Spatial Scales in the Making of Future Experiences

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Abstract

The fundamental principle in experience design is a fluctuation between familiarity and unfamiliarity, which invites users to make his or her own sense of a design. This is an inclusivist attitude aiming at evoking curiosity about what is actually going on. One of the

ways to generate this fluctuation is by manipulating the spatial scales as part of redesigning and restorying buildings. Through examining how novice designers handle spatial scales in their construction of an experience to come, the paper identifies four approaches, arguing that they may serve as scale-oriented design principles for restorying a building as either more familiar or more unfamiliar, more homely ("a place") or more alien ("space"). Our argument is that these principles can be used systematically to promote this fluctuation as part of the making of future experiences of buildings and to stimulate user inclusion as a collaborate manner of future making.

Keywords: Spatial restorying, experience design, scales in design, collaborative future making

Why scales matter in the design of experiences

The purpose of experience design is to create settings, situations, processes, devices, or other entities – objects in the widest sense – that generate user experiences. Experiencing something and remembering this experience presupposes a design that deviates from prior expectations. Experience design thus invites users to pose the question: 'What's going on?' (Jantzen et al. 2011). This is done by manipulating one or more of the four dimensions on which bodily presence in the here-and-now relies: time, space, motion, and matter. Scaling is one way to manipulate the users' experience of their own presence. Scaling is extending or compressing time, enlarging, or reducing space, speeding up or slowing down motion and increasing or diminishing matter.

This article examines how the manipulation of *spatial* scales may serve to design experiences by exploring design novices' manipulation of scale in restorying an existing building.

Theoretical concepts
The inclusivist attitude

A scale relates the size of a specific object to the size of something else. Moore and Allen have identified four categories of relationship in scaling (Jantzen et al. 2011, 18): 1) The scale of an object relative to the whole, 2) The scale of an object relative to similar objects,

3) The scale of an object relative to usual size and 4) The scale of an object relative to human size.

The scale intuitively applied in perceiving an object determines how this object will be experienced. The experiential value of an object depends on whether it is perceived to correspond to what was expected or not. The more it deviates from expectations the higher its experiential value.

This implies scales in two respects. In the first place, experiential value is related to normality. High normality corresponds with lower experiential value, while low normality – i.e., irregularity, distortion, or novelty – corresponds with higher value generating positive or negative affects. In second place, the collision of spatial scales may generate surprise and even astonishment, which are tokens of an experienced diminished normality. According to Moore and Allen, this collision occurs when some scales correspond to normality, while others deviate.

Architecture that promotes the oscillation between normalcy and surprise or certainty and uncertainty is characterized by an "inclusivist attitude", because "it includes the observer by urging him or her to ask a question" (Moore and Allen 1976, 22). The design of an experience strives for the same attitude by simultaneously being known and unknown thus inviting users to ask themselves 'What's going on?' (Jantzen et al. 2011).

"Space" and "Place"

This inclusivist attitude can be promoted by colliding the two fundamental forms of spatial organization suggested by Yi-Fu Tuan (1975). He distinguishes between "space" and "place", where "place" is assigned with home-like qualities: it's familiar, stable, certain, and well known by its users. "Place" is constructed by past experiences. "Space" on the contrary, are future possibilities. It is undetermined and therefore unpredictable, unstable, uncertain, and not yet known by its users. This distinction between "space" and "place" outlines two different strategies for experience design aiming at an inclusivist attitude. The designer could either add qualities of "space" to "place"-like surroundings or s/he could add qualities of "place" to a "space"-like environment (Jantzen & Rasmussen 2014). The first strategy implies the *de-familiarization* of aspects of the well-known so everyday existence may be experi-

enced anew (Shklovsky 2012). Thus restored. The latter strategy implies the *familiarization* of aspects of the unknown to create some form of stability that may encourage users to explore those promises for future existence that "space" seems to make. Our paper will therefore study how novices apply scaling to create this oscillation between "space" and "place".

The design of the study

The novices

Our population consisted of 65 students in Communication & Digital Media at Aalborg University. They were bachelor students in their 5th semester participating in an obligatory 6 weeks' introductory design course "Experiences, time & place". The purpose of the course was to train students to design an analog and/or digital solution for a specific building. The first half of the course mainly consisted of lectures and workshops on theoretical as well as methodological topics. The theoretical part introduced basic theories for experience design. One lecture on spatiality presented Tuan's distinction between "space" and "place" (1975). At no point were the students initiated in the concept of scale. The methodological lectures introduced the students systematically to design theories.

In the second half of the course, the students did PBL-based group work on their project (De Graaf & Kolmos 2003) based on a design brief co-developed by the case-partner and one of the researchers. There were 17 groups, most groups consisted of four or five students. The groups came up with a design solution and produced a written report explaining and reflecting on the theoretical and methodological underpinnings of this solution. The solution had to relate to a design brief. All students worked on the same predefined problem.

The design brief

The case concerned the site of a former distillery in Aalborg. Most of the building's content has already been programmed. The site will consist of an art center, a hotel, several restaurants, a microbrewery, -distillery, and -chocolate factory as well as luxury apartments. But the future function of the former malt house is undetermined. This building has 4 decks and measures 3300 square meters

in sum. The lower floor is 825 square meters, its dimensions being 68 meters long, 12 meters wide, and 7.5 meters high.

Figure 1: Illustration of the malt house (Illustration by Spritten A/S)

Apart from a stairwell in one end of the building, this floor is an open space with 18 concrete columns, bearing the construction of the building. The brief for the students' projects was thus to design a proposal for this building that might add experiential value to the whole site. As a minimum, the student projects should contain a new program for the ground floor, but the other decks could also be taken into consideration. This new program should not include housing or cannibalize the programmed activities for the rest of the site.

Data analysis

We addressed two data sets: firstly, PowerPoint slides handed in by the student groups and secondly their written reports. Many proposals showed similarity in that their overall idea resembled designs that already exist in late modern "Experience City" (Marling et al. 2009) while few were unique. Applying the experiential value scale to these ideas, significantly more proposals tended towards the normality than towards the abnormality pole. This scale covered the span from the familiar to the unfamiliar: from conventional suggestions, which are common in a city landscape like cafes, lounges, music stages, etc., to extraordinary and spectacular con-

stellations. Seven proposals were close to the familiarity pole, four were close to the unfamiliarity pole, and the remaining six were somewhere in between.

The next step was analyzing how spatial scaling could help explain this distribution by scrutinizing their written reports as annotated portfolios (Gaver & Bowers 2012). This made it possible for us to comprehend the data while still paying attention to the significant decisions made within each design proposal and accompanying these with brief textual annotations as suggested by Löwgren (2013). We individually re-read our own groups' reports focusing on the role of scaling by examining how each proposal dealt with the four categories of relationship in spatial scaling (Moore & Allen 1976) and with "space" and "place" (Tuan 1975). From this, we deduced fundamental principle of Fluctuation and four design principles relating to scale: Compartmentalization, Condensation, Expandation, and Miniaturization.

Scale-oriented design principles

Early in the course, students made a one-hour tour to the site. The developer showed them around and told them how the future of each building was programmed. The last 25 minutes of the tour was spent in the malt house, on the ground floor, and on two of the upper decks. Here, the students were confronted with "space" in the Tuanian sense. They experienced the empty vastness and indeterminacy of the ground floor. The lighting and heating contributed to this impression.

Figure 2: Photography of the inside of the malt house (Photo by Søren Bolvig Poulsen)

The spatial immensity combined with the chilliness and obscure lighting was experienced on a scale from 'still alien to human existence' to 'yet infinitely open to imagination'.

The fundamental principle: FLUCTUATION

Fluctuation is the fundamental design principle when it comes to scaling in designing experiences: The inclusivist attitude invites users to perpetually shift their perspective between familiarity and unfamiliarity. Experiencing "space" as alien implies sensing it as existentially "nothing": i.e., without contact with the observer's own past and present, not only physically empty but also devoid of meaning. No story. From this perspective, the spatial design should focus on making "space" existentially relevant, which means turning it into something that could become sensed as "place". "Place" is something to feel comfortable with because it meets your expectations and affords a connection. This explains why the humanizing design efforts by many of the groups tended to turn "space" into something conventional: something more usual and even quite ordinary by applying the familiarizing strategy.

Some groups, though, came up with extraordinary design solutions that exceeded expectations and therefore could be experienced as spectacular and unique. Their point of departure was rather the openness of "space" than its alien character. "Space" was not conceived as "nothing" but as potentially "anything": i.e., open to everything. These groups' design effort tended towards turning this unspecified anything into a specified something but now specified unusual. "Specified unusual" means open to imagination and curiosity (unusual) but within a defined, closely delimited field (specified). Being "specified unusual" enables human agency, which is a prerequisite for the inclusivist attitude of posing the question, 'What is this?'. Hence, invoking a story.

Experience design could thus be characterized as a practice aimed at turning "nothing" and "anything" into something that fluctuates between the usual and unusual, between certainty and uncertainty, between "place" and "space". Successful design of experiences is neither too usual nor too unusual, but rather something that keeps this scale in check for a possible new story to emerge.

Figure 3 Familiarity. (Illustration by Stine Geipel Frederiksen, Louise Simonsen, Clara Bolther Behrens, Isabella Oddermose Villadsen and Linda Mojtehedza-deh) and Figure 4 Unfamiliarity (Illustration by Mette Vestergaard Fomsgaard, Maria Blach Rossen Bjerring, Katrine Brix Christiansen, Annemette Rasmussen and Nanna Heidemann Jensen). Illustrations illuminating the difference between the students´ "place" and "space" making.

For a new story to emerge, experience design is about challenging its users' pre-conceptions without providing easy answers (e.g., 'This is what it is'). But this deferral must be designed in such a way that the question posed – 'What's going on?' – is nonetheless manageable by presupposing some kind of familiarity embedded in what seems unfamiliar.

The principle of COMPARTMENTALIZATION

Almost all groups striving for some kind of familiarization (13 out of 14) divided the ground floor into smaller areas. We call this design principle, *compartmentalization*: the partitioning of space into smaller sections (rooms), each section typically dedicated to one specific activity. The purpose of this principle is to reduce the immensity of "space". On an abstract level, the designs came to resemble a modern, suburban home, where each room has its own distinctive function. The idea was clearly to generate "place"-like qualities. For example, many proposals included a lounge. A recurrent theme for the designs was to create "third places" or a "home-away-from-home"-atmosphere (Oldenburg 1999). One proposal designed a student workspace for group work, informal places for socializing and relaxing as well as Zen-like spaces for contemplation.

Figure 5: Principle of compartmentalization (Illustration by Emma Bollerup Christensen, Josefine Marie Bengtsen, Daniel Kaj Taylor, and Benedicte Ambæk Flach). The students often created compartmentalization by dividing the ground floor into smaller areas as seen in this illustration of the interior design for a flower workshop.

The principle of CONDENSATION

Only one group with a more conventional proposal did not explicitly apply compartmentalization. These students envisaged a wintergarden-like design with flowers, bushes, tree, trails, benches, etc.. This, too, would seem a familiar idea to most visitors. The unusual size of the ground floor was in this case not tackled by partitioning it, but by filling it with objects. We call this design principle, *condensation*: the eradication of emptiness by accumulating objects that are familiar relative to their usual size (flowers, bushes, trees) as well as the human size (trails, benches).
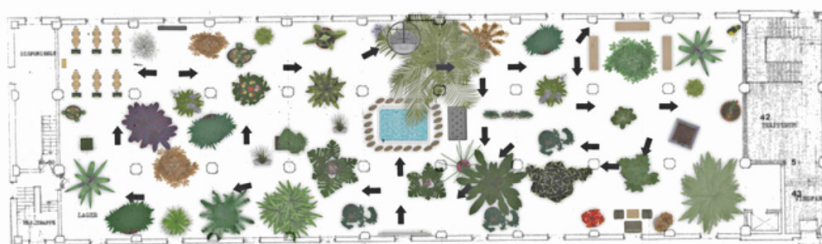

Figure 6: Principle of condensation (Illustration by Julia Juma Pedersen, Jeppe Højfeldt Jørgensen, Amanda Würtz Bunk, Ida Isager Veng Valentin, and Sander Toscano Pedersen). The students filled the ground floor to eradicate the emptiness and invoke an atmosphere of place.

Figure 7: Principle of expandation (Illustration by Rebekka Luna Risom, Marc Nielsen, Peter Dahl Andersen, and Mike Bromberg Olsen). A more unusual proposal where space is expanded beyond the physical confines of the ground floor by means of audio-visual projections.

The principle of EXPANDATION

Four designs took an opposite approach to the "space"-like qualities of the ground floor. Rather than reducing the immensity or turning the emptiness of "space" ("nothing") into something "place"-like (i.e., something more usual), these few designs transformed infinite possibilities ("anything") into something specific while maintaining "space"-like aspects (i.e., something "specified unusual"). The relative sparsity of this type of proposal does not allow for any exhaustive mapping of design principles that preserve remnants of unfamiliarity in the scaling of the design. Nonetheless, we could identify the outline of two distinct principles.

The first one operated as the opposite of compartmentalization by extending the unusual scale of the ground floor. This "space" became part of an even larger scale, expanding beyond the physical limits of the original ground floor. We call this design principle, *expandation*: its basic idea is not to rein "space" by partitioning or densifying it, but by showing that it is part of an even larger, conceivably even more uncontrollable "space". Two of the proposals used large scale audiovisual projections on the walls to illustrate this effect. In the first case landscapes and natural phenomena were projected: e.g., a mountainous area, a wildfire, or a tempest at sea (see fig. 7).

Figure 8: Principle of expandation (Illustration by Mia Ramskov Poulsen, Maja Rasmussen, Sofie Rindom, and Johannes Grunnet Sørensen). A rather unique proposal where the space was expanded by creating a centered shaft through the entire building allowing for a downpour of water.

These projections extended the immensity of "space" by making it part of a larger scenery. It became a "place" in "space" either as some privileged vantage point from where the distant landscape could be contemplated and its details scrutinized or as the center in a vertigo, the last point of stability in an engulfing or enraging storm nearby. This overwhelming effect was even more pronounced in the second case, where the scenery was neither at a safe distance or threatening close. Inspired by *Carrières des Lumières* (Les Baux-de-Provence, France), the visitor was immersed in the audiovisual installation, which dramatized the life of workers at the former distillery (see fig. 4). The projections were not only on the walls but also on the ceiling, the pillars, and the floor. The projections seemed to encapsulate and penetrate the spectator by submerging them in the audiovisual universe. Abstract "space" became an actual place where spectators were made aware of their own bodily presence, their existence in a here-and-now – a "place". In these proposals, forces of nature and the lives of others were made sensually palpable. This purpose was also evident in the third proposal, a water exhibition, which comprised the whole building. The centerpiece of this design was an installation descending from the roof to the ground-floor in the middle of the building, "Nedfaldet" ("the Downfall" or "the Downpour").

This installation required big holes in the ceilings of each floor, thereby connecting and extending the experience of the ground floor to potentially encompassing the whole building.
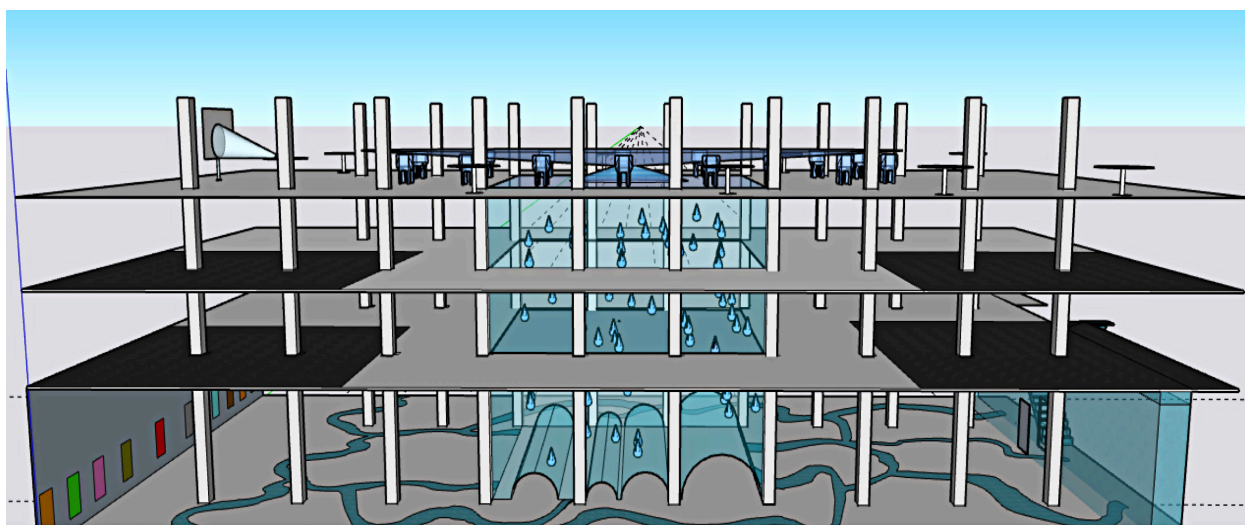
In this case, the unusual scale was expanded, invoking curiosity about the activities on the upper floors as well as beneath the fall.

The principle of MINIATURIZATION

We found one example in the design proposals of another design principle, *miniaturization*. The working of this principle is comparable to condensation in that it neither partitions nor enlarges "space", but rather veils it by using objects as props for creating a different scale. Whereas condensation blurs the emptiness of "space", "space" in miniaturization becomes the frame for magnifying the human body. This is the attraction of Legoland and similar miniature scales. Objects that normally appear large compared to the human body (houses, roads, trains, etc.), suddenly appear smaller and therefore more manageable. One of the proposals, "Play around the world", utilized this principle by presenting a diminished and radically edited version of the world. Only some few highlights from across the globe were presented, and this was done in a starkly reduced form. The world was compressed to fifteen locations, France was reduced to the Eiffel Tower and Greenland to an iceberg, both objects miniature representations of the real thing (figure 9).

Figure 9: Principle of miniaturization (Illustration by Julie Bo Jonsson, Emma Kjærsgaard Worup, Henry Phong Pham, Peter Pjengaard Pedersen, and Nicklas Johannes Holk). In the proposal of Play around the world, the design reduces space in an unfamiliar way with the effect of magnifying the human body.
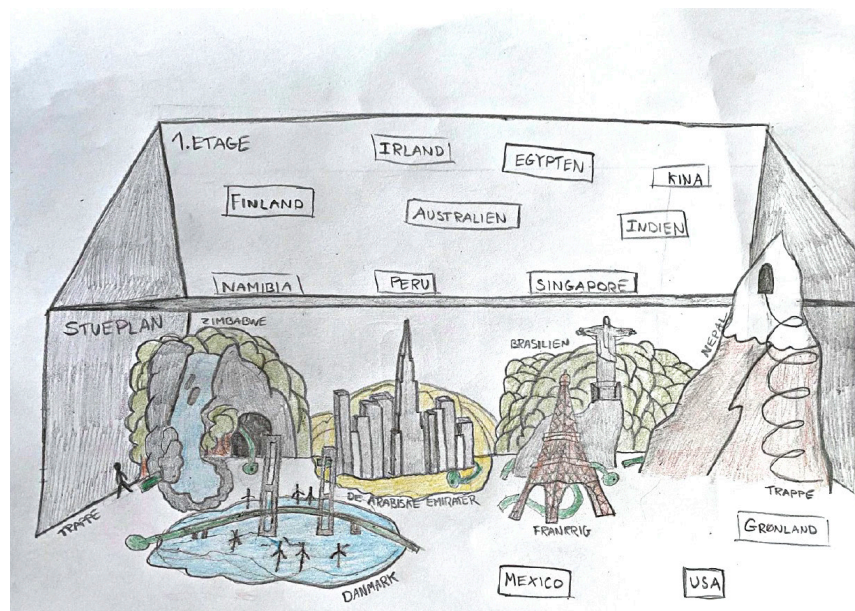
This is mentally gratifying because it appears to make human agency the locus of control over objects that are usually difficult to manage. At the same time, the illusion is apparent, thereby creating a doubled perspective: the world that is presented to me, is virtual and unreal, but I, in my bodily existence, am present in this world – and I am real. I am true to size, and even though the surrounding "space" is oversized compared to me, the objects contained within it are distinctly undersized.

Two strategies, four principles

Fluctuation is the fundamental principle of experience design. Experience design should ideally strive for an oscillation between perceptual uncertainty and some clearly perceptible order. Two different strategies help generate this oscillation: familiarization and de-familiarization. The four additional scale-oriented principles are ways to either familiarize or de-familiarize a design proposal. Familiarizing principles aim at transforming "space" into "place": i.e., to make something immense and empty – a nothingness, alien to human existence – more homely. *Compartmentalization* and *condensation* make "space" more usual. They adapt space to a human-like scale, thereby enabling the observer to relate it to his or her own existence. This generates some form of perceptual stability. De-familiarizing principles, on the other hand, prolong perceptual instability by keeping the spatial lay-out unusual or by tampering with the relationship of objects to the human size. These principles aim at turning the infinite possibilities of "space" – being potentially anything – into something specific, but still unusual: something "specified unusual". De-familiarizing principles produce a doubled perspective of simultaneous certitude and incertitude, of bodily reality and virtuality. The principles of *expandation* and *miniaturization* both pursued this de-familiarizing strategy.

Of these four principles, two of them operate on the immensity of "space". The first one, *compartmentalization*, reduces this immensity to smaller, more usual parts. The second one, *expandation*, enlarges the dimensions by simulating that this "space" is but a part of a gigantic immensity transforming the original "space" (a whole) into a "place" amidst a much larger "space" (a new, even more gigantic whole). The two other principles operate on the emptiness of "space". The first one, *condensation*, fills "space" with objects of their usual size that by their sheer mass veil the vacancy of "space". The second one, *miniaturization*, fills space with objects of an unusual,

much smaller size, thereby enlarging the appearance of the human size and making "space" a habitable "place".

The logical relationships between these four principles is summarized in the following table that shows the similarities and the differences between each of them:

		Operating on the immensity of "space"	Operating on the emptiness of "space"
Strategy of familiarization	Fundamental principle of Fluctuation	Principle of Compartmentalization	Principle of Condensation
Strategy of de-familiarization		Principle of Expandation	Principle of Miniaturization

Table 1: The four restorying and scale-oriented design principles.

At first glance, opting for de-familiarizing scale-oriented principles might seem the obvious way for experience design to go. But scale-oriented principles based on familiarization may also produce successful designs of experiential value. Manipulating spatial scales is just one way of upsetting expectations. Tampering with the location, the material qualities (with for example their substance and weight), the habitual sequence, the accustomed order or the ordinary movement of objects may also make these objects seem unusual, resulting in an oscillation between familiarity and unfamiliarity.

On the other hand, this oscillation requires some stabilizing counterbalance when applying de-familiarizing scale-oriented principles in experience design. The "specified unusual" is still in need of some recognizable features to be manageable. In our students' more extraordinary proposals, this counterbalance was typically created by their selection of objects for adorning or dressing-up the spatial design. These objects were easily recognizable for what they were: e.g., bushes and benches were of a shape and scale like shrubbery and furniture in the 'real' world (see fig. 7). They thus prevented the design from becoming altogether 'alien'. This highlights an important point in the inclusivist attitude: this attitude is promoted not by transgressing all expected scales, but only by violating some of them.

CONCLUSION

The purpose of this paper has been to identify how spatial scaling might be used to restory an environment. By studying the work of design novices, we analyzed how scaling was applied in constructing a coherent proposal and learned about the natural way in which scales are utilized when the task of managing space for the design of future experiences must be solved. Five principles emerged from our research, which could provide a systematic method for restorying a building as either more familiar or more unfamiliar, more homely ("a place") or more alien ("space").

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