In Motion: Exploring Context within the Design Process

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Growing research in the field of psychology confirms the intuitive knowledge held by many creatives: the movement of the body opens pathways for the mind and allows for a deeper understanding of our surroundings. Within contemporary practice, the understanding of context is an essential facet of the design process, and one which is challenging to instill in students' processes and priorities throughout architectural education. In search of more immersive and effective methods to explore context as part of the design process, this paper explores intuitive knowledge and developing psychological research to unearth opportunities for the deeper exploration of context through movement. Three activities / assignments, each intended to foster students' engagement and understanding of context, are drawn from recent design studios and examined to determine why active approaches are beneficial to the designer and the process.

INTRODUCTION

Growing research in the field of psychology confirms the intuitive knowledge held by many creatives: the movement of the body opens pathways for the mind and allows for a deeper understanding of our surroundings. This connection holds great potential for architectural design and education, with opportunities for movement to bolster exploration, learning, and the creative process. While the connection between the hand and the eye has received its due attention, the use of the entirety of the body as an active tool for design and the study of context has long been often overlooked, despite its potential.

Within contemporary practice, the understanding of context is an essential facet of the design process, and one which is challenging to instill in students' processes and priorities throughout architectural education. Context can play varying roles in the design process, often tied to the agenda or interests of the designer – yet, most educators would agree to the importance of teaching students why, how, and when to gather information about the places in which they work. Underlying this belief is a type of contextualism – one which emphasizes an understanding of our surroundings to appropriately, ethically, and aesthetically create a design response for a specific situation.

In search of more immersive and effective methods to explore context as part of the design process, this paper explores intuitive knowledge and developing psychological research to unearth opportunities for the deeper exploration of context through movement. Three activities / assignments, each intended to foster students' engagement and understanding of context, are drawn from recent design studios and examined to determine why active approaches are beneficial to the designer and the process. For the purposes of this article, context is broadly defined as the physical, cultural, social, and ephemeral facets of the environments in which we work. In the highlighted examples, the intentionality by which movement is prescribed varies, and the depth and focus by which context is investigated shifts based on the experience level of the students and the goals of the design project. This review, paired with relevant research, highlights opportunities for designers and educators to more fully leverage the potential of the body to explore context and validate the time and effort required to undertake such efforts.

INTUITIVE KNOWLEDGE

> "To know what you are going to draw, you have to begin drawing."
>
> — Pablo Picasso

The connection between the body and the mind has been long understood, tracing back to ancient times, and carried forward into modern creative practice. Aristotle, the famous Greek philosopher from the third century BC, harnessed physical movement and the mind-body connection to spur creative thinking. Capitalizing on the design of Greek architecture with its many colonnades, he founded the Peripatetic School, in which he lectured and conversed while walking. The name was derived from the ancient Greek word 'peripatetikos', meaning 'of walking' or 'given to walking about, esp. while teaching or disputing'.[1] Rebecca Solnit, in her book *Wanderlust: A History of Walking*, connects this lineage to more contemporary writers, such Rousseau, Thoreau, and Wordsworth, who used walking in the landscape to draw words onto the page. "Walking seems to have become Rousseau's chosen mode of being . . . As a literary structure, the recounted walk encourages digression and association . . ."[2] Over a century later, James Joyce and Virginia Wolfe developed the style of 'stream of consciousness' with

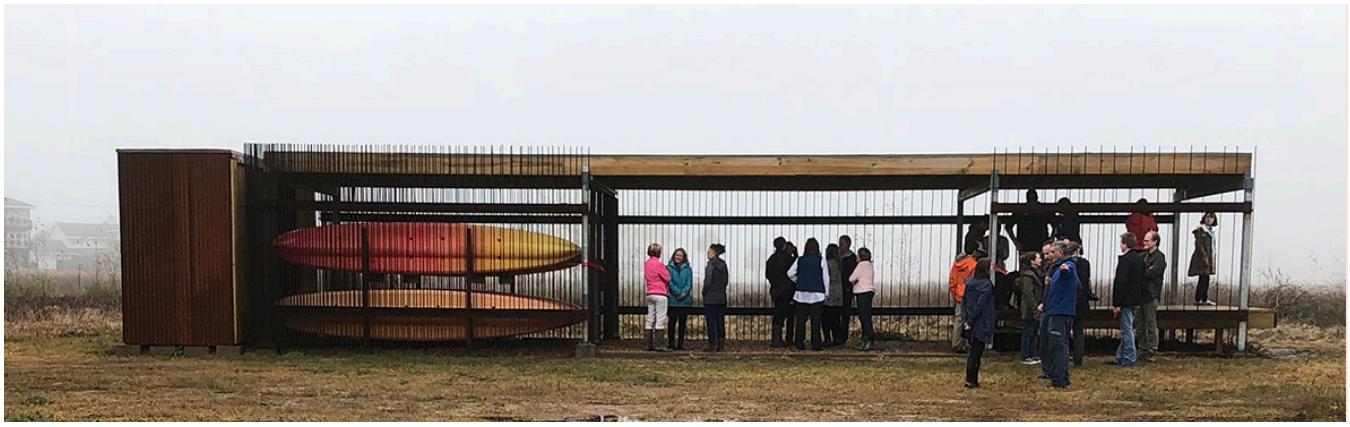

Figure 1. STORE provides shaded teaching space and storage for Artist Boat's educational programs. Image credit: Gulf Coast DesignLab.

their ideas "unfold[ing] best during walks."[3] To Solnit, "Walking . . . strikes a delicate balance between working and idling, being and doing. It is bodily labor that produces nothing but thoughts, experiences, arrivals. . . ."[4]

Within the field of architecture, research and writing on the movement of the body as a tool in the design process has been confined to a few areas of interest. Walking is one area, yet its potential within contemporary design is often overlooked. Architectural educator Ben Jacks of Miami University (Oxford, Ohio) explores the practice of walking, specifically "sighting, measuring, reading, and merging" in his article "Reimagining Walking: Four Practices."[5] Jacks promotes its value to the designer: "Only by walking the land, fully engaged and immersed as we read carefully and deeply, can we truly know a place. Thought of this way, the walking practice of reading involves data collection and assembly, interpretation and representation, and imaginal fictions."[6] In addition to the rhythmic movement of feet, the connection between the hand and the eye is one facet of the mind-body connection that has been intensely studied by design and arts educators and its lessons often applied. As explained by Juhani Pallasmaa, "The hand grasps the physicality and materiality of thought and turns it into a concrete image. In the arduous processes of designing, the hand often takes the lead in probing for a vision, a vague inkling that it eventually turns into a sketch, a materialization of an idea."[7] Consistent with Pallasma's thinking, there is a general understanding among architectural educators that the movement of the hand, such as sketching or construction of a physical architectural model, can ease the flow of ideas and raise the awareness of craft in our work.

DEVELOPING RESEARCH ON THE MIND

> "A creature didn't think in order to move: it just moved, and by moving it discovered the world that then formed the content of its thoughts."[8]
>
> — Summation of the work of Andy Clark, Professor and leading expert in mind extension

Consistent with our intuition, new science acknowledges the power of the body in motion, working with the brain, to take in complex environments. Cognitive Psychologist and Professor Barbara Tversky explores these relationships between the movement of the body and spatial thinking in her 2019 book, *Mind in Motion: How Action Shapes Thought*, making developing research on the subject accessible to a layperson audience. She describes the function of the brain and its many neurons, connecting how we navigate space and how we think. Parallel to internal thinking, she equates gesturing with the hands as a way to work through ideas outside of the body, especially complex or spatial ideas.[9] She vividly highlights the many phrases we use to talk about ideas, such as we: raise them, pull them apart, turn them upside, and push them forward. With spatial thinking preceding the evolution of language, these phrases exhibit how our engagement with ideas is inherently spatial.[10]

In the subsequent sections of this article, applicable research explored by Tversky, in her book and recent interviews, is connected to architectural design, exploring why and how movements of the body bolster the design process and the understanding of context.

EXPLORING CONTEXT

Within the contemporary design studio, the construction of assignments to foster deep learning and engagement with context is a goal for many designers, yet not without challenges or risks. There is a delicate balance between too little or too much context. When information is gathered and/or received in excess of a designer's capabilities, they can become overwhelmed, causing the design process to be stunted or driven solely by context. Yet, omitting or overlooking facets of our environment can also lead to uninformed projects and missed opportunities for learning.

Figure 2. Students participate in a wetlands tour by kayak. Image credit: Gulf Coast DesignLab.

Below, three activities and/or assignments from architectural design studios are paired with relevant psychological research to yield lessons for practice and education. As a series, the analysis provides applicable knowledge to spur the construction of more immersive, active experiences, and therefore to deepen the knowledge of architectural context's impact on the design process.

KAYAK EXCURSION

The Gulf Coast DesignLab, led by veteran educator and architect Coleman Coker of the University of Texas at Austin, immerses students in the Texas Gulf Coast, an area of great beauty, yet under tremendous pressure from frequent hurricanes, wetland degradation, and new development. This context challenges students to rethink their approach to site and context, as they consider the climate crisis and their social responsibility. Each semester, students work with a non-profit or public agency to design and build small structures that support local environmental education efforts for K-12 students, individuals with disabilities, and the public. Students are immersed with the clients in the landscape in which they work, taking the opportunity to see first-hand where and how they approach environmental education.

At the start of each semester, students travel from Austin to the Texas Coast to take part in the educational experiences that future users of their architectural designs will also undertake. Led by their clients, students venture on active explorations to learn about the specifics of their project site, the broader environment of the region, and the daily activities of their clients and future users. In recent studios, students have planted native grasses, assisted with clean-ups after damaging storms, constructed oyster shell barriers, and camped on the beach. As one GCDL alumni describes, structured activities and personal exploration shape the students' experiences: "The landscape of the Gulf Coast materialized in so many different forms over the course of the studio… guided tours at the UT Marine Science Institute to understand the usefulness of oysters, sitting in the dirt for an hour to document my perceptions, my discomfort through sketching and writing, sliding down sand dunes and waking up in a sand storm on the national seashore, swimming in bioluminescent plankton and then trudging through a sulfury marsh . . ."[11]

In Spring 2017, GDCL students collaborated with Artist Boat, a Galveston-based non-profit educating young people from the region. With a focus on middle and high school students from Houston's inner-city neighborhoods, kayak excursions provide an immersive experience for participants and have become central to their youth programming. To support this program, GDCL students were challenged to design a shaded gathering space for 25 students and storage space for 16 kayaks (Figure 1). On their first visit, GDCL students were led by Artist Boat staff on a kayak excursion of their own through the wetland setting (Figure 2). During the adventure, students lifted and carried equipment, entered and exited their kayak within the narrow channel, paddled with the group through the coastal wetlands, and stopped at key points to listen to environmental educators discuss the natural setting.

As GCDL students prepared and took part in the kayak excursion, their minds and bodies were learning through motion. The activity tapped into their brains' 'mirror neurons', also referred to as 'motor resonance'.[12] A research study focused on dance illustrates the power of 'mirror neurons' to connect physical activity with this type of learning. Videos of ballet and capoeira dance movements were shown to experts of ballet and capoeira, along with non-experts. Brain activity of the mirror system was measured in the 3 parties, showing all viewers brains were activated when watching these movements. Yet, the most activity was seen in the brain of the viewers who were also experts in the movements being viewed. These experts more fully embodied and understood the movement, due to their own past performance.[13] As Tversky explains, "Our experience performing specific actions modulates our perception of the same actions performed by others."[14] This learning by doing brings benefits to the design process. In contrast to watching others kayak, GCDL students, who took part in the kayak excursion, more fully understand the activity of kayaking and its many intricacies. When referencing their memory and/or watching others kayak in the future, research indicates the experience will more deeply resonate within the students' minds, and therefore, bring a more detailed understanding into the design process.

Figure 3. The simple tool, an oversized measuring stick, provided a constant within a series landscape photographs and increased their capability to measure during the extended site visit. Image credit: Jeff Carney.

By traveling into the wetlands, students also gathered information through their five senses to compose a more complete view and memory of the experience. Citing an example of those born without sight to successfully understand and navigate space, Tversky confirms the value of multi-sensory experiences like this one. She explains, "Space seems to be the confluence of many different senses, not just vision. . . . and there are places in the brain where they coincide, collide, and interact."[15] As described by one GCDL alumni, "Sensuous engagement with a wetland--hearing the birds, feeling the wind, smelling the water and plant life -- is much more effective in creating advocates for wetlands, because there is an important set of embodied experiences that are being lost, as they are compromised. Not just a set of cerebral data points. I think this was a lesson I really took to heart."[16] For this student, the kayak experience provided a deeper understanding of the context, while fostering appreciation for the natural environment and an experience that may not be available in the future.

DEVELOPING A TOOL

In Fall 2009, Louisiana State University Landscape Architecture students spent the semester studying the international boundary between Texas and Mexico. Jeff Carney, who led the studio, described the border as "a container, a deterrent . . . and at the same time a crossroads, something to overcome, an entryway." The students spent one week surveying the boundary from Brownsville to Laredo, a road trip of sorts, leading to designs that speculated on the future of the border along the Lower Rio Grande Valley.

Over the extended site visit, students were challenged to carefully craft an approach to documenting the landscape. The studio divided up into teams of three or four to: develop a methodology, a tool to assist in the process, and their route of travel. Captured in Figure 3, one team designed an oversized measuring stick, twelve feet long and composed of segments of PVC pipe painted red. Knowing intuitively that memory alone would not allow them to recall specifics or make comparisons, the students inserted the stick and their bodies into a series of photographs, bringing a known measure to unfamiliar places.

This design example links psychological research on perception with our common reliance on vision in context analysis. Studying perception, the work of Jerome Bruner and Mary Potter, Harvard researchers in the 1960's, sought to understand why the viewing of blurred images of everyday objects caused delayed recognition when the images of the objects came into focus. They found viewers formed initial hypotheses when viewing the images in a blurred state, which then impeded the identification of the object when the image was brought into full focus.[17] Tversky explains, ". . . we have the impression that we are taking in a vivid, clear, coherent, and complete image of the world and that in fact we aren't. . . . The mind can override perception."[18] In essence, the mind forms a sort of bias against other explanations, which challenges the viewer to clearly and accurately perceive what is in front of them. In this example, the measuring stick exemplifies how we can use design to overcome viewers' assumptions and preconceived notions to more fully understand our environments.

In addition, research in mind extension also sheds light on the mental benefits of tool use and the learned expansion of our physical capabilities within the design process. Andy Clark, Professor and expert in mind extension, believes the difference between ourselves and other species is "our heightened ability to incorporate props and tools into our thinking, to use them to think thoughts we could never have otherwise."[19] Our smart phones serve as a vivid example of this tool use, allowing the mind to perform many functions it couldn't otherwise, such as mapping, quick calculations, and memory recall. Tools also help us accomplish tasks that our physical bodies could not effectively perform on their own, such as gathering leaves with a rake or swimming quickly with flippers. Through the use of tools, we learn their applicability and improve our use. As Tversky describes, "The general finding is that extensive practice using tools enlarges both our conscious body image and our largely unconscious body schema." To illuminate this idea, Tversky humorously points to those who bump into others with their backpacks. These individuals have not had enough experience with these carrying tools to have mapped them into their body schema and can anticipate their impact.

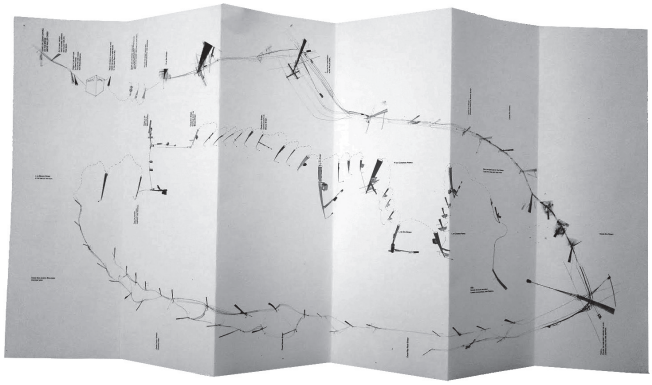

Figure 4. Tracing electrical lines throughout downtown Austin, this 'walk drawing' by University of Texas at Austin Graduate Student Molly Spetalnick explores the relationship between history and infrastructure. Image credit: Molly Spetalnick.

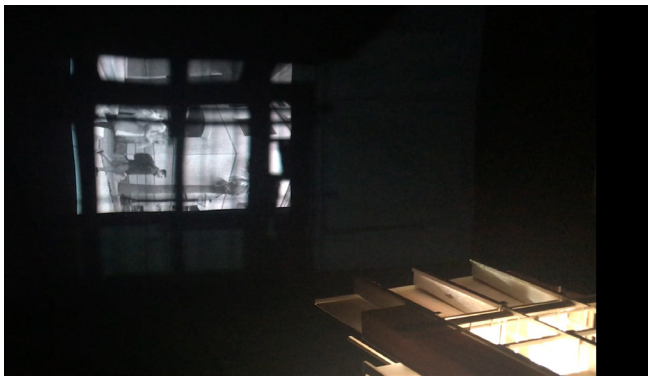

Figure 5. For University of Florida Student Agostina Portabales, the 'walk drawing' led to a cinematic reading of the city and culminated in a film capturing urban movement. The film was projected within and through the student's design for a 'Museum of Movement', celebrating motion at a variety of scales. Image credit: Agostina Portabales.

As Tversky describes, "The general finding is that extensive practice using tools enlarges both our conscious body image and our largely unconscious body schema."[20] To illuminate this idea, Tversky humorously points to those who bump into others with their backpacks. These individuals have not had enough experience with these carrying tools to have mapped them into their body schema and can anticipate their impact. [21]

URBAN WALKING

Aligned with ongoing research on walking, I, the author, developed a series of design studios focused on movement within the urban landscape, bringing themes of recreation, transportation, and urban infrastructure to design problems set within the public realm. The context of this studio series can be broadly defined as the urban cores of contemporary American cities and assumes a range of inhabitants, including local residents and tourists. For example, one introductory graduate studio focused on modes of active transportation, culminating in the design of a new Visitor Center for Downtown Austin with bike parking for 5,000. Students explored walking and biking for recreation, exercise, tourism, and education, considering tourists' short-term visits and locals' daily commutes. Another studio for third year undergraduates investigated itinerary and public infrastructure through the design of a Museum of Movement with Transportation Hub for Charleston, South Carolina. The designs included spaces for gathering, learning, viewing, resting, and circulating. The Museum, sited within the historic core, built upon the local transportation history, while providing a much-needed public space to accommodate a range of transportation options.

To enter into these dynamic contexts and movement-based programs, walking was a prescribed tool. A series of short assignments and explorations on foot fostered experiential readings of the city. Both active and conscious, experiential and ephemeral, walking promoted an intimate exploration of place, due to its slow speed, freedoms, and point of view. Walking for prescribed periods of time, such as a 15-minute walking radius, challenged traditional metrics and experience over a linear distance. Executing the Situationists' 'derive' brought up questions of time, direction, and purpose to travel.[22] Sketching, writing, photography, and short digital videos captured their experiences for later reflection.

The series of short exercises culminated in the design of a 'walk drawing', a detailed drawing exercise that integrates context analysis with visual communication (Figure 4). Based on their initial walking experiences and personal interests, students design a scripted walk, which has a clear thesis and agenda, begins at a prescribed point (their future project site), and lasts thirty to sixty minutes. The walk must be replicable by the public, yet it does not assume that its execution must be a tracing of the designer's route. Aligned with their thesis, students produce a 'walk drawing' in a media of their choosing, which is: black and white or grayscale, one-sided, and of a paper size that can be easily carried and folded when traversing the city. The drawing cannot rely on an aerial or plan view for navigation. Students are encouraged to unearth new information and perspectives, exploring topics outside of the typical tourist experience, and to explore a subject that interests them, often catalyzing the direction of their upcoming project. Students are discouraged from relying on text instructions to guide movement and encouraged to focus on visual communication. Similar to a map maker, they must edit out superfluous information to achieve clarity and focus. These walk drawings are available to the public within their future architectural proposals and conceptually feed the upcoming design process (Figure 5). Students are given one week to complete the 'walk drawing' assignment, followed by a testing phase. Students execute the designed walks using their classmates' drawings and provide feedback on: successful completion / navigation, alignment between the thesis and visual approach, opportunities for discovery and learning, and depth of the scripted experience.

The assignment meets several course goals, including the active engagement of context, development of spatial thinking, and synthesis of research for the design process. Within the brain, the 'walk drawing' exercises the students' spatial skills as they traverse the city and take on multiple perspectives. As Tversky explains, maps are traditionally made from an aerial perspective using an allocentric or ego-less view. Most commonly oriented to the cardinal directions, making a map requires the conception and compilation of information from many sources.[23] In contrast, an egocentric perspective is shaped by a singular body or view from within.[24] Rather than maps, this perspective is often associated with routes.[25] To script their route, the students must flip back and forth between sources of allocentric information, ie. the mapping applications on their smart phones, and egocentric information, ie. the view from a specific point. The multi-sensory experience is merged with an abstract understanding of place. Also, they must move between scripting the experience for their own bodies, knowing their physical capabilities and interests, and those of their future users. This toggling is a mental challenge, both spatially and socially, as the students imagine into the future experience of others. As Tversky explains, "Making sense of mixed perspectives might be difficult but ultimately has benefits: it makes our own thinking more flexible."[26]

CONCLUSION

Developing scientific research confirms that motion, linking the body and the brain, leads to a deeper understanding of context and benefits creative thinking. Aligned with our intuition, the data tells us it's worth it to expend the time, effort, and resources to actively explore. But - this type of active engagement is not without risk. Especially for inexperienced designers, the study of context can impede abstract thinking. As Tversky explains, "Together, the studies show that taking a distant spatial perspective induces people to think more abstractly. This suggests that taking a distant spatial perspective should abet creative problem solving, and in fact, children and adults are more likely to solve insight problems after they have been primed with a distant perspective."[27] By understanding the relationships between abstract thinking and the study of context, the previously discussed research can be carefully and thoughtfully employed to support designers of all experience levels.

An understanding of the mind-body connection guides us toward more innovative approaches to research and a more nuanced understanding of our environments. Our bodies remain a powerful tool in the process, despite our tendencies to rely on language and vision to gather information. As designers working within increasingly complex and dynamic environments, we must leverage all the tools available to us, including the one we reside within.

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