts.monash.edu.au/others/colloquy/issue9/reinhardt.pdf>

change through operative surface and interstitial space. This basically means that though usually a spatial formation is conceptualized in the early stages of a design process and consecutively frozen in construction to a specific condition, a surface formation would need to be unbalanced in the process of occupation. Only then could a continuous change be produced. It would be affectively inherent in an operative surface, and emergent as a specific responsiveness in an inhabitable and modifiable dress or space.

In the following, modes of change are discussed in greater detail as applied in the respective phases and addressing levels of differentiation and actualisation in fashion and architecture (as these domains offer a distinct illustration of the criteria in question). It is important to note though that all described stages and control mechanisms are integral elements in the design formation and production techniques of both fashion and architecture.

THE PATTERN CHART

Predominantly used in the field of tailoring, the pattern chart⁹ is the planning device for the construction of a volume — the garment [fig.1]. It is the control mechanism of a first phase, and defines body margins and measurements of clothing in the description of a determining line applied to the surface fabric. With the pattern chart, all forming parts are laid out on a plane from which they are to be cut, arranged, and sewn. The future shape is thus already determined by the very first arrangement of the cutting line on the surface. When the line is drawn, the form is defined. At this moment though, the overall surface still inherits an ambiguity or indifference. The pattern chart indicates a strategy. It is a mapping of the surface potential, a sum of descriptive lines, to be executed on the fabric the surface. The final surface volume is not yet determined by material properties or informed by directionality or formation of cut elements. The surface's control mechanism, the pattern chart, describes a virtual shape that only becomes actual in the process of fabrication and through the application of the constructive line. Similar to a computational rendering, the pattern chart at this stage defines three-dimensional potential in the realm of the possible, before verification. Repetitive cycles of change formations can be programmed, optimised and imprinted onto a surface, in a process of systemic delay. In the second phase, the change potential leaves its peak condition. Constructive line, material properties and form (and texture, density, depth, colour, etc.) differentiate a reality from a sum of all possibilities.

The third phase is determined by appropriation; the acceptance or dismissal of the given formation, in a differentiation between distributed possibilities and personal requirements. A mode of change is here dependent on the occupant, a specific time, and a trajectory setting.

⁹ 'Pattern' is a term used in tailoring (fashion), and as 'cutting pattern' it applies also to the fabrication of tensile and pneumatic structures (in the related field of architecture). The term is ambiguous as it describes stages of coding, mapping and operation on a surface plane: 'pattern' includes a graphic design on a textile, a template, or a cutting scheme. It thus addresses an abstract level such as an area of secondary information (ornament), or more importantly determines a form definition (design), and outline for a constructive process (cut/ construction manual). As the paper is interested in the latter two, in the following, the combined term 'pattern chart' will be used to indicate impacts of form, line and construction.

In this phase, the distance between the user's body and the enclosing envelope (equally valid for clothes or building) delineates an interstitial space. This is of course a result of the first two systemic phases that define gaps between surface formations and programmatic layers. This interstition also offers an area of negotiation. Being of a neutral, intense, restrictive or supportive character, it reflects a range for movement, spatial reading, and interaction. In both clothing garment and architectural envelope, the layers receive a direct impulse through a person, and while the space itself remains inactive, a negotiation is processed that derives from the constellation of interstitial and adjacent surface formations. Thus, the interstitial effectively generates a condition in which a space potential can be activated again, in a process of multiple spatial reading. Yet, if the potential is to be fully activated, it cannot be solely dependent on the interstitial as a by-product of surface formation, for this framework would be predominantly dependent on interpretation. The original space formation would need to take into account an active role for selected surfaces, positioned at strategic moments within the overall field formation. A heterogeneous configuration of space would include operative surfaces already in the pattern chart, formulated as areas of intensity, compression and elasticity. These operative surfaces then enable a situation of differentiation, in which the unforeseen emerges as a departure from the original program imprint.

As discussed, the pattern chart determines the formation of volume and programmatic employment, and at the same time it incorporates a potential of change through interstitial space and operative aspects of surfaces. In the following, the application of the pattern chart is traced in clothing, in respect to a typological variation through applied geometrical strategies. Various questions are addressed: How does the pattern chart render an operative surface within the formation as flexible or elastic? In which way does it affect the surface conditioning? What impact for the occupational code is given?

APPLIED/ CLOTHING ITEMS

The applied geometry of the pattern chart releases a critical impact on the enclosing envelope. The conditioning and formation of these surfaces re-contextualize body and program in a differentiated manner. This occurs because the pattern chart is charged. It transports a cultural understanding of form, function and content, which in turn are ascribed to surface, program and individual. Thus, a formation of surfaces and the strategy of the constructive line reveal not only substantial differences in appearance, but also determine characteristics of a static, flexible or elastic approach towards a surface definition, and therefore imply a cultural directive for the unexpected.

[DRESS/STATIC]

In the following, a specific garment, the contemporary (western) dress, will be quoted as a strategy for explorations of the relationship between pattern chart, shape and body contour

[fig. 2]. The dress is specifically chosen as a typology that is highly focused on a body contour, and thus contrasts other historical or ethnical approaches of dress in terms of elasticity/ flexibility, as will be discussed.

The surface description of a dress consists of a nurbs/vector system that reveals a multitude of concave/ convex lines for each field. Due to a symmetrical division of the human body, the pattern chart generally identifies a complementary set of forms as mirror image, rendering two fields alike. Each cutting line is unique. The pattern arrangement inevitably leaves an amount of surface area of the textile as waste. The resulting shape and its seams closely follow the body contour. The dress here is precisely designed for the exact proportions of the (female) wearer, and dominant in its form-giving intention. It is an anatomically programmed surface condition with a directed dimensionality. The overall surface volume reveals areas of layering and intensity, as pockets and inlays can be assumed with compressed programmatic fields, similar to the (internal service) core of a building structure. The interstitial space is reduced to a minimum, to optimise the shape according to body margins. A number of secondary elements ensure a close fit (button/-hole, zipper, loop, lashing). The dress system is based on a functional profile, directed towards a specified use, cut for an occasion, designed for a type, and thus results in a unique shape. The enclosure frames the context of a cultural message with a definite set of rules, and factual or suggestive information on gender and age, status, lifestyle attitudes, personal interests and such.¹⁰

Clothing here is already a spatial prosthesis in the way it re-territorializes the body, and connects it to space through codes. The final surface simultaneously permits actions while excluding others, and thus generates an extended body, dependent or interrelated with a context. The more specific the code is, the stronger the limit. Rather than intending an ambiguous, flexible or elastic process of appropriation, the dress pattern chart is thus adaptable to a range of predetermined uses. It therefore results – in the best case – in a *static* system. It indicates the moment of highest precision in pursuit of one purpose; fitting exactly at this moment in time

[KIMONO/ FLEXIBLE]

A contrasting approach of pattern chart is the applied Cartesian geometry used for the surface definition of a kimono, the iconic Japanese garment [fig. 3]. The pattern chart of the kimono's generative surface contains a series of rectangular forms, adjacent to each other. Each field is located through the positioning of four points on the surface, where two or more points are shared. The cutting line of one field is thus a cut already performed for the next. No waste is produced, as the original fabric is entirely consumed. The final shape is a vertically oriented, loose envelope that is fastened with a horizontal piece, an independent strap. The

¹⁰ Mary Shaw Ryan, "First Impressions/ What Do Clothes Communicate to the Observer about the Wearer?" , in *Clothing: A Study In Human Behaviour* (New York: Holt, Rhinehart and Winston Inc.: 1966), pp. 14-23.

resulting formation is non-specific in terms of gender, age or status.¹¹ The interstitial space between body and enclosing surfaces allows for a multiple layering, and enables a use negotiated through an individual, and in an open relation.

While the enclosing surface of a dress is anatomical, the kimono is a distant relative of an older species of gravitational clothing¹² that remains partially un-coded in axis definition, and where appearance is determined by behaviour. The surface strategy conceptualises the contour line as abstract; clothing is here an almost neutral object, constituted by the absence of a body-related measurement system. The modules of form organization in the pattern chart are based on a system of self-sameness that respects the whole of the texture. The formation of surfaces produces an absolute generic form, open to a range of adaptations. The enclosing surface does not determine beforehand fields of programmatic specificity. In this condition it is a relatively homogenous surface that receives its areas of intensity or compression in situ, on the body, through a negotiating constructive contour line.

The system provided might therefore be described as *flexible*, as a number of change conditions can be accommodated. The final garment is partially non-directional and un-coded in form, and retains a number of appropriations. This is an important aspect. While the dress is superimposing the preconceived form of an independent, functional shell, the kimono is actually requests a positioning, an impersonation of material. The resulting volume receives its ultimate form from the posture of the wearer.¹³ It is in that sense behavioural — a cultural negotiation — and dependent on a differentiation through duration, body impact, and personal narrative.

¹¹ A final specification occurs though through the properties of the fabric. Norio Yamanaka in: *The Book Of Kimono- The Complete Guide To Style And Wear* (Tokyo: Kodansha international, 1982).

¹² Rudofsky describes the classic gravitational dress as an oblong piece of woven fabric, uncut and unsewn, shaped by the draped folds on the body and entirely determined by the ability to wear it. 'Cloth was clothing itself, material and end-product were identical.' Bernard Rudofsky, *Are Clothes Modern? An Essay On Contemporary Appeal* (Chicago: Poole Brothers, 1947), p. 138-143.

¹³ The posture of the wearer is considered to be a state of mind: The constitution of an attitude that constructs the dress, in opposition to a traditional western approach where the body is constructed through the dress. A description of Kimono Tradition as found in: Norio Yamanaka, *The Book Of Kimono- The Complete Guide To Style And Wear*, Introduction.

[COUTURE/ ELASTIC GARMENTS]

Fashion operates in a realm of experimentation, independent from the constant demands of verification or functionality. For that reason, the narrow section of clothing production holds the possibilities of an exploration that might contribute yet another access to the aspects in question. Pattern chart, constructive contour line, field formation, interstitial space, and operative surface are defining notions of elasticity, which can be traced in the work of designers such as Martin Margiela, Issey Miyake and Rei Kawakubo. A short overview of specific works and the used signpost strategies might reveal some options for an elastic conditioning.

With 'Enlarged 157 Percent' (Spring-Summer 2001)¹⁴, Margiela suggests an overabundance for contour line, form and material [fig.4]. Here, common dress production is driven ad absurdum. Though in principle the control mechanisms via pattern chart and constructive line are maintained, the resulting garment receives its transformation - and within that, its potential elasticity - through a substantial enlargement of the pattern chart. The form does only to an extent follow the body contour, the resulting interstitial space is enlarged and thus the individual is independent from limiting boundaries, free to explore an individual movement line.

In 'Pleats Please', Miyake researches strategies of a coding for a garments texture, which results in an expansive material behaviour, established through a pleating technique [fig.5]. In a dual process, the garment is cut, sewn and finished, presumably based on an over-dimensioned pattern chart. Then its textural surface undergoes a fabrication process of shrinking, folding, and pleating until it reaches a stage that receives a final impact through the body of the customer. The inscribed over-plus of textural mass accepts a range of body contours through its physically elastic potential of expansion. Here, the surface formation contains the possibility of renegotiation, without abandoning the information of a previously designed shape; the dress is both anatomical and independent.¹⁵

The 'Lumps' collection (Spring-Summer 1997) of Comme des Garçons/ Kawakubo combines a predetermined contour line and expansive surface fabric with the insertion of volumes alien to the body [fig.6]. These padded insertions determine an extension of the body, an antenna or prosthesis, and form 'fashioned points of contact with the environment'.¹⁶ They reconfigure the body according to the spatial context through a change of corporeal/ sensory perception, and yet they can be understood as an independent programme, neutral in assignation or employed by extrinsic forces.

¹⁴ Claire Wilcox, *Radical Fashion* (London: V&A Publications, 2001), p. 110

¹⁵ Issey Miyake, *Irvin Penn regards the work of Issey Miyake* (Boston, New York, London: Bulfinch Press, no year given), no pagination

¹⁶ For a detailed exploration of spatial-corporeal processes initiated by the garment, refer to: Rebecca Sinclair, 'Dressed in Space: The Sartorial Architectures of Rei Kawakubo and Hussein Chalayan', in ed. Frichot, *Limits*, p. 432.

It is important to note that in all cases, elasticity is established through varying strategies, is inherent at all stages of production over to appropriation, and spans from a physical operation over to a spatial effect or a phenomenological reorganisation.

Similar to the surface of a garment, the third skin of architectural surfaces enables a highly specified use, and distributes an individual range of movement lines and appropriation, facilitated through a shift in coding and program. The organization of the pattern chart, the range of the interstitial space, the nature of the programmed surface, its texture and formation define a limit between flexibility and elasticity, and are thus the agents of a change potential. This is as much valid for clothing as for architecture, as will be discussed.

ELASTIC NOTION/ APPLIED SPATIAL SURFACE

In an architectural context, pattern chart (plan) and resulting operative surfaces are relocated with applied degrees of stability, flexibility and elasticity. These three conditions will be traced through a review of architectural typologies: a *static* surface condition such as in Mies van der Rohe's 'Farnsworth House', a *flexible* surface condition in a generic Japanese House typology and an *elastic* surface condition as apparent in the spatial envelope of Shigeru Ban's 'House Without Walls'.

A reiteration of the basic strategies might be useful here: A *static* condition offers one solution of appropriation. In a flexible version, a formed set of options is offered, in which each situation is pre-planned, pre-thought, and non-negotiable. Flexibility equals a mathematical rule, a precise functional alignment, similar to selected positions on a switchboard. An ideal elastic spatial capacity is stretched from its former starting position and repeatedly returns to its original state, going through a series of intermediary conditions. Elasticity arises through a continuity of variables on a field (e.g. a number of occupants, spatial zones, temporal framework, etc.). All of these will be discussed in greater detail in the following, in relation to the already discussed clothing strategies and according to their architectural references.

[STATIC] In an alteration to the homogenous, paralyzed program distribution developed in domesticity,¹⁷ Modernism introduced the open floor plan as generative device. A fluid continuation of spatial sequence is established, where highly defined units (kitchen/bath/etc) serve as a programmatic core around which the space unfolds. The 'Farnsworth House' by van der Rohe¹⁸ is a prominent example of the surface conditioning of open floor plan [fig. 7-8].

¹⁷ Rybczynski traces domesticity as a 300 year old phenomenon of Dutch origin: the privatisation and specialisation of space deriving from an architectural concept that established not a fixed spatial proposal, but rather followed the notion of adaptation or a programming of space. Witold Rybczynski, *Home- A Short History Of An Idea* (New York: Viking Penguin, 1986)

¹⁸ As described by Alice T. Friedman in two essays: 'People Who Live in Glass Houses: Edith Farnsworth, Ludwig Mies van der Rohe, and Philip Johnson', in: *Women And The Making Of The Modern House - A Social And Architectural History*, New York: Harry N. Abrahams, 1998, pp.126-159 and 'Domestic Differences: Edith Farnsworth, Mies van der Rohe, and the Gendered Body', in: Christopher Reed (editor), *Not At Home - The Suppression Of Domesticity In Modern Art And Architecture* (London: Thames and Hudson, 1996), p. 179-192.

Here, the space is based on a series of horizontal surfaces, and a dissolved vertical boundary. All areas of action float around the compressed surface formation of the service structure. This programming generates an interstitial space, a continuous flux of living conditions, as no separating walls interrupt the trajectory of an inhabitant. But ultimately, each area in the open plan is dominated in a two-fold programming: First, the central core generates an implied spatial separation. It 'infects' all surrounding open areas, forming invisible lines and limits of use. This strategy is in effect similar to building walls, with the mere advantage of abandoning the corridor as a connection between functional units. Because the core prevents any ambiguity or overlap between the zones, it represents effectively an interior boundary. The pattern chart strategy ultimately renders the house as static. Secondly, this spatial determination is enhanced through the coding of the furniture items, which demarcate the use of their respective areas (and which, once positioned, probably never changed in position). The house is frozen to a specified surface formation, a life condition not readily open for alteration. Cut to a specific form with a close fit, the domestic envelope here is based on a Cartesian geometry, but is in effect and code similar to the dress. Designed according to efficiency, optimisation, and specialization, both surface formation and conditioning result at best in a limited number of possibilities within one volume, based on personal effort of initiating a transformation of space through accessory coding (eg furniture). The change potential is designed for, dependent upon and carried out by one main actor, and would remain the solitary decision of one. In a flexible version, a formed set of options might be offered, for most situations pre-planned, pre-thought, and non-negotiable, but easily accessible. Each condition then equal a specific functional alignment with a set of 'ingredients', like positions on a switchboard, as will be shown in the following example.

[FLEXIBLE] A flexible space is partially specialized (as it contains pre-determined units) and partially defined (it still organizes zones through stable interior boundaries), but it also includes an organizational surface. Flexibility reframes a zone according to equipment, participants, time frame and uses initiated. Designed for a number of constellations, actions can be performed, in parallel or independently. Thus, a flexible space is a communication process between equal members in a network of occupancy, offering a simultaneous environment.

This relation of spatial potential and surface conditioning as described above is apparent in the generic Japanese house [fig. 9-10]. Similar to the Kimono, the house is based on an absolute Cartesian geometry, the rectangular module system of Tatami mats with specific dimensions.¹⁹ The geometry applied does not refer to an abstract surface potential nor is it

¹⁹ The dimensions of traditional Tatami mats can vary from district to district, but the contemporary 'standard' size is usually taken as 1.80 x 0.90, or 6:3 foot. These measurements define a spatial operation through the modules: two mat ends equate in size to the long side of a third mat, generating a pattern that in turn defines the overall size of each room. T Yoshida, *Das Japanische Wohnhaus* (Tuebingen: Verlag Ernst Wasmuth Tuebingen, 1954)

solely based on a grid. It establishes a 'modular coordination'²⁰ that generates a basic formation from inside out, with each module, each space, and finally in the total field of the house. It frames a rhythmic proportion between plan and elevation, and is in that sense already a three-dimensional tool. The resulting pattern chart describes areas of intensity rather than rooms, compressed fields of action rather than functions, a network constitution rather than a hierarchical system or a homogenous arrangement. It is important to note that in Japanese language, 'house' refers not to the outside but to the outside but to the inner spatial arrangement.²¹ And this space can be defined as a multipurpose, multifunctional potential that combines user profile, program and spatial arrangement in a continuous five-dimensional occupation.

The basic typology consists of two dialectical, self-similar spaces, and dislocated independent service units. The spaces, when joined, contribute to one organisational field. They share equal characteristics: a denominated area defined by the number of Tatami mats, an integrated storage space, and corresponding sliding doors. The storage space is the equivalent of a compressed service program. A sliding-door element equals a secondary constructive line, an element for negotiation in the surface fabric, similar to the zipping aspects of a garment. These lines of operation rearrange the internal and external spatial relationships. All areas are connected in a continuous flow through the field of the house, or separated to enclose a private, individual or programmatically differentiated field. A physical compression occurs in the depth of the vertical surfaces (storage, niche). In contrast to the demarcated spaces evident in the Farnsworth House, areas in this constellation are not programmed per se. Through re-locatable functional element of temporal use, the character of the respective area is reframed each time. The unfolding of a sleeping mattress demarcates the space as master bedroom, at a time of rest. The positioning of a table frames the same space as study area, or constitutes the ritual of family life. It is a space sewn around man, forming a unity of context, architecture, nature, human body and mind.²² Program aspects ('a place to live, eat, work'), emotional conditions ('a place to be happy') and physical or psychological balances ('a place to grow – a place to grow up')²³ are combined to produce a surface condition that is capable of integrating dynamic aspects.²⁴

²⁰ A term coined by Werner Blaser, in: Werner Blaser, *Struktur Und Gestalt In Japan-Structure And Form In Japan* (Verlag fuer Architektur, 1963), p. 77. Blaser also discusses a flexibility of the Japanese house between inside and outside.

²¹ Werner Blaser, *Struktur Und Gestalt In Japan-Structure And Form In Japan* (Verlag fuer Architektur, 1963), p. 77.

²² 'In Japan, structure and form grow entirely out of an inner experience: out of a sensibility tutored by meditative concentration. They integrate the relations between man, nature, material and the creative will to form a harmonious whole.' Werner Blaser, *Struktur Und Gestalt In Japan*, p. 7.

²³ 'Functional aspects of the Japanese house are named as follows: 'a place to live, a place to be happy, a place to eat, a place to work, a place to grow.' Iwao Yamawaki, Masura Katsumi, Torao Saito, *Japanese Houses Today* (Tokyo: The Asahi Shimbun, 1958), p. 107.

²⁴ 'A house is a container of living people. The plan must not be too static in feeling; it must take into account the dynamic aspects of life.' Werner Blaser, *-Structure And Form In Japan*, p. 223.

Tange describes space as a moment of flux, '[it] is movement, the flow of people and objects, and visual communication.'²⁵ Space here is understood not as a representation, the result of a completed communication, but as an interactive tool, a formative force.²⁶ The Japanese house does not reflect, but support processes of its owner's lives. Similar to the kimono, it is a dependent on the owner's ability to 'wear' it. Space here facilitates constitutions of the everyday, gradually changing between various stages of public and private, fluid and stable. It is an interactive device, a physically, organizational space, with a flexible range for change processes.

[ELASTIC] There is yet another moment to a spatial morphosis – elasticity. So far, aspects of an organizational, physical, material and formative characteristics of a surface conditioning have been discussed. Beyond this, a phenomenological or interpretative elasticity could be initiated. Such an elasticity would reframe the meaning of all elements possibly affected by an alternating coding, and within this subvert or enhance the nature of an original or anticipated state, and thus initiate the unexpected, as will be explained in the following example.

The continuous surface of Shigeru Ban's 'House Without Walls'²⁷ shifts from a horizontal living platform into a vertical boundary in one 'seamless move, blurring the distinction between floor, wall and ceiling [fig. 11-12].

Edge conditions and with that a space's expected end points are eliminated. Open floor plan and Cartesian geometry leave a faint echo in the pattern chart as it leaves a prognoses of a third axis of the architectural plane: a compressed functional field of this surface protrudes into space, shaping a table and undermining archetypal concepts of domesticity. The result is a 'universal floor'.²⁸ An alternation of occupation is here established through a re-combination of the occupational zones. The use of each zone is determined by the positioning of isolated objects (sanitary equipment). Enclosing boundaries are dismissed, though a basic division (sliding screen) retains requirements of privacy. A physical elasticity is thus provided through this constructive negotiating line in the fabric of the house. At rare moments, the aspect of an

²⁵ Kenzo Tange, *Funktion Und Raum - Function And Space* (originally published in: *The Japan Architect*, Nr.6, 1956), reprinted in: *Japanische Architektur-Geschichte und Gegenwart* (Düsseldorf: Akademie der Architektenkammer Nordrhein-Westphalen, 1983), p. 86.

²⁶ 'Space is the field in which a human functions or fulfils his physical work, but space is also the field in which the human gains structure, that means, space is a communication of the human being. Space is the field in which a human [conscience/ identity] is formed.' Kenzo Tange, *Funktion Und Raum - Function And Space*, p. 86.

²⁷ Shigeru Ban's 'House Without Walls', published in: *Transparencies Yet To Come* (Aachen: Archplus +, No 144-45, Dec 1998), p. 42-43. The house also runs under the name 'Wall-Less House', in: *Shigeru Ban* (London: Laurence King Publishers, 2001), p.55.

²⁸ A term coined in the description of the 'Wall-Less House', in: *Shigeru Ban* (London: Laurence King Publishers, 2001), p.55.

interstitial between internal boundary and exterior is physically dissolved, when the exterior skin is folded back.

This elastic arrangement is highly ambiguous, and at the same time compressed. With the abandoning of specific spaces, and dissemblance of services, the complete program is adaptable and can be re-interpreted, and in this way the individual user is re-contextualized and re-territorialized. The space becomes elastic when the user determines an area of inhabitancy on the operational surface, a programme undertaken, and a time frame. More important though, this phenomenon is partially due to a reversal of functional specification in the sanitary objects. These objects 'float' free in space. In this way they are abstracted in an almost Duchampian manner, stripped from their original purpose.²⁹ This causes a distancing effect from the original code; they become forms open for interpretation. In effect, common typologies are questioned, giving way to unexpected potentials and parallels of experience. This arrangement challenges the imagination of the occupant: How many uses can be invented for what was formally known as a bathtub? Does it become a container for an alternate or controversial filling? And furthermore, what actions can take place in parallel with other objects or occupants in other areas? Unlike the traditional Japanese house, where space is re-programmed through moveable objects, or the Miesean proposal of open plan, these objects and their arrangement invite a departure from an original program imprint. In finding a new meaning for them, a functional, occupational and spatial translation, the coding of operation and the cultural expression of the inhabitant undergo a change. Both pattern chart and organisational surface are therefore negotiated a third time, in adaptation. They relate to an individual narrative trajectory in the way that the characteristics and codes of each area alternate in duration and use according to who uses them and in which way. The surface and object elasticity engenders a seamless shift of interpretation, differentiation, and becoming, and thus allows for a repeatedly change potential, and the unexpected.

Though this example approaches a saturated elasticity, it is again limited. Again, it presumes a single occupant. A confrontation or interaction between multiple players, while not avoided, is not broached. This may be the most critical moment of this last example for an architectural elasticity: the unexpected lies within the responsibility of the individual, and there is no great surprise in that (after all, we know ourselves best).

FURTHER DIRECTIONS

In search of a response to shifting contemporary environments, this paper has attempted to articulate a notion of dynamic processes for surfaces. Elasticity has been discussed as a

²⁹As reference for the idea of abstraction of an object, Marcel Duchamp's 'Fountain' should be taken into consideration: a urinal turned upside down and declared as object of art. In its isolation, and separated from its original context, it is open for interpretation and a new coding: the form evokes the echo of a fountain, a piece of fresh water rather than an already processed liquid. An inversion. Jerrold Seigel, *The Private World Of Marcel Duchamp- Desire, Liberation, And The Self In Modern Culture* (Berkeley And Los Angeles, California: University Of California Press, 1995). See also: Calvin Tomkins, *Duchamp- A Biography* (New York: Holdt and Company, 1998)

potential supported through a five-dimensional axis that includes a personalized trajectory and occupation. As indicated, change processes can to an extent be integrated through control mechanisms of pattern chart, constructive line, interstitial space and operative surface. However, in order to achieve a repeated dynamic, the conceptualisation of a surface formation needs to incorporate the definition of compressed, indifferent and elastic areas. It is a heterogeneous arrangement of surface formations that enables an extended elasticity.

Apparently, not all conditions of surface formation, as discussed in the previous examples, generate an extended elasticity. A few further directions may be indicated here. Clearly the potential of the pattern chart as a surface conditioning method is in none of the three cases fully exploited, as they are limited to a predominantly horizontal formation. The exception may be the Shigeru Ban House, but even this architecture only attains some aspects of an elastic potential. An enhanced elastic strategy would start from a vertical exploration of duration and corporeal and narrative trajectory, investigating the rhythm and depth of the surface formations. Further, the definition of compressed areas would not be restricted to functional program zones, but integrate an operative overabundance of material. These areas of compression also would be interdependent with the interstitial space, and thus the two would be defined in a relationship of compression and release, specification and ambiguity, or indifference, in order to interplay. A process of change might be possible when a tension is apparent, and an area opens up for divergence and differentiation through division and disruption of the original or expected program imprint. Rather than being established hierarchically, elastic strategies could be used as a layering principle that increases the program and formation ability of a surface in depth when zooming into smaller scales, negotiating between a number of areas, occupants, and programs. Again, it is in principle a counterpart that releases the dynamic process.

In this paper, elasticity has been traced as a literal, physical, material, formative notion, but it has also been discussed under phenomenal, social and communicative aspects. Elasticity depends on, and also differentiates a cultural context and territory. In that line of thought, the differentiation is a device of interaction, not so much between architecture and the occupant, but between occupant and occupant through architecture. It is the notion of the other which enables us to experience the unexpected, and thus to stay among things, and share the animated phenomena of life.

APPENDIX

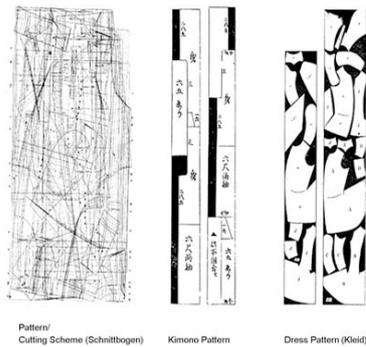


Fig.1: 'Pattern Chart (Cutting Scheme), Kimono Pattern, Dress Pattern', in: *Transfer* (Zurich: Lars Mueller Publishers, 2000)



Fig.2



Fig.3

Fig.2: Static/ Common Dress, 'Alba Moda', Otto Catalog – Online Shop, Spring Summer 2006, date of access: 03.03.2006, http://www.otto.de/is-bin/INTERSHOP.enfinity/WFS/Otto-OttoDe-Site/de_DE/-/EUR/OV_BrowseCatalog

Fig.3: Flexible/ Traditional Kimono, in: Norio Yamanaka, *The Book Of Kimono- The Complete Guide To Style And Wear* (Tokyo: Kodansha International, 1982), p.18.



Fig.4



Fig.5



Fig.6

Fig.4: Maison Martin Margiela, Prince Of Wales Check Jacket, Enlarged 157 Percent, White Rectangular 'Tent' Dress With Appliquéd Suiting Fabric, Ss 2001, Photo Marina Faust, published in: Claire Wilcox, *'Radical Fashion* (London: V&A Publications, 2001), p. 110

Fig.5: Miyake Couture 1996, photographed by Irvin Penn, in: *Irvin Penn regards the work of Issey Miyake* (Boston, New York, London: Bulfinch Press, no year given), no pagination

Fig.6: Rei Kawakubo, Dress becomes Body Becomes Dress, Spring-Summer 1997, photograph courtesy Comme des Garçons, in: Caroline Evans, *Fashion at The Edge* (New Haven and London: Yale University Press, 2003), p.268.

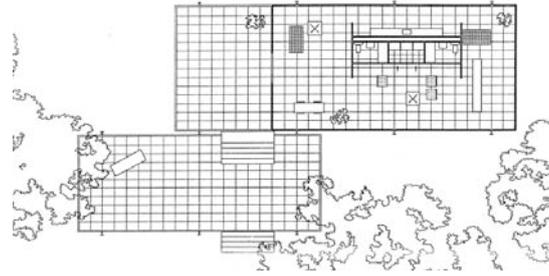
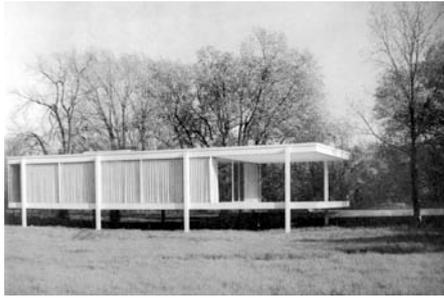


Fig.7/ 8: Photo and Plan of Mies van der Rohe, 'Farnsworth House', in: Alice T.Friedman, 'People Who Live in Glass Houses: Edith Farnsworth, Ludwig Mies van der Rohe, and Philip Johnson', in: *Women And The Making Of The Modern House - A Social And Architectural History* (New York: Harry N. Abrahams, 1998)

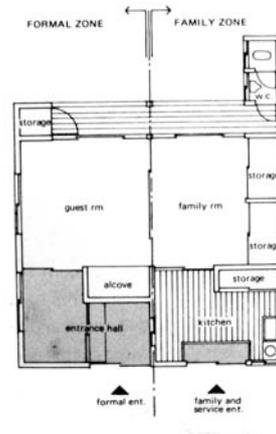


Fig.9/ 10: Photo: <http://www.stokely.org/200307-la/PICT0061.JPG>, Plan: Traditional Japanese House (until approx. 19 C), discussed by Riken Yamamoto, *Gedanken zum Tokyoter Wohnbau*, as published in: Manfred Speidel, *Japanische Architektur: Geschichte und Gegenwart* (Stuttgart: Hatje 1983), p.142.

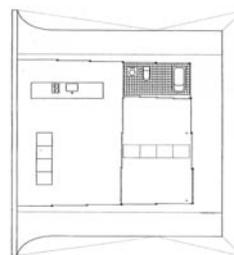


Fig.11/12: Photo and Plan of Shigeru Ban, 'House Without Walls', in: *Transparencies Yet To Come* (Aachen: Archplus+, No 144-45, Dec 1998) and *Shigeru Ban* (London: Laurence King Publishers, 2001), p.55.