Matrix Method

Developing New Spaces for Creativity.

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Abstract: What started in an intuitive explorative mode with a series of self-reflective actions ended up as a first application of the 'matrix' as a tool to generate experiences and creative ideas. This process resulted in a first version of a script intended to provide ways to use matrices as mental spaces in order to gain insights. The project was measured against several theories, in particular C. Otto Scharmer's Theory U (2009). This important theory with regard to the self features prominently in this research, as does the Self, our deepest source of knowledge and inspiration. In the next stage these experiences were communicated to outsiders. The challenge was to create the right circumstances to find out whether the group experience might also lead to new creative ideas. A number of critical reflections on the processes were formulated, which have resulted in a fine-tuning of the 'matrix method' in such constellations. The ensuing discussions made the transformations that manifested themselves more explicit. The paper will overview this research project and highlight the essential aspects.

Key words: matrices, Theory U, analogous spaces, transformative experiences, creativity

1. Introduction

The central theme of the present research project [10] is the act of looking (as an event in physical and social space) at the way a person is looking. An essential part of this investigation concerns the development of a creative method; the Matrix Method. This method makes use of 'matrices' as tools to generate experiences and creative ideas by using the look as a layered way of acting. With this method we develop tools for collaboration, so that people can solve the types of problems that are characteristic of their domain or discipline. This might be architectural design, but we have also tackled communication, acting and organization development.

My professional background as an architect, a photographer and a teacher is an essential part of the context in which this research project was developed. My research trajectory starts off in the field of architecture and has subsequently extended its scope to include photography. Any practice-based/artistic research developed in both these fields inevitably has to deal with the indistinctness and uncertainties specific to these disciplines [2] [3].

The project was measured against several theories, in particular C. Otto Scharmer's Theory U [13]. This important theory with regard to the self features prominently in this research project, as does the Self, our deepest source of knowledge and inspiration. Theory U has examined the self from a sociological point of view and created a theoretical framework that also serves to clarify certain elements of the present research project. Scharmer's Theory U and his concept of *presencing*, a blending of *sensing* and *presence*, will help us to understand how, at a certain point, the event of looking transforms from downloading (a one-dimensional way of

connecting) to seeing (a way of connecting with an open mind) to sensing (an empathic way of connecting) and to presencing, situated on a U-curve. Presencing is a moment in which a person is connected to the *deepest source*, from which the field of the future begins to arise. Looking in a layered way, supported by the use of matrices, can interfere with the stages of Theory U and may thus ideally aid in the implementation and interpretation of the latter.



Figure.1 Scheme of Theory U, all stages are situated on a U-curve.

2. Methodology

A main aspect of the methodology was based on the idea of a cartographer drafting maps of the research project as if it was a landscape. This fits with Jean-Marc Besse's theory on the cartographer researcher and the landscape he is facing [1]. The landscape that opens up, allowing us to see the underlying ideas and concepts, in such a way as to enable us to progress, to seek new trajectories and thence gain new insights, is an essential part of this theory. It can be a means to extend the scope and depth of the field of design and architecture, while at the same time establishing interdisciplinary and transdisciplinary connections with other fields. The mechanism of abductive thinking has proved to be crucial in this context. Another essential aspect of the methodology is the fact that those who apply it are very well aware of gaining insights from self-reflective actions.

The fieldwork for this research project was structured along the lines of a succession of action and reflection, in a continuous dialogue. Finally there was a stage of discussion, looking backwards to the fieldwork. At this point, a blend of both punctual overview of and sinuous peregrinations through the landscape results in the representation of a first level of the methodology in the fieldwork. A second level becomes apparent during the discussion following on the fieldwork. In other words by alternating intuition and consistency, oscillating from action to reflection and back, a clear focus on certain aspects will present itself and lead to a relevant form and output, which then becomes a subject of discussion.

3. Fieldwork

In an initial reflection, the idea of *analogous space* was developed. Engravings by, for instance, Filarete, Francesco di Giorgio Martini, Vincenzo Scamozzi and Giovanni Battista Piranesi - but also works by some contemporary artists (such as Lars Von Trier with *Dogville* and Gerhard Richter with *Atlas*) - can be experienced as analogous spaces [7]. By making use of several representational techniques (projection, perspective, abstraction etc.), each of these visualizes a space that cannot be a real existing space. Take for instance fig. 2. We see a

superposition of a human being, a plan of a city wall and a church, a perspective of a tower and a geometrical figure, a circle. Despite this complexity and unreal situation, whoever looked at such an image was prepared to immerse himself in these spaces and experience these spaces mentally, if not physically. Let us call these spaces analogous spaces. This mechanism was investigated extensively and lay at the base of the following action. What if a mathematical matrix is used as a tool to create such an analogous space. The usual content of such a matrix (numbers, vectors, stock data, etc.) was replaced by some hard-to-define data (such as materiality) or data which have a layered structure (such as concepts) or which have a subjective connotation (such as a sculptural effect) or a combination of all of these. The matrix becomes a space wherein we find a similar constellation as in the historic examples.



Figure.2 Francesco di Giorgio Martini. Torino, Cod. Saluzziano 148 fol. 3. Pianta di città con figura umana inscritta

Besides this investigation, a video project was set up that focused on the way I was looking at my environment, resulting in a series of short videos (ZOOM, Old Masters and Landscapes #) [11].

These thoughts gave rise to a series of self-reflective actions. What started in an intuitive explorative mode with a series of sketches and drawings [8] ended up as a first application of the matrix as a tool to generate experiences and creative ideas. I used personal creations such as twenty architectural projects (fig. 3) and a photo-archive (fig. 4) and offsetting them against a series of key notions (fig. 5) that were significant to me in the course of my creative activities. The architecture, the images and the keywords became the content of three matrices. These matrices were then manipulated, and the resulting output was a non-verbal expression of the keywords [9].



Figure.3 Matrix with architectural projects



Figure.4 Matrix with photo-archive (fragment)

sculpture	strategy	subversion	intensity
indistinctness	materiality	texture	image
commonplace	typology	layering	x
architecture	puzzles	splinters	old masters

Figure.5 Matrix with keywords

Let us briefly look to two of these manipulations during this action. The matrix with the keywords became a filter for re-looking to my photography. This led to 16 new matrices defined by the 16 keywords with a series of images selected out of hundreds of images. The keywords operated as filters (fig. 6). Images were selected if there was a kind of a relation with the keyword (a formal, visual, intellectual relation etc.). By repeating this action so many times, I reached a state of mind that enabled me to look sharper, with more awareness and with more confidence. Several manipulations as the previous one established this state of mind. There was never any compunction to either use one of these words or not. It was just a mental awareness, the knowledge that these words were at the forefront of my mind and that they operated as small personal containers of knowledge. This action resulted in a book entitled The Matrix Project [10].



Figure.6 example of a matrix, images selected by using keyword puzzles

Subsequently I focused on the relations between the words in the keyword matrix. The question was: Is any given keyword connected with any other keyword? To find out, I established the 15 times 16 potential relations between these keywords and examined each of these potential relations. While I was doing this I noticed an imbalance that had something to do with the viewpoint: in some cases, keyword A was clearly connected with keyword B but from this did not necessarily follow that B was connected with A. So if the cells in the matrix are elements in a network, then clearly this is a network in which connections can be established in either one or two directions (fig. 7).



Figure.7 Matrix keywords, relationship only 2 directions

blue lines = both directions

red lines = both directions and connected with two others

Another characteristic of this method is the appearance of word clusters. Looking only at the bilaterally connected words (red lines) we can see some of them operating in larger structures. In this case: triangles. It is interesting to see that in this word cluster, some words are interrelated more intensely than others (fig. 8).



Figure.8 Matrix keywords, the triangles blue lines = both directions and connected with two others

This first attempt to design and manipulate matrices provided me with a greater understanding of my own artistic production. The matrices became analogous spaces, experienced as 'real' spaces in which specific data were situated. This process resulted in a first version of a script intended to provide ways to use matrices in order to gain insights. Such a script was characterized by a series of steps leading to a design and manipulation of the matrices.

In the next stage these experiences were communicated to outsiders. The initial script became the starting point for new developments, in conditions that were different from a specific self-reflective context, yet similar as to the self-reflective experience. The challenge was to create the right circumstances to find out whether the group experience might also lead to new creative ideas. In the first few cases, Master students of architecture and other participants worked with a previously prepared script that did indeed spark off a chain of actions, resulting in several types of creative output, such as design insights, new concepts, models etc. Records were kept systematically of all cases in the form of diaries, participants' feedback, output material etc.

A number of critical reflections on the processes were formulated, which have resulted in a fine-tuning of the matrix technique in such constellations. A so-called first toolbox of the matrix became defined (with a variety of manipulations and characterizations of form and content). The game context, the playful mindset of the participants, the nature of the coach-participant relation and the need for a layered look at the subject all surfaced as important aspects of these processes. The coach's awareness of the connection between the stages defined by Theory U and the way participants look at their subject during these processes has become a vital part of the way he conducts the matrix process. In the next stage an analogous space was established within an actual physical space, thus shifting the boundaries and transcending the limitations encountered during previous actions. Students were asked to interact with these matrices in an actual space. This resulted in a new, more spatial, approach (fig.9).



Figure.9 Impression of a workshop, establishing an analogous space in an actual physical space.

The experience gained in the course of these cases enabled us to draft a script that was not just applicable in a context of architects and artists. The objective was to establish whether our findings would also be valid in the context of other disciplines. Also, a procedure was set up to transfer my personal experience with these cases to others, in order to allow people other than myself to act as coaches.

In a final stage all techniques were further developed in two separate directions. A process involving actors was developed. During several weeks we worked together in a master class improvisation. We established a series of analogous spaces by using matrices. These spaces made various themes for improvisation more precise and clear. This has led to a clearer insight into the correlation between analogous spaces, the use of matrices and various ways of looking. Finally a series of workshops was set up in which the use of matrices was applied to other disciplines as an integrated part of an organizational development technique, in particular 'appreciative inquiry' [5]. This method allowed us to generate appropriate tools that enable people to solve problems (collectively) that are characteristic of their specific field or discipline.

4. Discussion

The ensuing discussions made the transformations that manifested themselves more explicit. Let us overview the most important issues; Theory U as a way of connecting, situating indistinctness and architecture, strengthening the tool/matrix and situating intuition in a design context.

The link between Theory U and the way we look at things has resulted in a discussion that clearly revealed how our way of looking was transformed. Matrices create places in which all the stages of the U-curve can take place and that provide an interesting environment for these stages to take place. Fundamental observations can be made here, where you *suspend your Voice of Judgment and connect with your sense of wonder* [14] (from downloading to seeing). This happened to some degree in each of the cases, as well as in my stage of self-reflection. The video work also created such a mental environment, being a place for gathering thoughts and imagery, and for people visiting these spaces. These are what Scharmer calls *collective sensing organs that allow the system to see itself ... (they) use the power of shared seeing and dialogue to tap an unused resource of collective sense making and thinking together* [15] (from sensing to presencing). Indeed, the use of matrices during group sessions leads to co-creation and moments of awareness of certain fundamental aspects of the subject matter. When applied in a more

introspective way, visiting a matrix can become a kind of meditation, as seen in the case with acting students. By extension, the practice can become what Scharmer calls *a collective cultivation practice* [16] - or a mixture of these elements, as was the case where students visited various forms of matrices or during the last sessions with the acting students. In these cases, surely the following comment by Scharmer is more than apt: *A collective presencing practice is different from an individual one in that the various sensing and presencing experiences of the individuals are used as gateways to connecting with and entering the deeper source of collective creativity and knowing* [17]. In all cases featuring group sessions, such a collective practice is already being formalised.

The parallel that becomes apparent between the characteristics experienced in the U-curve and the process of this research project clearly reveals clear connections between Theory U and the processes initiated by the use of matrices. Theory U optimizes the principle of coaching, of understanding what the relevance of the use of the matrix can be. At the same time using the matrices can help to optimize a trip up the U curve. It is as described a 'concurrence', a 'togetherness' of the two perspectives (changing the look and the stages in Theory U) that makes some aspects clearer and leads to several insights. We experienced (and still experience in various workshops that me and my colleagues coach today) how both, the way people look and the way people connect are related with each other.

The occurrence of indistinctness as a source for creativity and the way to deal with this ambiguity was the next topic for discussion. The energy generated in a group when people are confronted with indistinct elements has led to a change of ideas, to new insights, to a different state of mind, to transformative experiences etc.

I sometimes noticed how facing indistinctness induced a feeling of uncertainty, an uncomfortable feeling. Let me illustrate this with an example. In the first case it took some time to allow the students to get used to the inappropriate tasks I gave them. For instance I asked them to design and compose matrices with images, impressions and thoughts on 'complexity and building'. Beside the design aspect it was a challenge to find a valuable and appropriate content. Next I asked them to juxtapose these matrices and come to new matrices with insights and concepts on complexity and building, as a reaction of looking to these juxtapositions. This was the beginning of an intellectual process leading to various new concepts on the central theme. Once they saw the new constellation and they had experienced the first steps of the process, their feelings of unease more or less disappeared. In these examples we see correlations between the disappearance of unease, the occurrence of creative acts and the prevalence of a playful mood that is conducive to the continuation of the creative process. All this was initiated by the act of looking in a certain way. It was this act that pushed the process from an uneasy situation to various forms of playfulness and productivity. Without generalizing - in other words: without excluding other constellations or processes - we may state that this is indeed a fruitful correlation. All my observations on the subject of this process point to the conclusion that creativity relates to facing the indistinctness. Also, I noticed how the feeling of unease appeared right at the start, only to fade away and remain somewhere in the background once creative action started taking place. In many cases I provoked this uncomfortable feeling by introducing a period of indistinctness into the process. For instance during the Appreciative Inquiry experts' workshops I introduced indistinctness various times in order to elicit an emotional response on the part of the participants, to get them out of their comfort zone. We may say that these actions became part of the game setup. I started creating artificial stages of unease at certain judiciously chosen instants, in order to stimulate the creative process. If at such moments the participants, myself included, observed the setup with the look of someone who is in a stage of *downloading*, this would not work. For this manipulation to yield results, participants need to have an

open mind, ready to capture whatever elements present themselves. They should be prepared to look with the eye of a poet and see beyond the surface, transcending these moments of indistinctness. That is when other aspects are revealed, which are new, or at least not that close to existing stereotypes. In this sense, coping with indistinctness may result in a broad spectrum of variations, consolidation, insights and actions that takes us a step further in that creative process. Students discover concepts or revealing thoughts, communication experts come up with provocative ideas leading to new brands, actors uncover previously unknown gestures in their arsenal of tools, thus enhancing the relevance of their communication, Appreciative Inquiry experts reach insights which help them to design their dreams, I detect the reasoning underlying my creative trajectory.

We took a closer look at the architectural qualities of these analogous spaces. We saw space expanding. Fieldwork demonstrated how analogous space could really be actual space. This research enabled us to not just reflect on space, but on both space and analogous space.

The matrices are analogous spaces in which people - and in extension groups and communities - find each other. They are in fact a type of public space. Matrices are not only spaces for personal and self-reflective inquiry (which is one specific application) but also an analogous space where people meet. This is not solely a mental space: the hardware that is used to construct it, contradicts this. Maps, sculptures, mechanical devices, all kinds of physical elements make them more than a purely mental tool. The final goal is not to establish as many analogous spaces as possible. As these spaces are at the core of potential solutions for specific problems, potential answers to questions that are quite real, it is important to see a dynamic developing of analogous spaces coming and going, being created and disappearing again, glowing with intensity and fading away

Each set of matrices is developed in response to a need. They have come into existence because people wanted them to. These are spaces full of an intense activity. People come up with personal contributions and add them to these matrices as part of their content. This allows them to share their experiences and preferences in a public space and generates a strong commitment within the team, with group members sharing facts and figures and listening carefully and intently to each other's contributions, which leads to a fluid development of the matrices. This is reflected in the different stages of Scharmer's U-curve. This genesis is an important strength, though it entails two significant weaknesses as well. This public space relies on the integrity of the whole group or community, and this might be naïve in a sense. Not everybody is prepared to commit to such a journey. The larger the group, the harder it may become to build these spaces. Smaller groups hold risks as well. It is a matter of trust. Besides this, there is the fact that this is an ephemeral construction. This architecture is, in a sense, 'light'. It only exists by the grace of the community's belief in it. A sigh and it could be all over. The opportunity we are being offered is the possibility to connect a specific mental dimension of our space with an ever-growing determination to find answers to questions of a specific kind. Questions that require us to draw on our creativity. This public space then becomes manifest - and a necessity. The major threat to its success is that it is still optional at this moment. If this "exothermic reaction" is extinguished, there will be no continuity. To counter this on a local, modest scale, a series of actions have been planned and some are already being implemented (e.g. implementation in education (for aspiring architecture and others), courses for teachers will be set up in the following years, implementation of a tool to develop community platforms is being planned). These initiatives will provide a broader, more stable platform of actions and reactions, which will help to guide future steps.

Analogous spaces constructed with matrices are carefully constructed constellations of spaces. A conscious, layered way of looking is a crucial element in this process. It leads to the creation of an alternative for

contemporary public space. It is both a mental space imaginable by all visitors and an actual space, as it is designed by some or all of them using actual content and matrices. The latter make it - in some respects, depending on the circumstances - tangible and visible, so that anyone who wants to can enter. These spaces will relate to our real space, semi-public and public space in particular.

Matrices and the way they are used were compared with other techniques and methods (The Technique Library Creativity, Innovation and Change [12], and the IDEO Method Cards [6]). It is clear that these two collections start from quite diverging objectives. By bringing them both into this discussion I create a layered spectrum connecting with both a more mechanical, exhaustive approach and a creative, intuitively compiled collection. Let us focus in this context on the first one. One third of the 153 techniques of the library were selected. I looked at two aspects to select them. The first aspect concerns the fact that these methods and the use of matrices are similar, comparable. I saw two types of connections. A technique may be a kind of smaller version or part of matrix game, as it were, a component of a larger method. Secondly, both had to make use of a specific routine or action. The second aspect concerns the possibility of implementing the use of matrices within an existing method. There are two clear ways to do this. First, for many methods using matrices might be an alternative way to map. Many methods gather information during the process and the fact that the matrix is adaptable and open, ready to receive information, suits this requirement. An intelligently designed matrix can give significant added value to these methods with respect to the gathering of data material and content management. A first form of mapping can be seen as purely a supporting technique. A second form is going beyond mapping as such. It is rather a way to reorient existing methods in the direction of a more creative attitude. This means that the characteristic actions of the matrix game, such as associative thinking, making use of abduction, making use of your intuition and facing indistinctness, to generate creative interventions, might be implemented as an integral part of existing methods. It might tighten and refocus methods that were already using some of these techniques. Sometimes it might give an existing instrumental, rational, functional technique a twist, steering it towards a more creative trajectory. The exercise only serves to demonstrate how these human-centred methods, all situated in a design context and dealing with design issues match on several levels with the use of matrices. When linked up with existing techniques, the use of matrices leads to potential transformations of these techniques, with regard to people's experience of them and their results. This exercise may open a debate on the propitiousness of inserting this system into a great variety of techniques and methods, applied in a great variety of constellations.

With six major types of intuition in mind, as described by Claxton [4], I examined the actions undertaken by the participants more closely. The purpose was to look at it and try to understand those aspects of the event of looking that are related to intuition. Intuition seemed to be an essential factor, a requirement to initiate and accomplish these transformations. The matrices and the manipulation of these matrices are spaces in which intuition becomes more explicit. The material that will be put into the matrices is not what we see, it is what we wanted to see in that framework: my photography (self-reflection), words that express a person's fascination, phenomena somebody is intrigued with, etc. These spaces are, in this sense, fitting objects to connect with the occurrence of intuition. Moreover, the process of evaluation of the hypotheses arising in the course of a creative trajectory is facilitated and enhanced by connecting them. More than once have I witnessed this aspect. Participants explain how they use the matrices and formulate their hypotheses. The quality of these propositions, including any embedded conflicts, was lying there naked on the table, illustrating the pedagogical quality of the use of matrices.

5. Conclusions

The project has resulted in both an artistic output and a research output. The artistic output comprises video works (ZOOM, Old Masters and Landscapes #) [11] and a book entitled The Matrix Project [10]. Also, some architectural projects were designed and have been realized during this research project.

The research output is situated on a personal level and on a general level. On a personal level, this has been a self-reflective trajectory. This led to the development of a set of techniques that helped me to understand a series of notions that have proved to be essential to my practice as architect and photographer. These techniques enabled me to demonstrate how these notions could be described in a non-verbal way. On a general level, it has produced views on the development of analogous spaces and the development of a creative technique called the matrix method. As stated before, analogous space is correlated with the amount of attention a community will pay to this phenomenon. If a community is willing to establish these challenging spaces, they will come and go. They will be part of a dynamic development, though we are certainly aware of its lightness - a mere sigh and it could be all over - we know that at this moment these public spaces are still optional. There is no necessity to build them. Yet once people are engaged in a process and trust the procedure, the strength of the particular genesis of these spaces comes to the fore. Sharing experiences and preferences, generating a strong commitment among participants and visitors, ensuring that everyone is listened to carefully: these are essential aspects of Theory U. These are vital for the construction of a space with a specific mental dimension leading to an ever-growing determination to find answers to questions that entice us to draw on our creativity.

Taking a closer look at the analogous spaces, we notice how these spaces become real by means of the matrices. These matrices embrace many different elements: space and game, travel and play, looking and acting. Matrices, based on the mathematical theory, became a tool leading to experiences and a transformation of experiences. Looking, in particular the playful variation of the activity, which appeared mostly in a social context, lay at the base. It is this layered looking, in accordance with Scharmer's ideas, which makes it a successful operation. A coach, participant or researcher, who sees to it that all conditions are fulfilled, will reach this stage and tighten and improve the process for all. This research trajectory has led to a specific use of matrices. Discussion of the fieldwork has led to a kind of roadmap being drawn up, which makes it possible to use matrices accurately and precisely in various constellations. We use matrices as means to interact with other people, to stimulate and subsequently order and structure their experiences, in order to apply them towards practical applications. Most of the time, this happens when it is done with a creative attitude. In other words, with this method we develop tools for collaboration, so that people can solve the types of problems that are characteristic of their domain or discipline. This might be architectural design, but we have also tackled communication, acting and organization development. As mentioned before, all these problems require creative insights, action, reaction, vision, and reflection.

The use of matrices has given rise to a view on looking - as an event in space and time - at the way a person is looking, which occasionally leads to some creative insights. What started as an investigation into the nature of a certain way of looking has turned into an undertaking that has led to a series of transformations. Hundreds of people have during these workshops changed the way they are looking at issues linked with creativity. The concept of what a helpful tool may consist of has gradually transformed from just a simple sketch to a rather more complex set of matrices. In parallel with this evolution, the role of the architect has changed from being a designer

to being a designer of transformative experiences. Last but not least, our view of what exactly might be at the core of this research project has become more focused: transformation as an event that makes a person's thinking, seeing, being more relevant. Which was the objective of this practice-based research trajectory.

6. References and Citations

- [1] Besse, J-M. (2001) Cartographier, construire, inventer. Notes pour une épistémologie de la démarche de projet, Les Carnets du paysage, automne, no. 7, pp. 126-145.
- [2] Borgdorff, H. (2012) *The Production of Knowledge in Artistic Research* in M Biggs, H Karlsson (eds.), The Routledge Companion to Research in the Arts, Routledge, Abingdon, pp. 44-63.
- [3] Borgdorff, H. (2006) The Debate on Research in the Arts, National Academy of the Arts, Bergen.
- [4] Claxton, G. (2001) *The anatomy of intuition*, in T Atkinson & G Claxton (eds.), The Intuitive Practitioner, Open University Press, Buckingham, pp. 32-52.
- [5] Cooperrider, D.L., Whitney D. & Stavros J. M. (2005) Appreciative Inquiry Handbook, Crown Custom Publishing & Berrett-Koehler Publishers, Ohio, San Francisco.
- [6] IDEO, http://www.ideo.com/work/ideo-method-card-app [Accessed 10 March 2013]
- [7] Lagrange, T. (2008) *Mental spaces, a design tool seen in historical perspective, A few considerations*, In Proceedings of Conference Analogous Spaces (CD ROM), University Ghent, Ghent.
- [8] Lagrange, T. (2009) Self-reflexivity as a tool for a more relevant design-process. Mapping strategies and creative outputs by using matrices, In Proceedings of Conference Rigor and relevance in design [CD ROM], International Association of Societies of Design Research, Seoul.
- [9] Lagrange, T. (2011) A Matrix as an Analogous Space, Designing a mental tool as a generator of new insight, Oase, vol. 85, pp. 60-71.
- [10] Lagrange, T. (2012) *Look Here Now, Mapping Design Trajectories*, Ph.D. in Architecture, Faculty of Architecture, Catholic University of Leuven.
- [11] Lagrange, T. (2012) Available at http://thierrylagrange.com/video-menu.html [Accessed 10 March 2013]
- [12] Martin, J. (2000) Technique Library, The Open University, Hampshire.
- [13] Scharmer, C. O. (2009) *Theory U, Leading from the Future as It Emerges*, Berrett-Koehler Publishers, San Francisco.
- [14] Scharmer, C. O. (2009) Theory U, Leading from the Future as It Emerges, Berrett-Koehler Publishers, San Francisco, p 393.
- [15] Scharmer, C. O. (2009) Theory U, Leading from the Future as It Emerges, Berrett-Koehler Publishers, San Francisco, p 398.
- [16] Scharmer, C. O. (2009) Theory U, Leading from the Future as It Emerges, Berrett-Koehler Publishers, San Francisco, p 188.
- [17] Scharmer, C. O. (2009) *Theory U, Leading from the Future as It Emerges*, Berrett-Koehler Publishers, San Francisco, p 189.