

Exploring Spatial Qualities Evaluating Movement as a Source for Spatial Knowledge

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ABSTRACT

Our hunch is that movement is a valuable form of communication which may expose new insights concerning spatial experiences which might of use in architectural design processes. In that sense investigating movement visualisations and notations can be a way to reveal new knowledge related to spatial qualities, as well as qualities related to embodied experience. These reflections were the motive to set up *Mapping, Drawing, Visualising the Experienced* as a research-based master elective. In this elective, we investigated how existing movement visualisations and notations could be a manner to explore and reveal new knowledge and insights related to spatial qualities, as well as qualities related to the embodied spatial experience and subsequently how these insights can enrich the architectural design process. Within this paper, we elaborate on the context, content and the intention of the course and critically reflect on the obtained results.

INTRODUCTION

About two years ago we ended up in the same session of a conference and discovered a mutual interest in choreography and movement and its potential link to the field of architecture, design(ing) and drawing.¹ The encounter led to a series of animated discussions and emails concerning the tension between embodied experiences and the built environment on the one hand and the inability to express the ephemeral in conventional architectural drawing on the other. To further nourish our dialogue we agreed to set up a research-based master elective.

We initiated the elective as a way to invite participants (master students in architecture and interior architecture) to partake in our on-going research. The aim was (i) to explore and share new insights and experiences concerning the subject. (ii) To study the conceptual understanding of the relation between space and movement. (iii) To raise the participants' awareness for choreography and embodied spatial experiences by introducing them into movement visualisations and notations.²

Throughout the following we would like to share, discuss and critically assess the setup, process and first results of our *Mapping, Drawing, Visualising the Experienced* elective course.

CHOREOGRAPHY AND EMBODIED SPATIAL EXPERIENCES

To choreograph is, originally, to trace or note down dance.³ Choreographer William Forsythe describes choreography as the act of "organising bodies in space, (...) organising bodies with other bodies or a body with other bodies in an environment that is organised".⁴ Our research departs from the idea that people's subjective, embodied experiences of their bodies in action provide part of the fundamental grounding for language and thought.

According to philosopher and former dancer Maxine Sheets-Johnstone "Corporal concepts in each case derive from experience and in no way require language for their formulation.[...] If anything, language is post-kinetic. Fundamental spatio-temporal energetic concepts come from experiences of movement [...]".⁵ From the latter we

assume that by observing and studying movement, we could possibly grasp inexplicit insights concerning the embodied spatial experience which are difficult to translate verbally.

Professor of psychology Raymond W. Gibbs Jr. states that the concept of embodied cognition is what occurs when the body engages the physical, cultural world and argues that it must be studied in terms of the dynamical interactions between people and the environment. In his article *Embodied Experience and Linguistic Meaning* Gibbs argues that human language and thought “emerge from recurring patterns of embodied activity that constrain ongoing intelligent behaviour”.⁶ This implies we must not assume cognition to be purely internal, symbolic, computational, and disembodied, but seek out the gross and detailed ways that language and thought are inextricably shaped by embodied action.

In similar vein cultural theorist and urbanist Paul Virilio observed that “dance is lived and transversed as a living present”, arguing that dance has, “in appearance, no need for a symbolising system that would be incompatible with experiential givens and would reduce the sensible fabric of movement to an all resuming graph, universal, transferable from one place to another, from one textuality to another.”⁷

Our hunch is that investigating movement visualisations and notations can be a way to reveal new knowledge related to spatial qualities, as well as qualities related to embodied experience. As such we believe that the exploration of alternative marking and drawing techniques can reveal qualities related to embodied experience. If we agree with psychologist James Gibson that movement is a vital part of perception we asked ourselves whether people’s movement can be used as a form of communication.⁸

MOVEMENT VISUALISATIONS AND NOTATIONS IN DESIGN-DRIVEN DRAWING PROCESSES

While music can rely on a conventional notation system to express pitch, rhythm, note length, harmony and so on; choreography never achieved consensus upon its preferred notation system. From Baroque Feuillet notation over Labanotation to Eschkol and Wachman’s attempts to define a complete system for animals and humans no system achieved the omnipresence of the staves and noteheads in musical practice.⁹

Dance’s dimensionality surpasses that of music and architecture which evidently impacts its notational strategies. Dance involves a non-linear set of events, activities and interactions. First of all there is the moving body and the interaction between other individual bodies, secondly there is time and space wherein the bodies move which can even be extended with multimedia projections and, finally, there is accompanying musical score with its own distinct dimensions. Depending on the choreography, one of these parameters might be highlighted or toned down but the bottom line is that all these dimensions, in some way, interact in a performative way.

In comparison conventional architectural drawings (plans, elevations, sections, perspectives) mostly reveal a fixed state of an anticipated spatial constellation. Our disciplinary focus on measurability seems to contradict our spatial experiences involving all of our senses and which are characterised by perceptual movement rather than

frozen observation. This observation led architect and historian preservationist James Marston Fitch to state: “*To be truly satisfactory, the building must meet all the body’s requirements, for it is not just upon the eye but on the whole person that its impact falls*”. The bottom line is that any type of notation tends to reduce the qualitative properties of the activity the system tries to map.¹⁰

While architecture’s conventional drawing system has proven its worth, its geometric foundations persists to ignore the more or less ephemeral qualities which characterise embodied spatial experiences. This exclusion has increasingly become a point of critique.¹¹ Acknowledging these critiques implies that architects and (drawing) instructors alike, should at least inquire a balance between convention, embodiment and experience in order to provide fuller attention towards - and accounts of the richness of architectural experiences.

In our elective we took the above observations and critiques as a starting point to broaden our vocabulary in conceiving, designing and representing architectural experiences. We aimed to inquire the tension between choreography and embodied spatial experiences and the built environment. We were specifically interested in how studying qualitative properties of movement could be a method to reveal the fundamental elements of space itself.

TEACHING PRACTICE

We devised a ten week course divided in three blocks. In (4.1) we introduced the key concepts of movement notation, choreography and their relation to architecture and space. In (4.2) we designed and fabricated D.I.Y. drawing devices to map unique movements. Finally in (4.3) we challenged the embodied experience of people moving in an actual space. In (4.4) we concluded the elective by staging a research exhibition at the Faculty’s gallery space.

For our first run of the elective we mainly focused on notation systems and how these systems potentially could be used as an alternative design tool. Our decision to shy away from functional design in favour of more or less open-ended artistic activities and interventions allowed for an explorative atmosphere.

The elective consisted mainly of practical exercises in a studio setting and was built up in such a way that through practice the participants gradually acquired new understanding concerning movement in design processes. Based on interim results, weekly classroom reflection and discussion aimed to progressively adjust and fine tune the notations, artefacts and interventions as well as the evolving conceptual frameworks. As such the assignments aimed to function as a trigger for further research, beyond the elective.

INTRODUCTORY ASSIGNMENTS

By way of a contextual introduction we presented a selection of key-examples of movement visualisations such as Etienne Marey’s chronophotography, Eadweard Muybrige’s stop-motion photography and Frank and Lilian Gilbreth’s cyclography as well as some exemplary movement notations such as Rudolf von Laban’s Movement Analysis, Lawrence Halprin’s Ecoscores and Motations, Bernard Tschumi Manhattan Transcript and choreographic notations from

Lucinda Childs, Anne Theresa De Keersmaecker and Trisha Brown to name a few.¹²

As a first experiment we explored the space within and around the body by mark making. These performative drawing techniques act as an introduction to experience the limits, boundaries and possibilities of the human body as mark making tool.¹³

To further contextualise the elective and open up the participants' minds we organised a screening at a local Centre for Art and Media.¹⁴ We preselected a series of short films and film fragments that correspond to our ambitions. The selection varied from dance films such as Anne Teresa de Keersmaecker's seminal choreography *Fase, four movements* to the music of Steve Reich by Thierry De Mey to rather experimental video art by Pascal Baes wherein wordless performances aim for an uprooting and a deconstruction of space and time. The visit set the tone and made clear that within our elective one could think beyond the boundaries of the discipline of architecture and dance.¹⁵

To raise the participants' awareness for the dichotomies between moving and transcribing that experience we invited the participants to explore aspects of the introduced concepts and systems in three different assignments: (i) a random walk, (ii) a referential walk and (iii) observing other people's movements.

In (i) we sent the participants on a walk with the instruction to record movement in relation to their spatial environment. The random walk assignment deliberately questioned their disciplinary pre-conceptions about observational drawing - i.e. drawing from one fixed point of view - and forced participants to look for alternative ways to note and map their stroll as opposed to conventional vantage point perspective. To narrow their input possibilities we proposed to focus on one specific aspect of their movement such as the swinging of the arms, the speed of the steps, the turning of the head, etc. (see figure 1.)

In (ii) we asked the participants to analyse different notational systems. We gave them the same instructions as in (i) and challenged them to try to understand a chosen system by applying its elements in a new walk. The idea was to confront them with the practicalities, advantages as well as shortcomings of one notation system or the other. We insisted on making modifications to the applied systems if necessary. After all, every notation system is a reduction of a kinaesthetic experience whereby it is never possible to grasp the richness of the sensations involved. (see figure 2.)

In (iii) we asked the participants observe and note other people's movements. While (i) confronted the participants with the divide between walking, reflecting upon an experience as well as figuring out a way to map that (iii) allowed for a more passive observation. When observing other people's movement the observer can focus on specifics of someone else's movement from a personal point of view. The change of position (from actor to observer) indirectly created a reflection about their own movement, as analysed in assignment (i) and (ii). The observing other people's movement assignment also confronted the participants with the fact that some referential notation systems are less applicable for the observation of others. (see figure 3.)

The idea of these introductory assignments was to challenge the

participants to explore personal approaches in mapping movement and develop a personal movement notation system. These developed notation systems were reintroduced later in a design context (see 4.3).



Figure 1. Examples of a recordings of a random walk (i). (image courtesy of the participant)

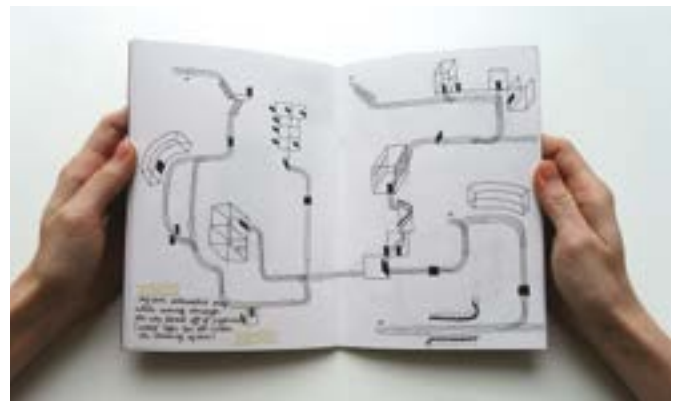


Figure 2. Example of a referential walk (ii). (image courtesy of the participant)



Figure 3. Examples of movement observation assignment (iii). (image courtesy of the participant)

RECORDING DEVICE

In the introductory assignments the participants were consciously confronted with the divide between looking, moving and mapping - which complicates the observation and leads to a loss of data in the transcription due to continuous eye-hand coordination. In these observations one tries to concentrate on a mobile world while simultaneously figuring out a way to capture the dynamism unfolding around you. To be able to rule out autographic drawing activities we challenged the participants to come up with a D.I.Y. recording device designed to capture once's movement mechanically. As a way to focus on movement without being constrained by the coordination needed to simultaneously move, observe, map and draw.

The device intended to redirect the participants' attention to different aspects of movement and challenged them to assess and refine the device's ability to track movement graphically, aesthetically and even experientially. In evaluating the device's qualities the participants had to assess the resulting graphical notation in relation to the specific movement the device tried to track (i.e. velocity, change of viewing direction, destabilisation of gravity center, etc.).



Figure 4. Example of a recording device. (image courtesy of the participant)

The Recording Devices work on two levels. First of all as a means to trace activities and secondly the device as an autonomous research artefact. The process of designing and making the recording device revealed alternative possibilities in recording movement which could only be achieved by a process of making, testing and reflection. As such the device led to heightened awareness of different properties of movement.

CHOREOGRAPHIC OBJECT(IVE)

This assignment is loosely based on choreographer William Forsythe's Choreographic Objects series which, in Forsythe's words, "were conceived to artistically reflect on choreography and to free it from its close relation to the moving body of a dancer".¹⁶ In William Forsythe's oeuvre the choreographic objects function as examples of specific physical circumstances that isolate fundamental classes of motion activation and organisation.¹⁷ They figure as "a model of potential transition from one state to another in any space imaginable".

¹⁸ In our research we interpret spatial elements such as walls, doors, stairs, columns, floors, roofs and slopes as an architectural kind of choreographic object. Our choreographic object(ive)s were interpreted as spatial interventions induced by objects and/or objectives. Our reinterpretation of architectural elements as choreographic objects was conceived as an approach to examine forms of communication which are able to inform us about the embodied impact of architectural elements.

To study the relationship between notations and an actual design process we asked the participants to think of possible tactics which aim to redirect peoples' usual spatial involvement. The assignment was set up as an iteration of testing and improving possible interventions and was to be staged on a 1:1 scale.

The intervention was to be performed in a transit zone in one of the campuses. A first step was to conceptualise a choreographic object(ive) to introduce on site. A second step was to design, build and implement the choreographic object(ive) on site. The choreographic object(ive) had to challenge passers-by to change their usual involvement with the site of study.

In a third step we asked them to graphically illustrate the impact of their intervention(s) by using (i) conventional techniques (i.e. drawing, sound, photography, moving image, stop motion, video...); (ii) their personal notation system as well as (iii) their own recording devices. In that way the intervention(s) became a way to explore and compare the characteristics and differences between different notation and recording techniques.

As a last step the participants were asked to reflect upon their choreographic object(ive) in order to refine steps 1 to 3. The choreographic object(ive) could be based on lines, planes, volumes, movement(s), moving objects, projections, instructions, ... It was specifically stated that the choreographic object(ive) should avoid usefulness or functionality. Neither did it involve social science nor participatory design and it had to surpass the act of merely blocking someone or something. The participants were specifically asked to think about ways to augment the quality of movement - adding value to a situation or context as a design objective.



Figure 5. Example of choreographic object(ive). (image courtesy of the participant)

PERFORMATIVE RESEARCH EXHIBITION

To conclude the elective we staged an performative research exhibition to share our conclusions in a gallery-like environment. The main purpose was to finalise and conclude the experiments and refine the objects and artefacts as an account of their research. We also invited some external jury members to evaluate the work. The exhibition was open for visitors and was seen as an open forum to discuss the work and the elective.



Figure 6. Example of presentation at the performative research exhibition (image courtesy of the participant)

ASSESSMENT OF THE OUTPUT AND ASSIGNMENTS

Our introductory assignments aimed to confront the participants with the intrinsic inconsistencies in recording movement. With the fact that any system which tries to map an embodied experience - even only walking - will obscure the ephemeral and tacit properties of the experience.

Although these first assignments resulted in a rich interpretation, in retrospect there was a lack of a comparative parameter or reflection so that the variety of explorations could be played out towards each other. For a next run, we will have to propose a kind of protocol that guides the participants to explore the different properties and qualities of the introduced notation systems. For instance inviting them to explore similar activities and places as a way to narrow down the possibilities. Looking for a way to define similar variables and sensations will heighten the collective understanding as well as setting a framework for further research.

The introduction of movement notations from performance art, choreography introduces the participants into new ways of conceiving movement and space which they can apply in their own spatial practice. But we also observed that the focus on performative notation systems lacked information about the specific qualitative properties of the spaces where the movement took place. In that sense we should inquire whether we can extend our referential scope as well as investigating how to trigger reflections about the converge of choreographic dimensions (i.e. movement of bodies and their interaction, time, space, sound,...) and architectural design.

The choreographic object(ive)s aimed to build further upon the acquired insights about movement in relation to the experience of space. We have to admit that, while we saw some intriguing interventions, most of the interventions didn't really extend the concept of space neither did they reveal substantial impacts upon the embodied experience of the spaces. We should ask ourselves what kind of spaces - or spatial readings - assignments like this one should open up. Ideally the intervention informs the intrinsic properties and qualities of the space at hand as well as finding out ways to enhance or manipulate them. The aim should be to heighten an understanding of the influence of specific architectural elements upon experiences of space thereby enabling the participants to deploy these elements as a kind of choreographic objects.

A next run should inquire the kind of spaces we intend to manipulate as well as looking for ways to activate the cognitive activity of transcribing movement to inform directions for design(ing). We could try to introduce more or less abstracted spaces which the participants can charge with activities or interactive interpretations so that the design of the abstract space informs the recording which again informs the design(ing).

We had conceived the final performative research exhibition as a culmination of the wide range of activities that were performed during elective. While the presented work varied from photographs, video, projections, and in situ interventions as well as one performance we seem to have missed the opportunity to confront the participants with the dichotomies of what a research exhibition entails. More precisely the tension between paper-based research, artistic exhibitions and their potential overlap. By doing so we also missed the opportunity to introduce the participants into the complexity of providing a visual account of the work while simultaneously introducing an audience into the intrinsic research questions which gave rise to the presented results.

CONCLUSION

While movement is an important feature of the experiential aspects of design(ing) we, as designers, still seem to lack a language or sign system to communicate those qualities. Explorative studios such as our elective provide an ideal environment to collectively search for such language or sign system or, at least, raise awareness amongst

“For me the elective really changed the way I look at architecture and hope I can incorporate the things I learned into my designs. I often heard that we should incorporate the way people move into our design, but we were never really explained how to. This class helped me a lot with that.”
(Franziska Faude)

“At the beginning I thought the elective would be more related to space/ architecture. I don't think I will design in a different way after the elective but I do look at movement differently, with more awareness I think.” (Eveline Achten)

Figure 7. One of the participants' feedback on the question : Did your participation in this elective resulted in a different way of looking/designing?

the participants to incorporate movement in their design processes. We do realise we are still far from the ideal to “use people’s movement as a form of communication” but our elective did open up some viable ways to approach movement in spaces. Based on the reflections provided in the participants’ surveys it appears that the elective did broaden their conceptual understanding of movement. (see figure 7)

That being said a learning environment doubling as research environment also confronts a project with its limitations. We, as instructors-researchers, have to balance our research ambitions with the participants’ personal explorative (learning) ambitions. Ideally the participants nourish the research with fresh views and insights but in reality, they start with a genuine backlog. By the time (some of them) are ready to process the content in such a way that they can contribute to the research the sessions are, more likely than not, over. Of course there are doctoral studies to deal with this problem, but, we assert, that shouldn’t mean students should not get into contact with some of the intricacies of doing (practice-based) research.

During such an elective one hopes to inspire the participants in such a way that they start considering or even further inquire what it was one wanted to convey. In the end, it is up to the learner to discover and explore new knowledge, not up to the instructors to constrain them, or even steer them, in result-centered directions - in other words aiming for solipsistic academic goals. During the elective, we defined the activities and assignments but left enough room to discover something of consequence for themselves. Our role was to frame, contextualise and help the ideas and work along the course of their development.²⁰

It will be important for the elective to further distinguish between choreographic notation and movement notation to inquire what kind of notation can inform design processes. Ultimately the aim of opening of the concept of embodied spatial experiences is to explore possibilities to consciously incorporate movement in design processes. How movement analysis can enhance the design and quality of a space? Triggering that architects make use of spatial elements to choreograph users.

Notes

1. Movement was peripherally touched upon within Robin’s doctoral thesis. It was acknowledged as a primordial aspect in researching the of drawing spatial experiences but, in its magnitude, resided outside the scope of his PhD thesis. For Liselotte, movement is the main theme of her ongoing practice-led PhD research, wherein she conceives movement as the key-element in the relationship between human and their environment. She explores how architectural design processes may benefit from studying and applying movement notations and visualisations.
2. The notion of *spatial embodied experiences* refers to the sensory dimensions, which are related to the human body while moving in space.
3. Virilio et al., *Traces of Dance*, 14.

4. Forsythe, *Seeing you fingers as a line* in Spier, *Dancing and drawing*, choreography and architecture, 352.
5. Sheets-Johnstone, *The Primacy of Movement*, 438.
6. Gibbs, *Embodied Experience and Linguistic Meaning*.
7. Virilio et al., *ibid*, 9.
8. Gibson, *The Ecological Approach to Visual Perception*, 223.
9. For a survey of notational system see: Hutchinson Guest, *Choreo-Graphics*.
10. Fitch, *The Aesthetics of Function*, 709.
11. See amongst others: Arnheim, *Art and visual perception*; Merleau Ponty, *Phenomenology of Perception*; Appleyard et al., *The View From the Road*; Halprin, *The RSVP Cycles*; Gibson, *The Ecological Approach to Visual Perception*; Latour, *Visualisation and Cognition*; Tschumi, *Questions of Space*; Thiel, *People, Paths, and Purposes*; Summers, *Real Spaces*; Pallasmaa, *The Eyes of the Skin*; Holl, Pallasmaa, and Perez-Gomez, *Questions of Perception*; Frascari, *Eleven Exercises in the Art of Architectural Drawing*.
12. Movement has been represented in many fields and disciplines with a wide range of objectives. We distinguish two large groups of movement representations: movement visualisations and movement notations. Movement visualisation are an attempt to re-compose the durational movement with the aid of optical technology, while a movement notation is a graphical system that can consist of symbols, figures, numbers, words and lines that can be used for the analysis of movement, but also for recording or designing (dance) movements (by choreographers e.g.).
13. see amongst others: Monika Weiss (<http://www.monika-weiss.com>); Heather Hansen (<http://www.heatherhansen.net>); Jaime Refoyo (<http://www.jaimerefoyo.com>); Tonny Orrico (<https://tonyorrico.com/>)
14. Argos Centre for Art and Media focusses on experimental film and provides an extended catalogue of dance and performance recordings. (www.argosarts.org)
15. Baes, TOPIC I & II, 1990.
16. Maar. *On the Aesthetic Potentials and Epistemic Functions of Scenography Scores*.
17. Forsythe. *Choreographic Objects*.
18. Spier. *William Forsythe and the Practice of Choreography*, 91.
19. We were confronted with questions such as how to challenge them, when (and how) to steer them, what is the status of the participants’ work vis a vis the research and ultimately what is the added value of such an elective for the research as well as for the participants?

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