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Abstract

Spatial perception is a vital skill for architects. Architectural pedagogy methods naturally focus on its development, but they rely heavily on abstract notions and exercises. In most schools, thinking in, of and with space – is a geometrically arid, grid-dependent affair. But spaces aren't necessarily places - defined by experiences, memories, individual and collective meanings. Spatial intelligence should be complemented by spatial sensibility, and both should be equally important in architectural education. This paper represents a case study of cultivating these skills in architecture students, through studio projects designed to raise their receptivity to the context and socio-cultural dimensions of the site.

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1. Introduction

Of increasing importance in contemporary society, spatial intelligence is the bread and butter of professions such as geophysics, engineering or architecture. Broadly defined, spatial intelligence represents the knowledge, intellectual predispositions and aptitudes which allow the human mind to comprehend and work with the concept of space. Problem solving and decision making based on the application of the aforementioned knowledge and aptitudes can be construed as spatial thinking – the ability to grasp, modify or navigate through the real world, but also that of mentally constructing (through abstract manipulation of the three dimensions) spaces which have yet to become reality. This type of thinking entails the mastery of abstract concepts (space, scale, direction), the ability to work with them using coded means of representation (plans to scale, for instance) and acquirement of reasoning processes, such as the geometric method of finding the volume resulting from the intersection of two cones.

In most architecture universities, however, the cultivation of spatial intelligence, the actual teaching, guidance and supervision of students as they progress from novice to advanced spatial thinkers relies heavily on abstract notions and exercises, and thinking *in, of* and *with* space is a conceptual, geometrically arid, grid-dependent affair. As crucial as it is, spatial intelligence only equips students with the professional knowledge and aptitude to produce spaces which are feasible and sound in a concrete, geometrical way. But *spaces* aren't necessarily *places*, which are defined by sensory experiences, memory, and a host of individual and collective meanings stemming from sources outside the realm of space as intellectual, Cartesian abstraction. Since architecture strives to be much more than the mere physical embodiment of abstract spatial notions – and, indeed, most architects try to create places which

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engage people in meaningful *experiences* – it would seem paradoxical that, in the education of future architects, such emphasis is placed on spatial intelligence alone.

There are multiple reasons for this discrepancy, ranging from the mind-body disconnect which arose during the Enlightenment, when architecture teaching was deeply steeped in the cold logic of geometrical and mathematical notions, and all the way to the disquieting degree to which virtual experiences and web-accessed information have lately supplanted knowledge gained through first-hand experience. When coupled with the alarming pace at which technology and the virtual have begun to displace reality and the immediately physical, it becomes obvious that space-making and architecture have become matters of visual consumption rather than bodily experience.

2. Spatial sensibility – a working/tentative definition

In order to flesh out a set of basic principles which could be applied in architectural education so as to stimulate spatial sensibility in students, we must first define this skill as something not opposed, but rather complementary to spatial intelligence. We would argue that spatial intelligence should be complemented by a spatial awareness and sensibility derived from the experience of the body in space, and that architecture teaching should focus on equally developing both skills, especially at the beginning of the student's education – years 1 to 3 of study.

But what exactly is spatial sensibility? The idea permeates writings coming from multiple fields: philosophy, anthropology, architecture, sociology. For instance, Maurice Merleau-Ponty makes a compelling argument for *embodied experience*, a means of interacting with the world based on knowledge gained through first-hand, bodily experience. “We are also inhabited by space, our bodies filled with dynamic cellular processes and atoms made up almost exclusively of space”, he writes in “Eye and mind”. Our way of being in the world is a continuous transformative state – we redefine ourselves constantly, in relation to our surroundings, which we in turn create, shape or alter through interaction and experience. When it comes to architecture, embodied experience means that we relate to it with all our senses deployed in motion, so that qualities thought secondary by Cartesian tradition – colour, texture, the sparkle of sunlight on a windowpane, the echo of footsteps – become primary to spatial perception. Then, spatial sensibility can be defined as the unselfconscious awareness of the body in the world, our intersubjective interactions with it, a receptivity to the transient amalgam of sensory cues which make up the sense of a place at a given moment in time.

Before they begin their architectural education, young space-makers work from a place of innate spatial sensibility. They have a gift for immersing themselves completely in the spaces they create, and when they create, they instinctively turn to their own spatial experiences. In “Street corner theology”, Charlie Simic perfectly captures this state of creative exploration: “The disorder of the city is sacred. All things are interrelated. As above so below. We are fragments of an unutterable whole. Meaning is always in search of itself. Unsuspected revelations await us around the next corner.” But architecture teaching has a dual nature: it is largely practice based, while also requiring the systematic assimilation of a great deal of abstract knowledge. This accumulation of abstract knowledge, oftentimes over-emphasized in both coursework and design studio, leads to the steady erosion of the student's spatial sensibility. Moreover, working almost exclusively with the abstract attributes of space and relying mainly on spatial intelligence can result in a limitation of the creative design process to the formal language of architecture (composition, proportion, geometry) and to the bidimensional world of conventional representation – be it on paper or on the computer screen. Therefore, the teaching of architecture should also take into account developing a strong sense of spatial engagement in architecture students, a capacity to relate to existing and imagined spaces through spatial sensitivity.

The projects discussed below are meant to illustrate an approach to stimulating spatial sensitivity and linking it to spatial intelligence in a coherent whole. While still a work in progress, amended and made better every year with the help of my students, I have applied this method in my design studio at the “Ion Mincu” University of Architecture and Urbanism. Year after year, the students grow more confident in their readings of existing spaces and in fashioning new ones according to their own embodied experiences.

3. Case studies

3.1. Digital art gallery

The project theme “Digital art gallery – public space – urban experiment” challenged 2nd year students to imagine an exhibition space for digital art pieces of varying dimensions, shapes and means of expression. Working with a context rich in information, the general approach to the theme was a multi-layered one. The actual design process was, intentionally, pluridirectional, with the complexities of the site waiting to be gradually discovered. At first, the students were made aware of the means through which to bodily explore the diversity of the site, focusing on simultaneous, overlapping perceptions – an attitude equally based on intuitive experience and comprehension. As a result, the project solutions present gestures, record movements, various trajectories and paths around and across the site – in a nutshell, give an account of the human activities unfolding under the specific conditions of the site.

In other words, the site – a part of the city – is a replica of urban society at a diminutive scale, framed by architecture, ruled by the tension between sets of relationships: material – pattern, human psyche – human body, memory – history. The reading of the site is inherently linked to the movement of the observer; that movement occupies the entire space, and is made apparent in the projects presented below by highlighting physical or virtual links between pairs of points situated on the perimeter of the site. Once recorded through drawings, text, photography and cartographic fragments, these elements are given - with the imperfections characteristic of the early stages of study - a spatial expression indissolubly linked to each student’s embodied experience of the project’s site.



Figure 1. Andrada Bulai – 2nd year – digital gallery project

The solution devised by the student seems a tectonic extension of the site through an overlay of concrete slabs, forming two different types of juxtaposed geological profiles: one partly subterranean - with a strong speleological reference (housing the gallery proper and a small café), and a street-level space – basically, the reverse of the underground cave-like space – a stylized crater, whose extremities take the shape of tiers where the public can sit and relax. The tight connection between shape, material and structure is as clear as the tectonic source of inspiration for the gallery’s volume, but with a slight, creative licence: the curvature of the superior slabs calls to mind a ductility which is more organic than mineral.

3.2. Low-rise collective housing

For the 3rd year students, the second project – Housing vs. Public space – with a site located at the intersection between Dacia Boulevard and Toamnei Street, was an unexpected occasion for urban experiments. In addition to the study of collective housing and working through the basics of housing design, the studio explored the gradual transition between the private space of the dwelling to the public space of Dacia Boulevard – the result of a regulated urban operation, whose unity and rigour blend with the smaller, modest scale and specific traits of the residential urban tissue characteristic of Bucharest at the end of the XIXth century. By paying special attention to the building-free spaces of the housing complex, the students put forward a series of pedestrian routes, systems of courtyards (interior or street-facing), green spaces with generous vegetation, and semi-private spaces meant for

leisurely activities or commerce. Due to the spatial imprint and the cohesive character of the area, to which the students were very receptive, most solutions were of the low-rise, high-density variety, successfully integrated into the boulevard's profile.

After initial explorations of the site, resulting in drawings, collages, photo-montages and even vignettes acted out during studio sessions, each student was encouraged to come up with a keyword concisely resuming both their individual reading of the site characteristics, and the core concept of their project: cohabitation, re-weaving, permeability, parallelism, etc. The keyword proved to be an effective instrument in focusing an assumed design direction based on a synaesthetic site profile of the site, and avoiding departures from the concept. Based on this profile, the students devised correct, coherent and architecturally expressive answers to the requirements of the theme and of the housing program. The projects also offered different perspectives on the public-private rapport, by enriching the housing complex with public and semi-public spaces meant to stimulate social activities, varied perceptions, and a certain aesthetic and functional flexibility.

Oana Abălaru's project is based on a sensorial reading of the site, weighed against urban/architectural characteristics. The solution represents a sensitive illustration of cohabitation as human experience and state of mind, integrating the residents of the housing complex within the broader community of the area, and the new constructions themselves within the built context. Overcoming the simple mimesis of architectural shapes, the project interprets the site's spatial typologies in a new formula, created around key-elements in space articulation (passages, loggias, porticos) and existing spatial tendencies – such as the subterranean extension of inhabited space. Another interesting feature is the introduction of a pedestrian route as regulating element of the ensemble, which is unveiled progressively, and the subtlety of the public-private transition – from the orientation of public functions towards Dacia Boulevard to the intimacy of the private gardens, unfolding towards Toamnei Street.

Raul Tătulescu's project approaches the architectural program of collective housing from the point of view of the social group, trying to stimulate community spirit without neglecting the need for intimacy and individuality. The volumetric composition is a simple one – a few regular volumes, placed so as to create public-accessible alveoli toward Toamnei Street and Dacia Boulevard, and a series of semi-private green and leisure spaces. Dematerialization on the vertical axis is enhanced by the use of a platform, raised 1.20m from ground level and sporting most of the ensemble's leisure spaces. It also allows easier access to a partly underground level, and serves to delimit areas meant for social activities. Commercial, service and playground spaces line the various pedestrian routes available on the platform. As far as architectural expression is concerned, the simple volumes are broken up by shifts of plans (balconies, loggias, canopies) which induce a sensation of façade vibration and allow each dwelling space a distinct, individual expression.

4. Developing spatial sensibility in the design studio

Still in the making, the method comprises three groups of activities – *sensing*, *making*, *showing* – driven by and named after the simplest, most evocative human actions which can adequately define them. It is important to note that these activities do not supplant, but rather guide, supplement or overlap the habitual methodology of design studio teaching.

Sensing deals with perception and spatial situatedness. Students are encouraged to read the site based on the first-hand experience of their bodies moving through the designated project environment, to develop a sensorial relationship with it, rather than relate to it solely through plans, photographs or the computer screen. This is achievable through a number of on-site exercises which give precedence to experience and site-specific stimuli over the language used to describe the bidimensional image of the site: building mood / sensation 'maps', a site profile based on those second-hand qualities which defy verbal description, etc. *Making* refers to design from the point of view of complete spatial engagement. In addition to thinking about the spaces they design, students are challenged to also simulate as many of their sensorial qualities as possible. For instance, with the aid of simple 1:1 models made from a few painted cardboard sheets and taken out onto the sun-drenched university terrace, the students were able

to assess the effect of sunlight and shadows had on various sections of their buildings, see how they visibly transformed spaces, and make the required modifications where the achieved image/sensation did not suit the one they had imagined. Model making is a great tool for teaching design as creation of embodied experiences, rather than bland, 2d representations of those experiences. Working with a wide range of materials – mousse, cardboard, but also clay, plaster and glass – can give students a better sense of textured surfaces and their inherent qualities.

Showing is the extension of traditional architectural representation, comprising techniques or associations of techniques meant to overcome the lack of depth present in plans, sections, axonometric drawings, and even perspectives, which can simulate it, but cannot convey the rich sequentiality of moving through a certain space. Students are encouraged to show the spaces they create through a variety and mixture of media, from collage/decoupage to sketch-photographs, and always reference their own bodily experience in extant spaces or project them onto imagined spaces. *Showing* is also concerned with secondary, unquantifiable qualities (the warmth of a wooden bench in the sun, the shifting kaleidoscope of shadows thrown by windblown leaves on a daubed wall), with giving a sensory account of spaces-to-be. The sensing-making-showing approach allows students free range of motion in terms of design and expression, connects them with their innate spatial sensibility and teaches them how to use it in order to create spaces which aren't merely functional and comprehensible, but also evocative and poetic.

5. Conclusions

Spatial sensibility is an important didactic instrument in the teaching of architecture – not as a replacement, but as a complementary strategy to traditional design teaching methods. Defined as the unselfconscious awareness of the body in the world, spatial sensibility can guide students towards creating spaces as embodied experiences, rather than abstract constructs. Ideally, architectural design is a balanced blend of spatial intelligence (responsible for the soundness, coherence and cohesion of a projected space) and spatial sensibility, which confers it a human, relatable and poetic dimension. Given the propensity of the curriculum in most schools to overemphasise spatial intelligence, this paper is an invitation to explore the benefits of spatial sensibility.

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