Affordances and the Potential for Architecture

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Affordances and the Potential for Architecture

Essays from Sarah Robinson, Harry Francis Mallgrave, and James Hamilton

Introduced by Andrea Jelic
Edited by Bob Condia
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Introduction: Designing Affordances for the Living-Lived Body?
Andrea Jelić

How architecture affords being-in-the-world? This seemingly simple yet pervasive question within architectural scholarship and practice has been reinvigorated in recent years through the embodied and experiential turn i.e., a paradigmatic turn highlighting the primacy of the body and experience as drivers of architectural design. This steady infusion of architectural research with the insights, theories, and methods from embodied cognition, philosophy of mind, ecological psychology, and neuroscience, among other fields, is clearly reflected in the theme of this symposium and the contributions gathered on the following pages.

The essay by Sarah Robinson directly addresses this question right from the opening, illuminating quote by John Hejduk. The evoked image of a ‘rocking chair as the soul of the porch’ helps unfold the relationship between the body, mind, and environment as one of life, in its full biological and phenomenological sense. By recasting—or better yet, reminding—the reader that architecture should be thought of in terms of relations, connections, processes, couplings of action and movement, Robinson places the concept of affordances in a natural relationship to design. In her account, performative and generative affordances are proposed as a way to focus designers’ thinking on the body acting, interacting, and living in space. Tracing a similar line of thought, Harry Mallgrave’s essay calls for a shift of prevailing, albeit misconceived, priorities of architectural profession by moving from ‘object to experience’ way of understanding and designing architecture. To design and create built environments fit for the human organism as a whole (i.e., as a multisensory, emotional, hormonal, social, and cultural bodily subject) is a forgotten task of architects (perhaps an ethical one?) to secure our way of being-in-the-world as living, feeling, en cultured organisms—our ‘paradise on earth’. According to Mallgrave, the notion of affordances thereby highlights the relational nature between the built space and the human being as attunement with action-related prospects in organism’s spatial surroundings. The third and last essay by James R. Hamilton rounds off this discussion by raising two significant questions. The first question on whether affordances can be perceived by users in a particular, predesignated manner, pinpoints to an important consideration of complementarity between materialized intentionality of a designer and a perceiver’s intentionality as an ability to act on an affordance. Hamilton’s second question of what kind of ‘data’ would be of need and help to designers to ensure an intended action on a designed affordance hints at the complexity of design process, and in particular the task of translating the multiplicity of affordances available to human form of life into architectural and urban environments.

Accordingly, I would suggest that the allure and promise of the concept of affordances is twofold. Firstly, it emphasizes the interdependent, relational connection between the bodily subject and the environment in a way that brings forth an understanding of architecture and designed spaces as a set—or to borrow Rietveld and Kiverstein’s term—a rich ‘landscape of affordances’ (Rietveld & Kiverstein, 2014). This relational stance can be further valued for its correspondence to the long standing tradition of phenomenological thought in architectural scholarship arguing that

Figure 1.0: The MIT Chapel (built in 1956), was designed by architect Eero Saarinen as a religious place, but without particular denomination. A small round brick building, it is recognized as an efficacious model of mid-century modern. Saarinen creates a palpable experience manifesting or affording a humanity through the shadows, twinkle of the suspending sculpture behind an altar, the light descending from oculus above, the reflected light from the water outside highlighting the undulating brick walls with rusticated handicraft of the masonry. (Image by Bob Condia, 2020.)
such connectedness between the inhabitant and the space is a prime characteristic of what means to dwell and to be in the world. Secondly, the notion of affordances—with its origin in ecological psychology, but readily taken within other fields such as neuroscience—shows a promise of a shared vocabulary that can ease the bridging between architecture and cognitive science disciplines, and thereby, possibly provide a way to operationalize the investigation of architecture-body relationship. Several illustrative examples of this dialogue readily spring to mind, including the ‘End of Sitting’ (figure 1.1) and ‘Hardcore Heritage’ design projects by RAAAF, informed and shaped by ecological-enactive cognition framework (Rietveld & Rietveld, 2017; Rietveld, Rietveld, Mackic, Waalwijk Van Doorn, & Bervoets, 2015); a set of empirical studies by ecological psychologists exploring children’s perception and engagement with play affordances based on well-known Aldo van Eyck’s playgrounds (Withagen & Caljouw, 2017); or a recent neuroscientific study of sensorimotor brain dynamics in relation to architectural affordances (Djebbara, Fich, Petrini, & Gramann, 2019).

Taken in sum, these three essays clearly indicate the value of considering the concept of affordances in the context of architecture, and provide a valuable contribution to this discussion of how to conceive, think, and design the inherent coupling between the human organism and the environment.

References:

Figure 1.1: “The end of sitting,” can a theory of affordances suggest new body-architecture relationships? https://www.raaaf.nl/en/projects/927_the_end_of_sitting/972
Articulating Affordances: Towards a New Theory of Design
Sarah Robinson

The rocking chair is the soul of the porch. Remove it and all you have left is white pine for the carpenter ants.
-John Hejduk

The poet’s gift is to distill the essence of something complex to a few lines. Here the poet is also an architect who, seemingly innocent of the pretenses that burden his profession, gets straight to the point. The rocking chair unites body with place, makes the porch a place fit for human habitation. Yet, in architecture we have little regard for chairs, much less those that rock, and we certainly no longer speak of souls. That a rocking chair could be the soul of the porch is contrary to everything we learn in architecture school. We are still taught according to the Renaissance conception that understands man as the subject and the world and nature as objects—one that renders architecture a static form in which other, lesser objects are contained; not something to be inhabited, but an object to be fetishized from afar. I remember feeling annoyed when I was asked to do a furniture layout in my floor plan because I did not want to be mistaken for an interior designer, so thoroughly did I swallow the tacit notion that the almighty realm of architecture did not bother with matters so mundane.

But here, Hejduk suggests another alternative: the chair rocks in rhythm to our movement, and this rocking is the beating heart of the porch. This is more than the subject, the hypertrophic “I” encountering an inert object, it is a fusion of subject and object in their mutual animacy, as well as the fusion of form and function: the form of the porch at the outcropping of the building affords a place for a chair, which in turn affords rocking, which in turn releases cascades of pleasure and relaxation in our body, which in turn adjusts our affective state, which then modulates our attitude towards the world. Without the chair, there is no possibility for human habitation—the chair renders an otherwise inert object into a building/porch/body/pleasure system. This example provides a way of thinking about architecture not in terms of objects within objects, but in terms of relationships, links, connections, couplings of action and movement. Architecture and furnishing are no longer completely distinct, nor are environment and action, nor are form and function; here architecture is understood as a matrix of dynamic interdependent relationships.

To truly understand architecture as a verb—as the dynamic tissue of connection, means rethinking some of the basic tenets that our profession holds so dear. And this rethinking is also a reimagining—one that calls us to leave behind familiar terrain so that we might return to it...
with fresh eyes. And thankfully there are those who have forged ahead of us who can serve as our guides along the way. J. J. Gibson and his partner Eleanor are two such pioneers, their discovery of ecological perception, which was radical in their time, is the consensus view of perception held today. Yet, in the intervening five decades we have scarcely considered the implications of their theories for architectural design. Truly reckoning with the profoundly ecological nature of the way we exist in the world means that we must reimagine our discipline on terms of movement rather than stasis, embedded umwelts rather than from isolated atoms, verbs instead of nouns—to go from form to forming, from opposition to complementarity, from space to place, from time to occasion, from anonymity to atmosphere and from abstractions to affordances.

From Vitruvius to the Body Electric

The most basic ground of our inquiry must begin with the way we understand our bodies. If you think I am exaggerating when I claim that architectural thinking still adheres to an obsolete paradigm, consider the way we continue to conceive of the human body, the rightful subject of our architectural designs. The Vitruvian man splayed over a geometric grid is the primary image that has guided our discipline for centuries, even though the context from which that ideal arose has radically changed. For Vitruvius the ideal proportions of architecture derived from the ideal proportions of the human body. In his Ptolemaic world picture, cosmic proportions were reiterated in the natural world, the human body was considered the most perfect expression of natural and cosmic order and was understood in terms of this larger system. The Renaissance reaffirmed the Vitruvian ideal considering man as the measure of all things; and it is important to remember that the essential meaning of the word measure meant ‘boundary’ or ‘limit’—measure implied moderation, and had a relative and qualitative, as well as a quantitative meaning. Beauty, wisdom and health were the consequences of moderation, mental and physical balance was the consequence of having everything in its proper measure. By the time Le Corbusier’s modulor man arrived, the body had been reduced to a static yardstick—and “ideal” proportions were exemplified a 6’0” tall male body builder. The body had long since been torn from its biological and cosmic matrix, and was considered to be a machine. We lost the sense of measure as a boundary and a proportion and retained only its quantitative significance, which for centuries was considered to be of only secondary importance.

Understanding the body not as a complex and dynamic boundary, but as an object among objects specified by its outward quantitative specifications is a habit of thinking that we have yet to fully overcome. Consider the example of study conducted by the Cleveland School of Medicine in 1943 whose goal was to determine the dimensions of the average or “normal” woman. In order to do this, they averaged the data gathered on 15,000 young adult women and created the statue named “Norma” (Figure 2.1 and 2.2). To their surprise, they found that less than one percent of the actual women came even close to matching even half of Norma’s dimensions. Seven years later, the US Air Force, in their effort to understand why so many of their fighter jets were crashing—sometimes up to 17 times per day—deduced that perhaps the cockpits were no longer sized to fit the pilots. In high speed, fast acting situations, the cockpit and the pilot demanded a hand in glove fit. Figure 2.3. To test their hypothesis, they conducted a study to find the size of the average pilot. In their analysis of the bodily dimensions of 4063 men, they found

Figure 2.1: Woman being measured during the Cleveland Health Museum Contest
Figure 2.2: The End of Average Statue at the Cleveland Museum of Art

that not a single pilot fit within an average range on all 10 dimensions, and less than 3.5 percent were “average” on only three dimensions. Like the story of Norma before them, they found that not one living breathing pilot matched the average. But, unlike the Norma study, they did not blame the actual, living breathing women for not matching the ideal—instead, they innovated. They designed adjustable hand controls, seats, foot pedals, all the features that are now standard equipment not only in cockpits, but in every automobile.

Today, thanks to breakthroughs in the biological sciences we now have a more refined understanding of the astonishing sensitivity and connectedness of the human organism than ever before. Not only can the body not be reduced to a static Platonic form, or crunched into a norm, the body is inseparable from the environments that we inhabit, and inextricably bound to the interpersonal, social and cultural relationships on which our lives depend. Our bodies do not stop at the surface of our skin. As the ecological psychologist J.J. Gibson said five decades ago, “The surface of an organism, it should be remembered, is actually a boundary between the organism and its environment, and the boundary is not always or everywhere as clean-cut as the hairless human philosopher tends to think.” Indeed, the old dualisms between body/mind/world have finally given way to an understanding of the living human organism embedded interactively in our environments. Our images of the body must begin to express this body/mind/ecological system. Even the Air Force figured out seven decades ago, that we need to design for a moving, dynamic body—but now we must go further, to design for a vulnerable, aging, multi-gendered body extending interdependently into its surroundings—one that by its very nature cannot be reduced to a static ideal.

**From One Size Fits All to Umwelt**

J.J. Gibson would perhaps have appreciated the example of cockpit redesign, because implicit in the story is that the capabilities of the pilot were constrained or afforded by the design of the cockpit. Optimal performance depended upon the appropriate fit between the pilot’s body and the controls of the airplane. The cockpit is a very real extension of the pilot’s body, enabling both to do what neither could do alone. One could even say that the cockpit is the pilot’s umwelt. Umwelt, which is German for life-world, is a term the Estonian biologist Jakob Von Uexküll coined to express how an animal cannot be understood apart from its particular environment. While many animals share the same habitat, each is tuned to that habitat in its own particular way. A spider is sensitive to the forces and features of the habitat relevant to its own particular needs. To truly understand the spider’s lifeworld, we would have to experience that world the way that a spider does. It is impossible to truly understand an animal apart from the environment in which that animal evolved and to whose features its perceptual systems have adapted.

Of course we human animals also occupy our own lifeworlds, our perceptual bandwidth is not tuned to ultraviolet light like the spiders, nor do we sense ultrasonic sound like dogs can, our lifeworlds emerge according to our own particular needs and purposes. This is another way in which our sensorimotor and perceptual systems extend into, and are reciprocally conditioned by our lifeworlds; and it is exactly this mutuality that J.J. Gibson devoted his lifework to elaborating. His ecological model of perception challenged traditional cognitive theories of perception and laid the foundation for today’s embedded, embodied, enactive, extended theories of cognition—his ecological model of perception was the original “E.”

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It is interesting that Gibson undertook much of his early work on perception during his tenure as the director of the Aviation Psychology Program during the Second World War. His theory of perception as the active, direct extraction of information from an ambient flow of energy grew out of his interest in trying to understand how pilots were able to accomplish skilled flight, which the then prevailing notions of perception failed explain. The skilled sensorimotor coupling essential to aircraft flight remained a stirring question to him, and perhaps contributed to his later introduction of the notion of affordances, the key to understanding his ecological psychology. Gibson defined an affordance quite broadly as a possibility for action in the environment that refers “to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment.”

Affordances refined and textured von Uexküll’s umwelt by articulating the concrete and specific features of the life-world that constrain or afford behavior, which then leads to modulations and changes to both organism and environment in a complementarily manner. Returning to our earlier example, the pilot’s umwelt is detailed and furnished with the tools, levers, seats and mechanisms complementary to the pilot’s sensorimotor perceptual systems, the two systems are united via the pilot’s actions which those details and furnishings enable and allow—understood in this way affordances serve as the connective tissue between animal and environment.

Extended Organisms - Nested Dynamic Systems

Taking seriously the implications of the co-emergent coupling of organism and umwelt, leads to some rather startling conclusions. In his book, The Extended Organism, the physiological ecologist J. Scott Turner meticulously illustrates how animals exploit the physical properties of their surroundings to their advantage, posing the deceptively simple question: “Are animal-built structures properly things external to the animals that built them, or are they properly parts of the animals themselves?” Where do we draw the line between organism proper and the organisms’ umwelt? If we choose to draw the line at the envelope of the organism’s body, we find that this outermost layer is quite permeable, allowing a steady influx of matter and energy to flow through it. Cut off the flow of energy and the organism will perish. “It is not the boundary itself that makes the organism distinctive,” he writes, “but what that boundary does. In other words, the boundary is not a thing, but a process.” He illustrates how earthworms manipulate the physical properties of the soil to serve as an accessory kidney, how mole crickets construct trumpeter shaped burrows that help amplify the sound of their mating calls and how the spectacular mound nests of African termite not only house the colony, but serve as gas-exchange systems allowing them to adapt to a wide-range of environmental conditions—effectively extending their physiology in the structures they build.

Figure 2.4: Pacific Bluefin Tuna uses water to propel its body at amazing speeds. Image courtesy of Randy Wilder from the Monterey Bay Aquarium

The slipperiness of the line between organism and environment has been importantly elaborated by philosopher Andy Clark, who with David Chalmers introduced the Extended Mind hypothesis in 1998, asserting that body/brain/world involve a dynamic system. He argues his case citing the example of the bluefin tuna (Figure 2.4) who also treats the environment as an equal partner. According to studies by fluid dynamicists, the anatomy and musculature of the tuna render it physically incapable of swimming as fast as it does. Tunas reach their remarkable speeds by sensing naturally occurring currents, and using their tails to create additional vortices that propel them faster than their strictly physiological capabilities alone would allow. Clark writes, “The real ‘swimming machine’ therefore, is not the tuna alone, but the tuna in its ‘proper context’—the tuna, plus the water, plus the vortices it creates and exploits.”

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8 Ibid
If we understand the structures we build not as inert objects but as physiological extensions and amplifications of our own capacities, that is, if our buildings are to us, as the cockpit is to the pilot; we must consider them in terms of a nested dynamic body/brain/building system. And, to get at the full import of what Gibson meant by an affordance, we must understand an affordance as it is positioned—that is nested—within the context of a dynamic system. The units of measure used in physics made no sense in Gibson's terrestrial ecology. “The components and events of the environment fall into natural units. These units are nested. They should not be confused with the metric units of space and time.”

Gibson consistently referred to affordances in terms of spatial and temporal nesting—places are nested within other places, events are nested within other events: “For perception this nesting is what counts, not the metric dimensions of empty time with its arbitrary instants and durations. Time as such, like space is not perceived.”

The relative and qualitative dimensions of measure are here restored, umwelt and organism are scaled and tempered according to each other. Gibson's affordances provide an alternative to the conceit of a static ideal, to the absolutes of architecture according to Gibson's way of seeing, that is through the filter of ecological perception, some basic architectural principles assume a completely new meaning. To design things for the sake of what they will afford, not for how they look, but for what they do, would go far beyond the dictum that form follows function, to imply that form itself is a verb—form forms. The shape of things, shape our movements, invite or disclose possibilities—are worn and grooved by the shape of our habits. Here Gibson intends form in the Aristotelian sense, form not as outward cause of the growth of things but as inward activity which is the cause of the growth of things. Or, as Paul Klee put it—“form is the end, death, form-giving is life.”

According to Gibson, architects have misunderstood form because they have been taught form as a graphic exercise, treating form as a painter would treat form. In this way, “No one is ever going to understand “form” . . . the use of the term only promotes confusion.” Indeed, how many architecture schools still engage in formal exercises—carving styrofoam solids, and manipulating the cube may have their value as playful, creative experiments, but they perpetuate the obsolete notion that the goal of architecture is to dress up and hollow out a Platonic solid, failing to realize that treating form as an end in itself is, as Klee
insisted—death. “What architects are concerned about,” said Gibson, “is
the layout of surfaces.”19 And to consider surfaces in the way that Gibson
intended—that is, trading the word layout for “formal arrangement”
replacing the noun form with substance, reserving the word form for use
only in its active sense—would be radical indeed. And going a step further,
what if we understood surfaces not for what they are, but for what they
do. Treating surfaces as boundaries that are, like we must now understand
the boundary of our skin, not as things but as processes—surfaces as the
site of intense interactions.

Primacy of Movement

Gibson’s ecological model is inherently dynamic, so it is not
surprising that he proclaimed, “Architects need to pay attention to the
affordances of locomotion and action in the layouts they design.” The
long practiced but shortsighted goal to produce “esthetically pleasing
forms” rests on an obsolete understanding of perception, one that
considers the static picture as the rule, rather than an exception—this
is exactly the model that Gibson overturned more than fifty years ago.
Perceiving is active, exploratory and sequential, “We are never frozen in
the moment,” as Gibson insisted, what we see when we look around,
“Is not a patchwork of forms but the possibilities of support, of falling,
of resting, of sitting, of resting . . . of taking shelter.” Similarly, Juhani
Pallasmaa has long advocated for understanding architecture as a verb,
“Its true essence is always an invitation to action. It is this verb-like
tendency towards active search and exploration that unites architecture
and the human mind.”20 His statement echoes Gibson’s insistence on
the exploratory nature of perception, when we move through places
we are searching for, “The possibility of entering the next vista.”21 We
now know that every act of perception is also an act of the imagination,
that the two faculties share an inseparably common ground, and we
are beginning to appreciate the extent to which they are both rooted in
movement. Not only is movement primary to architectural experience,
movement is primordial to thought and feeling. Gibson’s refusal to
relegate the mental and the physical to opposing realms has now found a
wealth of empirical corroboration. Numerous studies have documented
the complementarity between posture and gesture and thought and
feeling. Assuming various poses triggers changes in our endochrine

![Figure 2.5: This double image compares the syncopation of Peter Zumthor’s Serpentine Gallery, 2011, hallway (https://golfatech.weebly.com/design-studio/archives/01-2015) with the multiple impression of a walking dancer, presenting the case of how we actually see ourselves in space (https://www.ted.com/talks/amy_cuddy_your_body_language_may_shape_who_you_are). In other words, we see ourselves not in still frames of a photographic moment, but as complete and complex motions moving from here to there.](image)

system that match the import of the gesture, striking a Wonder Woman
pose, for example, literally makes us feel more powerful.22 As Colin
Ellard has noted, “We feel because we do.”23 Gesture and posture
have their own complex emotional and chemical signature. Further,
a recent neuroscience experiment indicated that cortical potentials
vary as a function of bodily affordances available in the physical
environment, implying that cognition is intimately related to potential
bodily movements24 (Figure 2.5). Gibson also confirmed that knowledge
unfolds through movement. We learn places by moving through them,
places are disclosed through successive opening of vistas and he

22. Amy Cuddy’s Ted talk: “Your Body Language May Shape Who You Are”
insisted that we not only perceive, but proprioceive. This reiterates the philosopher-dancer-biologist Maxine Sheets-Johnstone’s assertion that, “What is distinctive about thinking in movement is not that the flow of thought is kinetic, but that thought itself is. It is motional through and through.” Both our most humble and noble capacities are saturated with movement; it is indeed the very sign of life.

Experiential Space

The metrics of Gibson’s terrestrial ecology were not those applied in the physical sciences, they were nested units whose values were always relative, that is, relational. The obstacle to thoroughly applying a relational understanding to architecture is that we continue to assume along with classical physics that the universe consists of isolated bodies in space. Gibson was constantly trying to get us to break this habit, “What we perceive first of all is not abstract color and space . . . but surfaces and their layout.” Space is a term that reverberates through the halls of architecture schools, yet absolute space is an abstraction borrowed from physics, and like pure form, has little practical value to an architect. Along with space and form, we architects also idolize light, but as Gibson insisted, we can never see light itself—we see gradients, discontinuities in an array of light as it moves through and along surfaces, substances and their layout. Gibson broke down the architect’s triad of pet preoccupations: space, form and light into living, breathing human dimensions.

We now understand space as layered energetic envelopes that are extensions of our nervous systems, known as peripersonal and extrapersonal space. Our experience of space is conditioned by our emotional and somatic states—this again has been confirmed by numerous studies. We now know that hills seem steeper to a person wearing a heavy backpack and to someone who is hungry or not physically fit. Another amazing example of how we extend into the space around us, comes again from the world of aviation. Because flying an aircraft relies almost exclusively on visual perception, many of the problems occur when atmospheric conditions impair a pilot’s vision. This is another affirmation of Gibson’s insistence that we do not perceive space, indeed, without reference points that are scaled to the human perceptual field, we cannot perform even the most basic tasks, much less fly an airplane. To address this problem, the U.S. Air Force augmented visual perception by devising the Tactile Situation Awareness System; which is a full-body suit pilots wear with “tactile simulators” integrated inside it. (Figure 2.6) The garment delivers small puffs of air controlled by complex sensors that correspond to various flight parameters, the airspeed, the way the plane is tilting, etc. The pilot feels a puff of air on the side of her body that corresponds to the direction of the tilt, and adjusts the plane in that direction to make the puff on her body disappear. The body feels as the plane moves. Notice how they choose their words carefully—this is not a garment, but a system that includes situational conditions; velocity, atmospheric pressure, oncoming threats, the aircraft, the suit, the pilot, the controls. This system is so effective that even inexperienced pilots can perform difficult tasks while blindfolded. The space of the aircraft and the space of the body morph into a shared dance—the connective tissue between them is the TSAS suit that affords flight.

Time as Event

And of course we cannot properly understand space without addressing the problem of time. Indeed, Gibson did not see time or space as problems per se, but as underdeveloped concepts in need of reinterpretation in terms of ecological perception: “Perceptual research needs a program newer than the one formulated in Newton’s Principles and

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This inherited conceptual framework is unfit to speak of human experience—we need to develop a vocabulary for understanding time scaled to human perception. We do not experience abstractions—like space and time—what we do experience are places and events and both are co-perceived. In terms of ecological perception, we experience time as change, animate movement and flow—and he called all such changes, events. The notion of empty time, as if time is somehow a container that must be filled is alien to human experience. And this idea, again, is based on an outdated division between mental and physical realms. Our awareness of the environment, which both persists and changes is simultaneous with our awareness of our persistent and changing self—our self-awareness and environmental awareness are complementary, concurrent and interdependent. Awareness of events therefore seamlessly encompasses psychic and physical dimensions. Memory and imagination are triggered by and nested in place. Our memory of an event arises simultaneously with the living context in which the event took place. What then, does this entail for architects? Gibson, in his very matter of fact manner, insisted that our concern must be with surfaces and substances and their layout—I would suggest that humanizing time has very much to do with the manner in which we treat these surfaces and substances—texture captures light by casting shadows and seeming to slow down light’s passage, smooth surfaces reflect light in a blinding glare, a candle’s glow casts the halo that transforms an event into an occasion. The play of light is time’s humane messenger.

**Articulating Affordances**

Now that we have updated some longstanding issues in architecture: understood form as process, affirmed the verb-like, dynamic nature of architecture, movement as characteristic of thought, feeling and experience, established the complementarity of organism/umwelt proportioned in nested units, the extended, plastic nature of our perceptual systems and the experiential nature of space and time—we can take a fresh look at Gibson’s claim that affordances offered a basis for a reinvigorated theory of design. Gibson acknowledged that affordances were not without their precedents, and explicitly stated that the term is reminiscent of aufforderungscharakter, a German term Kurt Lewin coined that has been translated to English as invitation-character (by J.F. Brown in 1929) and later as valence (by D.K. Adams in 1931) and later by Gestalt psychologists as demand-character. Although he followed a similar line of theoretical development, Gibson contrasted affordances by giving them an independent character. Affordances were invariant features of the environment that did not change as the observer changed—the edibility of a substance does not depend on the animal’s hunger but rather offers what it does, because of what it is. “The affordances of the environment are permanent, although they do refer to animal and are species-specific. The positive and negative valence of things that change when the internal state of the observer changes are temporary. The perception of what something affords should not be confused with the “coloring” of experience by needs and motives. Tastes and preferences fluctuate, something that look goods today may look bad tomorrow but what it actually offers the observer will be the same.”

Endowing affordances with this invariant character enabled Gibson to resolve the subjective-objective duality that plagued the Gestalt psychologists forty years before him. Possibilities for action exist in the environment regardless of your mood or fleeting physiological state. On this Gibson was very clear: “Affordances are invariant combinations of properties of

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**Figure 2.7:** Cover of Desert Works by Rick Joy, Steven Holl, and Juhani Pallasmaa. Courtesy of our friend Rick Joy

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30 Gibson, 1982, 403.
31 Ibid, 418.
things (properties at the ecological level) taken with reference to a species or an individual. I now add: with reference to its needs (biological as well as social) as well as to its action-systems and its anatomy. The affordances for behavior and the behaving animal are complementary.

Atmospheres and Attunement

In order to articulate affordances, due attention must be given to the nature of atmospheres, as atmospheres and affordances share critical common ground: “An important fact about the affordances of the environment is that they are in a sense objective, real, and physical, unlike values and meanings, which are often supposed to be subjective, phenomenal, and mental. But, actually, an affordance is neither an objective property nor a subjective property; or it is both if you like. An affordance cuts across the dichotomy of subjective/objective and helps us to understand its inadequacy. It is equally a fact of the environment and a fact of behavior. It is both physical and psychical, yet neither. An affordance points both ways, to the environment and to the observer.”

The key overlap between atmospheres and affordances is the manner in which they both baffle the categories of subject and object and the physical and psychical and for this reason, both notions have given architects a way to think beyond the divide. Our language and philosophy have been so shaped by the dichotomy that any tendency to confine affordances and atmospheres, is an indication of the poverty of our alternatives. And it this poverty, I think that makes it important to articulate and enrich our vocabulary of alternatives, and for this reason it is helpful to distinguish between the two.

What if we understand an atmosphere as an irreducible quality of experience that is neither subjective or objective but a dynamic fusion of both. Tonino Griffero characterizes atmospheres as quasi-things to acknowledge the way in which atmospheres are “out there” in the world. I would compare the ontological status of atmospheres to that of color—Merleau Ponty’s paradigmatic example of the way perception works. Color, like light and sound and mood is immersive, lacks a front and a back, does not obey perspective, is multidirectional, multisensorial, cannot be contained or reduced to its component parts without losing its life. What if we think of atmosphere as a general term whose manifestations include light and sound, scent and feeling—all of these are fluid and permeable and have moving, temporal qualities.

In an affirmation of their undeniably pervasive physical presence, Griffero has also advanced the notion that atmospheres have affordances. Yet, taking Gibson at his word, it seems doubtful that he would have gone quite so far. Gibson categorized affordances as objects, substances, places, events, other people, animals, but he clearly stated that affordances, “Are not phenomenal qualities of subjective experiences (tertiary qualities, dynamic and physiognomic properties, etc.) I also assume that they are not the physical properties of things as now conceived by physical science. Instead, they are ecological, in the sense they are properties of the environment relative to the animal.” This very claim suggests that Gibson himself did not quite fully overcome the bifurcation of nature that the classical categorization of qualitative properties presupposes. That is, to overcome the subject-object divide is to overcome the division between primary and secondary qualities—those physical properties that belong to things are not ontologically different from the experience of those things. In order for affordances to fulfill their role as the interdependent tissue between animal and environment, the properties relative to the animal cannot be primary or secondary in importance. It would seem then that if one cannot admit the divisions of primary or secondary properties, one certainly cannot admit the category of a third—or tertiary qualities.

I would interpret Gibson’s imprecision on the categorization of properties as evidence of his commitment to the concreteness of affordances. He wanted to preserve the open character of affordances, while retaining their physicality, declaring there is no such thing as an “abstract object.” The key criterion that differentiated his affordances from Gestalt terms like demand and invitation character was that affordances were invariant—what something afforded was immune to one’s psychosomatic state. An apple affords edibility, regardless of

34 Ibid.
38 Gibson, 1982, 417.
39 Ibid, 404.
40 For Martin Heidegger the verb attunement was critical to his characterization of Mood, Heidegger, Being and Time, trans. Joan Stambaugh New York: SUNY Press, 1996. 313
whether or not you are hungry or like how it tastes. The apple is colored red for complex evolutionary motives—red makes it stand out from the background, evokes erotic desire, excites my nervous system—but is the color red here an affordance because it makes me want to bite the apple? First it would seem that in order for something to qualify as affordance it must pass the invariant test. Second, despite its conceptual inconsistency, yet respecting Gibson at his word—it cannot be a phenomenal quality—the color red, then would seem to fail on both accounts. Which is not to say that red does not modulate my mood or elicit my desire, it just means it cannot strictly be considered as an affordance. For these reasons, affordances cannot properly be applied in the context of atmospheres, to do so, would be to extend Gibson's radical notion to its breaking point. I would suggest that a more fitting verb to use to describe the capacity of atmospheres to do, would be the verb *attune*, as one would tune an instrument, “To bring into harmony.” Atmospheres can move us powerfully, pervade us with their certain intangible signature, tune us according to their own particular harmony or dissonance. For the sake of my aim here, rather than articulating affordances as features of atmospheres, I suggest that in the effort to enrich our vocabulary of alternatives to the subject-object dichotomy it is more helpful to consider atmospheres and affordances separately (see Figure 4.2 in Dr. James Hamilton’s essay as a reference).

**Performative Affordances**

As opportunities for action, affordances always imply bodily coupling, they are shapes in the world that shape the body and vice-versa. Performative affordances are designed with a specific purpose, to evoke a prescribed response. This does not mean that the affordance will not perform other unforeseen gestures and responses, but that it is configured according to a very specific purpose. An outstanding example of an umwelt with nested performative affordances that work in concert in a dynamic system is Alvar Aalto’s Paimio Sanatorium—this is a rare example of a building that was intended to do, rather than being an assemblage of “esthetically pleasing forms,” yet whose outcome is exceedingly pleasing. The building was designed for patients recovering from tuberculosis, and was informed by Aalto’s own personal experience. When Aalto himself was hospitalized, he realized that hospitals are rarely designed from the patient’s point of view, who is almost always lying down. Instead at Paimio, “The room design is determined by the depleted strength of the patient reclining in his bed. The color of the ceiling is chosen for its quiet, the light sources are outside the patient’s field of vision, the heating is oriented towards the patient’s feet and the water runs soundlessly from the taps to make sure that no patient disturbs his neighbor.”

Windows and the placement of beds were based on solar considerations and daylighting, balconies were colorful and located to optimize resting in the sunshine. He designed communal spaces for interaction, and mutual resting in the sun. He and his wife Aino carefully designed the furniture, fixtures and door hardware to afford comfort and aesthetic delight. Because the rooms were intended to be shared by two people, sinks were designed to be noiseless so as not to disturb one’s fellow patient, handles were designed to be easily and silently opened. The iconic Paimio armchair’s sensuous curves were not designed purely for visual delight, but were shaped according to the patient’s spine to facilitate easier breathing. Aalto acknowledged the precedent in Marcel Breuer’s Wassily chair (Figure 2.8), but intentionally used wood instead of metal because metal conducts heat away from the body. For this reason, the handrails on the stairs are made of wood, a material that is porous, because it once too breathed. Being porous, it is more responsive to the ambient environment. We tend to see this chair in isolation, as an object, but in their original context, the chairs they were

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arrayed in a communal room, situated in a sun-lit ensemble. Every detail, the affordances of handles, faucets, sinks, windows, the handrails, the symphony of chairs in the communal rooms of the patients’ umwelt was considered with attention to their healing process. Aalto explicitly stated that his aim for the building to function as a “medical instrument.” And I don’t think he intended instrument in the mechanistic sense, but rather in the sense of a musical instrument, one that in concert with the human breath and movement is animated to make music. The building was an umwelt for healing, outfitted and detailed with affordances to invite and organize actions, postures and gestures and colored and lit to attune person and place in a total atmosphere of well-being.

“Affordances do not cause behavior but constrain and afford it,” insisted Gibson, and while he was clear that affordances do not cause behavior, in the case of performative affordances they can limit the alternative actions to the extent that they intentionally shape, and therefore to a large extent favor certain behaviors over other possible alternatives. Aalto’s medical instrument, like a musical instrument, was designed in a way to elicit certain sounds and not others, and yet it allowed each player, to mark the performance with their own personality. Another classic example of a performative affordance is the layout of the British House of Commons Chamber, whose destruction provoked Winston Churchill’s memorable statement, “We shape our buildings and thereafter, they shape us.” After years of experience working in the parliament chamber he came to deeply appreciate how the rectangular chamber forced the adversarial parties to face one another, unlike the semi-circular or horseshoe configurations commonly used by other governments. When it came time to rebuild the chamber, they retained not only the configuration, but also its relatively small size with only 427 seats to accommodate 646 ministers—so that they could maintain the intimacy and liveliness of their debates. Another example comes from South Pacific islanders whose leaders meet in a room with ceilings so low that one cannot stand up inside of them. When people are angry they stand up and wave their fists, and the low-ceiling prevents this from happening. The ceiling height constrains behavior so that the leaders are more likely to resolve disagreements peacefully. Given what we now know about the correlation between gesture and endochrine levels, the dominant pose of standing up likely releases testosterone and perhaps exacerbates aggression levels.

Generative Affordances

Affordances can be performative but not deterministic, and when they are more loosely composed and open-ended, rather than suggest certain behaviors, their very openness can favor improvisation—I call these generative affordances because they generate unforeseen responses. If the musical instrument was the analogy for a performative affordance, designed to allow certain sounds yet flexible enough for them to be played in different ways, the analogy for generative affordances is the surfboard. The surfboard affords surfing, it is true, but it has also generated many other sports and subcultures to go along with them. The non-specificity of the shape affords a certain flow. The film, Dogtown and the Z Boys documents how on days when the waves were not big enough to surf, surfers attached wheels to what was essentially a miniature surfboard and rode around Los Angeles, eventually improvising skateboards to cruise around inside empty swimming pools. This of course is the origin of skateboarding, and even today, skateboard parks are designed with the features that emulate the old lima bean shaped swimming pools with concrete rims that populated Los Angeles in the 1970’s. Skateboarding translated to snow became snowboarding. You could trace all of these developments back to the open and flowing shape of the board.

The evolution of board sports has changed the topography of our cities—where one sees a bench, another sees a curvature that could generate a possible trick. The tool of the board has opened a different way
of perceiving the environment through the many possible movements it affords; and those flowing movements seem to seek out contours that will allow that particular gesture (Figure 2.9). Each topos—the Greek word for place—suggests movements that go along with it; and, understood in this way—forms form. It is not just that skateboards move some ways and not others that causes the skateboarder to favor certain shapes and contours over others—skateboarding has generated its own subculture—a network of postures, gestures, linguistic expressions, clothing and attitudes in rhythm with the flowing movements afforded by the skateboard. Board sports require loose-fitting clothing that accommodate the movements, the general outlook is open, experimental and anti-authoritarian and the role of performance is more akin to dance as an artistic expression and spectacle, than it is to other athletic performances. The tool of the skateboard generates behavior as well as a culture and local topography that supports that behavior. This is yet another illustration that, “We feel because we do,” or we feel because of how we move, that is, our affective dispositions are calibrated by our movements, actions and gestures and those dispositions in turn trigger a cascade of further consequences and this spectrum of activity is an untapped dimension of design. What and how we design impacts the way we move, think and feel.

To design things for the sake of the movements, actions and gestures they will afford, not for how they look—but for what they do, which is essentially Gibson’s advice for architects resonates uncannily with the work of Aldo Van Eyck who worked at roughly the same time.46 Like Gibson’s rejection of Euclidean form for its own sake and insistence on design as the layout of surfaces—Van Eyck was concerned not so much with what things look like, but with what things do. Architecture was not a search for ideal forms, but a configurative discipline whose task was to, “Get closer to the center of human reality and build its counterform.” Van Eyck’s47 notion of a counterform illustrates the interactive formative dialogue between the shapes of things and the way those shape us. According to Van Eyck, design elements should be configured to support the shapes and rituals of everyday life: “A wall, a seat or some steps on which to repose, talk, wait or watch; a table around which people gather for an occasion; a balustrade, wall or lamppost against which one can lean and smoke a pipe, a door that allows one to tarry with dignity. All these things are not spaces as such but they constitute place in the most

46 Gibson lived from 1904-1979 and Aldo Van Eyck from 1918 to 1999.
47 As quoted in Robert McCarter, Aldo Van Eyck, New Haven, Yale, 118.
keep an eye on the children without encroaching on their activities and they succeeded in becoming part of the urban fabric because they are not fenced in.

These playgrounds are outstanding architectural examples of generative affordances, and the great deal of analysis\(^54\) (Figure 2.10 and 2.11) that they have since received can help us understand why they have worked so well and are so beloved. The playground equipment was non-

![Figure 2.10: Before Construction of one of Aldo Van Eyck's Playground](image1)

![Figure 2.11: After construction of one of Aldo Van Eyck's Playground](image2)

specific, in the sense that it did not suggest a narrow mode of use. Van Eyck was explicitly against “abstract forms” which uncannily echoes Gibson’s refusal to acknowledge the existence of “abstract objects” yet his critics have praised this playground equipment for being so abstract. Van Eyck was a friend and admirer of Constantin Brancusi, famous for his genius in distilling the emotionally charged act of something like a kiss into a powerful sculptural gesture. And like Brancusi, Van Eyck’s aim was not for abstraction, or reduction—but for distillation; eliminating the extraneous in order to create “vital things.” Taking to heart his friend’s words, “Simplicity is not a goal in art but one reaches simplicity in spite of oneself, by approaching the real sense of things.”\(^55\) Always dimensioned according to the mutating shape of children’s bodies, Van Eyck’s play structures consisted of repeated elements: sandpits nested within low walls of varying shapes, steel tubes bent into arches, domes and cones and stepping stones of differing shapes and heights. “What is perhaps most striking about Van Eyck’s playgrounds,” as Robert McCarter has noted, “is that each one is an entirely unique design for a specific site; each one turns often seemingly irresolvable existing conditions to advantage; each one uses the same limited set of common elements; each one is clearly part of a family of forms—and yet the particular arrangement of each design is never repeated.”\(^56\) Like musical compositions and performances, the playgrounds configured repeating elements in relationship to factors unique to their situation, their vitality was generated in the relation between the elements, the pause between the notes.

This attention to the configuration of solid elements in terms of the dynamics of the relationship generated between them comes forward most powerfully in the fact that none of the playgrounds were fenced in. At the time, playgrounds were cordoned off and patrolled to insure the safety of the children. Van Eyck was able to create the sense of a protected, magical world without such rigid enforcement. Rather than playgrounds per se, they more closely resembled furniture arrangements, with toys for kids and benches for grown-ups. And this is exactly how they functioned, the lack of a hard boundary, turned the invisible boundary into a sort of live edge, a porous membrane which contained the young and old together, as if they were inhabiting a protected precinct much like a room (Again see Figure 2.11). Certain etiquette developed around these nodes of activity, a shared code of conduct naturally emerged which created its own protected circle of behavior. The playground equipment is obviously a generative affordance, but what about the ambiguous edge that also generated certain behaviors—is that an affordance, too?

The verb afford is rooted in the word for “to further, forward, onward,” which has a definite developmental meaning and when used in reference to things means, “to be capable of yielding,” which speaks to the flexibility, elasticity and even generosity inchoate in the term affordance. When understood in this light I would say that the ambiguous


\(^56\) McCarter, p.43.
edge of the playground is a generative affordance, its ambiguity generates improvisation, allowing for growth and emergence—the processes of life. The playground design manifests the import of the Zen master Shunryū Suzuki’s saying that, if you want to keep your cow close to you, give her a big pasture.\(^{57}\) Indeed, the absence of an outward restraint causes one to create an inner boundary—the lack of an outward structure of control, causes one to generate one’s own with the tools at hand. Yet, we cannot fully appreciate how a generative affordance functions unless we understand it in the context of its role in a larger dynamic system. And while this is not the place to launch into a summary of dynamic systems theory, for our purposes it is helpful to improvise some of their basic principles.

A dynamic system is self-organizing; its organization and structure emerge from diverse elements that interact on multiple levels in nonlinear and time-sensitive ways. Dynamic systems have an inherent tendency to create pattern. Behavior and development are constructed through process according to the organizational principle of soft-assembly.\(^{58}\) Understood as dynamic systems, the very openness of the playgrounds’ layout, the relationship between soft (spatial) and hard (solid) elements, the non-specificity of the equipment excited the imagination to invite multiple interpretations. The ambiguous boundary itself generated a living protective edge because the system self-organizes and has a tendency to create pattern, and in a sense builds a functional fence where no physical fence exists. That is, because there is no explicit boundary, caretakers have to pay more attention to the children to assure they weren’t wandering too far, rather than becoming overly engrossed in reading their newspapers. Without a fence, children can feel free and exercise their own sense of limits. While at the same time, caretakers have to be present in the moment—and this presence, this awareness could be considered as an integral component of the system itself. In this way, the configuration of objects was a pattern that patterned attention and awareness. The principle of soft-assembly describes the way development happens through the multimodal and spontaneous appropriation of the tools at hand; these tools can be “hard” as in playground equipment, or they can be “soft” the way that human awareness is soft but no less real or relevant to the way actions, movements or places and events are organized and come into being. Soft-assembly describes how development is constructed through process, how children learn to become self-regulating when given the opportunity to exercise their limits and receive feedback from their environment. Yet this can only happen when they have been given “a large pasture” as the Zen saying goes. As Suzuki says, “Even though you try to put people under control, it is impossible. You cannot do it. The best way to control people is to encourage them to be mischievous. Then they will be in control in a wider sense. To give your sheep or cow a large spacious meadow is the way to control him. So it is with people: first let them do what they want, and watch them. This is the best policy. To ignore them is not good. That is the worst policy. The second worst is trying to control them. The best one is to watch them, just to watch them, without trying to control them.”\(^{59}\) Here Suzuki summarizes the elusive, yet very real potential of generative affordances.

Affordances is a general term, as well as a generous and generative one, and articulating different ways that affordances function is not intended to be a pedantic exercise, but rather to stimulate thinking about the endless ways to engage our bodies and minds in the ecology of our daily lives. Articulating affordances can take us from abstractions to actions, from general behavior to specific gestures and can open more sensitive levels of awareness. When we architects interpret our brief in terms not of forms, but of potential movements and become aware of how those movements shape mood, attitude, disposition, memory and imagination, we engage the soft dimension of human consciousness into our configurative discipline. Details will speak not only to the trained eye of our peers, but to the contours and sound of the human hand, the curvature of the spine that affords breathing, the shape of the basin that diverts a splash into a cascade, and the rhythm of rocking that animates the soul of the porch. The circle of play and the bench that makes a place, the circle of light illuminated by the candle that makes an occasion, the attention paid to these specifics has been the missing link in the education of an architect concerned with the top down approach that fails to consider and support the rituals of daily life in pursuit of the abstract ideal. In the words of Aldo Van Eyck, “Whoever attempts to solve the riddle of space in the abstract will construct the outline of emptiness and call it space. Whoever attempts to meet humanity in the abstract will speak with an echo and call this dialogue. Humans still breathe in and out. When is architecture going to do the same?”\(^{60}\)

\(^{58}\) Ibid
\(^{59}\) Ibid
Although the theme of this talk is the idea of affordance within the humanities today, I would like first to consider the idea in an economic sense. Designers have limited time and money to put into the conception and realization of a building, and the question I would like to pose is on what exactly should they spend this time? What is the role of the architect in designing, documenting, and overseeing the project? A score of talented engineers can now provide nearly all of the technical specifications that go into a design, and a team of good contractors are capable of building almost any creation or aberration that the architect may concoct. So, what role does the architect play?

Some may argue that designers come up with the overarching “idea” of the design—that is, they provide the framework or what is sometimes referred to as the “aesthetic” expression of the building’s functions. Yet this view rings somewhat hollow to me, because it leaves out many other things. It seems to reduce the designer’s role—if I might borrow the binary option of the late Robert Venturi—to designing the wallpaper for the decorated shed, or sculpting the feathered locks of the duck. Wherein resides this so-called aesthetic idea, in any case? Even philosophers as deliberate as Immanuel Kant, as we shall see, were unable to find it. A little more than sixty years ago the great Finnish architect Alvar Aalto, in a lecture entitled “The Architect’s Dream of Paradise,” offered what I think is a more gallant and noble response to the question of the designer’s role, when he noted that “Every building, every architectural product that is its symbol, is intended to show that we wish to build a paradise on earth for man.”

Now these are high aspirations, because the notion of paradise is fecund with both lush images and historical meanings. The lost or future paradise stands at the core of the Hindu, Buddhist, Judeo-Christian, and Islamic religions. The Greek word \textit{paradeisos}, which appears twice in the Alexandrian translation of the Hebrew bible, comes from the Persian word \textit{paridaeza}, which mean an enclosed or walled-off garden. Thus, the word paradise is most generally associated with the garden.

This is also true with the great rulers of the ancient world. The famed Hanging Gardens of Babylon, as we now know, were actually located in the Assyrian city of Nineveh (present-day Mosul), and King Ashurbanipal went to great lengths to describe not his palace but the gardens that he had designed. The great imperial cities of China were built around...
the emperor’s palace, which was generally centered within or adjacent to the imperial garden. The city of Kyoto, the one-time capital of Japan, exists today as a city defined almost entirely by its imperial and monastic gardens. Plato and Epicurus gave their lectures in gardens. Hadrian built his imperial city at Tivoli (for a resident of one) in a vast garden. And the mesmerizing mosaic depiction of the wide-eyed Empress Theodora in the church of San Vitale in Ravenna is portrayed inside a garden pavilion. Early Christian monks who left their towns for the isolation of desert caves or forest huts alluded to them as paradises. Later in the Middle Ages, the reform-minded Cistercians referred to the cloisters of their austere stone abbeys as paradises. Imagine for a moment how indeed paradisiacal were their churches with their extremely high reverberation times, the aural spectacle of one hundred monks in a candle-lit midnight mass interlacing the precisely times phrases of their Gregorian chants (Figure 3.1). They must have imagined the collective sound as emanating from heaven above.

Does this mean that Aalto was misguided in his hope that designers could build another paradise? Or have we, as designers, lost our way in the muddy philosophical backwaters of semiotics, postmodernism, poststructuralism, deconstruction, and computer-generated software—all of which at least has had the benefit of wringing the last molecule of life out of a tedious and exhausting line of architectural theory. Like the Sirens of the Odyssey, theory has lured architects into the belief that the purpose of design is to play conceptual games or be edgy, as it were, through the manipulation of society’s cultural emblems. In doing so, we have overlooked the fact that architecture is predominantly a “whole body” experience—a multisensory, emotional, hormonal, and phenomenal one grounded in the entire bodily organism. This experience also arises in the dynamic interplay of the ecological, social, and cognitive environments. If design studios have emphasized the need to be creative in a fashionable display of glass boxes or twisted cutting-edge objects, Aalto’s notion of paradise was much simpler. He was simply voicing the desire to create an environment in which people would thrive and be happy.

II. Yet how do we save our ship from being pummeled on the rocks of our own unchallenged design premises? The problem is not an easy one because of the great complexities of what we now refer to as global culture.

But perhaps we should start by admitting that we have, in recent years, been a little intellectual lazy. After theory crashed and burned sometime around the start of the new millennium, we have been coasting along a little too smugly. We continue to view the world in Cartesian dualities, such as the belief that we have material bodies into which are crammed the gray matter of thinking minds, or that we are subjects cast within an objective world somehow standing apart from us, something that we can manipulate at will. We continue to characterize culture as something out there in the world, something given and not of our making, something over which we have little or no control. We continue to ignore the fact that in the last quarter-century philosophy, the humanities more broadly, and the biological sciences have undergone a significant paradigm shift—to borrow a phrase from Thomas Kuhn. It is one that has uprooted many centuries-old ways of viewing the world. If we wish to start fresh in our pursuit of Aalto’s paradise, then perhaps the first thing that we do is to work with an up-to-date understanding of who we are as living organisms.
In part, this new view of ourselves can be summarized by this passage of the philosophers Evan Thompson and Francisco Varela:

*The nervous system, the body and the environment are highly structured dynamical systems, coupled to each other on multiple levels. Because they are so thoroughly enmeshed—biologically, ecologically and socially—a better conception of brain, body, and environment would be as mutually embedded systems rather than as internally and externally located with respect to one another.*

There are two crucial points for architects that can be extracted from this summation. First, we cannot extract the organism from the environment in which it is embedded; our very existence is bound with it. Second, because architects build environments, they contribute largely to the environmental and social cultures in which our lives unfold. A little over a year ago, a group of European architects and planners at the annual gathering of world leaders in Davos, Switzerland, issued the proclamation that we urgently needed a holistic, culture-centered approach to the built environment. What does such an approach entail? We might start with the underlying premise of the new biological field of niche construction—that is, when an organism alters its environmental field, it also changes the natural-selection pressures of that organism. Saying it another way, every time we pollute the environmental field with poor objects of our own, we demean ourselves as a species.

Three interrelated terms stand in the forefront of the contemporary humanistic discourse: embodiment, enculturation, and enactivism. To say that we are embodied organisms by virtue of our bodies borders on a tautology, yet from a cognitive perspective it is important to clarify one essential point. Cognition in itself does not exist in the brain somewhere alone or apart from the body. Every thought, every course of action, every meaningful affordance is a function of the whole organism. If you at semester’s end have not slept for three days, your life is diminished and your compacity for thinking is lessened. Thought is therefore limited, or rather, sensory regard. Our social lives are also unique. As one textbook on the idea of embodiment made the case: “By using the term embodiment we might highlight two points: first that cognition depends upon the kinds of experience that come from having a body with various sensorimotor capacities, and second, that these individual sensorimotor capacities are themselves embedded in a more encompassing biological, psychological and cultural context.” If a bee with its sensory system seeks out honey, we have our own perceptual and organic affections.

The idea of enculturation or culture is another term whose meaning has radically shifted in recent years. According to the anthropological models of the 1960s, culture was simply the “nurture” factor of the nature/nurture equation—that is, culture was something imposed upon the human genetic structure from the outside, from the social environment that humans themselves have created. The anthropologist Clifford Geertz in the early 1970s, for instance, defined culture as “extragenetic, outside-the-skin” control mechanisms, which distinguish the behavior of our species from other species. Contemporary philosophy, however, views culture in a very different light, as we have seen with Thompson’s characterization of the brain, body, and environment as dynamically structured systems mutually embedded. The original meaning of the word “culture,” taking it back to its Latin root, is growing or cultivating something in the soil or a prepared medium. The humanities and sciences are today actually returning us to this meaning. In architectural terms, culture is tending to the human organism within its built and social environments—the inseparable environmental and cultural medium in which our particular organism either thrives or diminishes.

The idea of culture is also related to that of enactivism, which is the idea that we are not bodies separate from and cognitively assessing an objective world apart from us. Rather, there is a dynamic interplay between the two, which cannot be suspended. Our constantly changing cognitive systems, through each individual and generational change, enacts or constructs the meaning of what we perceive. Each of us, living in a cultural medium, enacts a somewhat different world. And our different experiences, in turn, are a result of the mutual interaction between our sensorimotor capacities and the environment in which we dwell.

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III.

And here we come to the idea of “affordance,” the theme of this particular seminar. In 1934, the biologist Jakob first approached the idea with his notion of the Umwelt, the surrounding world, or how our perception is defined by the sensory carriers of meaning particular to our organism.\(^6\) In 1979 the psychologist James Gibson carried this notion forward when he defined a “niche”—that which we as architects are presumed to design—as “a set of affordances.” He also noted that a “niche” stands apart from the idea of “habitat, because it refers more to how an animal lives than to where it lives.”\(^7\)

I will make the case that this distinction between “how we live,” as opposed to “where we live,” is crucial to a more responsible approach to design. It is pivotal because it suggests that we should be focusing less on what a building means to the occupant or to the designer (for the latter, usually a reaffirmation of the latest fashions), and more on how people experience them. Take these two somewhat random images.

One is the almost prototypical American urban street: little direct sunlight within the canyons of the tall buildings, concrete sidewalks, glass boxes with no detailing—in short, a cold, boring, and lifeless design offering no sensory spark or engagement. Various studies have shown that people pick up their pace when walking past such buildings, in order to move away from them as quickly as possible (Figure 3.2). Unfortunately, the glass box adjacent to it typically provides only more of the same. The American anthropologist Edward T. Hall, back in the 1960s, made the observation that the failing of modern architecture was precisely its lack of scale and tactile stimulation. As he described the problem: “Our urban spaces provide little excitement or visual variation and virtually no opportunity to build a kinesthetic repertoire of spatial experiences. It would appear that many people are kinesthetically deprived and even cramped.”\(^8\) This statement was made fifty-three years ago, and yet we seem content with making the same mistake. Perhaps an even more embarrassing question is why are we content with designing with the architectural palette of a half-century ago?

The other image, admittedly situated in a better climate, has, by contrast, sunlight, greenery (so important in relaxing the optic nerve), texture, scale, history, and of the affordance of multiple transportations, which allows us the healthy exercising of our biological organism (Figure 3.3). Why is it that architects, and even those studying architecture I dare say, still tend to gravitate toward the so-called solution on the left? It is because we are focused on the object and not the experience of the urban inhabitant. Designers are looking for a technological solution rather than creating a human niche that allows people a set of affordances.

points of high congestion, and shadowed streets on which many people walk past these glass boxes in a very unhappy frame of mind. Parisians, living within a different cultural niche, interestingly still restrict their high rises to the outskirts of the city.

I once lived in Chicago, and from the 35th street station on the Red Line, one can look north to the impressive skyline of Chicago. People commuting into the city on freeways from the west also view the skyline as they are arriving, no doubt with some pride or sense of self-importance. Yet over many months of the year, people walking those downtown streets do so with little joy. The cardinal grid channels the howling winter winds into the glass-and-concrete canyons at great intensity. Trash litters the sidewalks. The ambient noise level of the overhead mass-transit system and the horns of the automobiles are only slightly less disturbing than standing at the end of a runway at O’Hare Airport. The air is fowl, and the tens of thousands of commuters emerging from their parking garages or bleak subway stations, twice a day, have to endure this hellish experience of walking to or from their offices—where, if their desk is less than twenty feet from the window walls, they will shiver away their body heat all day long. I think my point is now rather obvious. Architects radiate a distinct glow when asked by fawning critics to expound upon the inspiration behind their glass towers, aesthetically fashioned with the latest twists and bends. Yet the experience of the residents negotiating the city on a daily basis is more often than not a hellish one—even if their iPhones can direct them to the nearest pub or pizza parlor. How did we come to this present state of affairs? Why do we employ such vacuous standards in our designs? There is a line from a Clint Eastwood movie that pretty much explains it: “We became civilized.” The legacy of these dumb glass boxes plopped in every city across the globe will nevertheless remain with us for quite a while. Whatever happened to Aalto’s dream of paradise?

IV.
Just what can designers afford? Andy Clark defines affordance this way: “Affordances are the possibilities for use, intervention and action which the physical world offers a given agent and are determined by the ‘fit’ between the agent’s physical structure, capacities and skills and the action-related properties of the environment itself.” I like in particular the idea of a “fit” between the human organism and “action-related” qualities of the environment. And because one perceives the built environment through one’s sensory and emotional engagement with it, the architect’s task would seem to be creating environments that are intriguing or compelling in some manner, environments that are adaptive to our organisms, environments that are restorative or restive, or more simply, environments that make us happy. Conversely, people shun environments that are dangerous, annoying, tedious, and injurious to their health.

Yet because we, as a society, seem unable to repair the impoverished or dilapidated parts of our cities, or maintain our dark and filthy mass-transit stations where we are jammed into overcrowded trains, or relieve our suburban commuters of their two hours of bumper-to-bumper travel on so-called expressways—we run up against the difficult question of what can architects really afford? Can we really think of changing the patterns that have been set down over generations, as it were? Can we any longer contemplate, as Aalto once did, a vision of something different? In what way can we realistically provide a better “fit” or attunement of the human organism with the action-related prospects of its surroundings?

Although there may be no timely or inexpensive solutions to the many failings of our present environments, we can at least start by reforming our profession, and in this regard, I would like to begin with a radical reform of architectural education. For a start, I would like to see significantly less studio time devoted to coming up with the “idea” for a design, or how we might ape the latest trends in our glass boxes, and more on research into the human experience of designed environments—that is, serious research funded by federal agencies such as the National Science Foundation or National Institute of Health, or private foundations. It should be research carried out with the very sophisticated technologies we have at our disposal today to evaluate better how we engage with our environments. In the 1960s the Green Movement first articulated our shortcomings with regard to the impact our poor designs were having on our natural environments. Today it is time to address the equally pernicious effects our designed environments are having on us—how we think and how we socially engage with each other. Some may argue that this time spent on research will lessen our skill as designers and thwart creativity, yet I believe the opposite to be the case. Architecture students are very smart and can handle both tasks, and school is a time for learning and not to suffer an indoctrination into the unwritten rules of the profession.

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Understanding better who we are and our intensely social natures will open up fresh and creative approaches to the design of our cultural niches. Moreover, without such documentation, architects will never have credibility with zoning boards, planning commissions, or the heavy arm of the ever-expanding and oppressive political state. We should reinforce the point that our ultimate objective is good design, or even better, beautiful design. And in considering design from a human perspective, we will put an end to the intellectual fashions that seem perpetually to plague the field of design.

Now what kinds of research do I mean? The range can be quite extensive but let me give you a couple of examples. You are a mostly young audience, who have not entered into the tedium of the workforce, and therefore you have not yet been forced to come to terms with the idea of a precious two or three-week vacation each year, where people go fishing, rent a cabin in the mountains, visit a foreign country, or stay at a seashore resort. Now why do people feel the need to do such things? We of course have the appropriate technological metaphor for needing such a thing; we say we do so to recharge our batteries. We mean by this that we need periodically a place to relax, to relieve our anxieties and tensions, to take in new sensory stimulation, and forget the fact that we are nine thousand dollars in debt on our credit cards. Yet we are also saying something else when we take on these annual treks. We are saying that beaches, golf courses, mountains, or a trip to a foreign country are in their own way paradises, which are remote from our everyday designed or built environments. The more dismal our local urban environments are, the more these trips are necessary to maintain biological equilibrium and good health.

Yet these trips also tell us something else, which can inform our everyday environments. A few decades ago the psychologist Roger Ulrich looked at the recovery rates of patients after a surgical procedure that on average required six days in the hospital. He looked at patients in a hospital wing that had two different outside views. One part of the wing faced a brick wall; the other part of the wing opened onto a green meadow. He discovered that the view of nature, in and of itself, has a restorative effect on the human body. Those patients with a view of the meadow stayed in the hospital one day less, had fewer complications after surgery, and took fewer pain medications. This study not only told us something important about ourselves, but, as it turned out, it also had a profound effect on the design of hospitals, which today are being designed and built around gardens, which I, following the ancient Persians, will call paradises. It also opened a new realm of design thinking—biophilic design—or the integration of nature into all of our designs. Think of this the next time you design a building with a view of a brick wall, or worse, a parking lot.

We have many other areas in which research is needed today. Ulrich’s study of hospital rooms concerned the homeostatic regulation of the body within the built environment, through the medium of evidence-based design. Yet with the same techniques we can study the effects of poor environments, or what might be called environmental deprivation. They are many, well-documented studies of the negative effects of such environments, among them, obesity, disease, depression, stress, crime, drug addiction, alcoholism, asocial behavior, psychological and personality disorders, and higher ratios of morbidity. We have known these problems for years, yet we as a society seem to be incapable of improving our poor urban environments—helpless as we seemingly are. Conversely, we have done virtually no research on what constitutes good or enriched environments, although studies with rats have shown that sensory and socially enriched environments can double the size of brain cells and greatly enhances synaptic connectivity. Does this mean that good environments can make us smarter?

We also have another way of thinking how we engage or experience the built environment, which revolves around our sensory systems. We have proprioceptive, kinesthetic, sensorimotor, and mirror systems; emotional, visceral, and hormonal systems; visual, auditory, and olfactory systems; and then there is the breakthroughs in how we engage with form and space. The discovery of mirror systems in the 1990s, for instance, has profound implications for the field of architectural design. Through a process that has been called embodied simulation, mirror systems in the premotor and parietal areas of the brain, for example, allow us to simulate not only the actions and intentions of others but also the physical characteristic of the environment, such as the perception of form, space, light, scale, color, texture, materials, among other features. Where are these topics within your design-studio curriculum?

A third area in which we, over the past few decades, have made important progress about ourselves is the recognition of how profoundly we are social animals. Only very few architects, such as Christopher Alexander, have wandered into this terrain, and he did so with only modest and sometimes questionable social-science models. Today we have made major advances into understanding the parts of the social brain allowing us to network with others, the environmental factors imperative for the full development of the social brain, our much longer evolutionary history, and the ubiquity of human rituals, which lie at the foundation of our behavior. Once again, I ask the question: Where is this topic within your design-studio curriculum?

There is far too much here to discuss today, so I will limit myself to two areas of interest to architects. One is the role that emotion or mood plays in the experience of a designed environment. The second is the seemingly quaint idea of beauty, which I will obviously not be discussing by the standards of architectural design juries.

VI.

The idea of emotion and mood actually has had a lengthy pedigree in architectural discussions going back through architectural history—that is, before the advent of the modern movement short-circuited it. Aestheticians of the 19th century also seem to have had a good grasp of mood and perception, matched only by what we have learned in the past few decades. Both Robert Vischer and Heinrich Wölfflin, for instance, argued that the experience of architecture was emotional and phsyiognomic—a process by which we feel ourselves into and understand the world around us. August Schmarsow made precisely the same argument with architectural space—that is, spatial perception is not a neutral or Euclidean field but something that changes with the position, orientation, and affordances of our bodies.11

Traditional psychology textbooks of just a few decades ago defined mood or emotion as a response of an organism a sensory stimulus, the way we typically think of emotions such as love or anger. Present models, however, view mood in a much more complex way. For many within the field of affective psychology, mood is defined as an ongoing, endogenous kinesthetic activity onto itself, the predisposed movement of an organism within an environmental field. Mood is not something that rises up from some mysterious place below; rather, it is a “whole-organism” event motivating our movements and actions. If we walk into a social environment of other people, for example, we immediately understand the mood of the room. If we walk into a boring architectural environment, our first impulse is to leave or tune it out.

Just as the appearance of a morning sun seems to brighten the prospects for our day, or a drizzling rain seems to dampen it, so does every architectural environment alter our mood or way of thinking. Upon entering a room in a northern climate, for instance, we might instinctively move toward a sunny window, both to enjoy the warming heat of the sun and to rest our eyes if there is a pleasant view of paradise outside. Again, if it is spring and the window is open, we might enjoy a whiff of a fragrance emanating from a garden, without being aware that this sensory experience in itself puts us into an amiable state of mind. Please note that inoperable windows do not allow this affordance. Maxime Sheets-Johnstone has emphasized that “affective feelings and tactile-kinesthetic feelings are experientially intertwined.” Mood is already “a postural attitude” or “corporeal readiness to act.”12 We might then think of the open window as more than just sunlight or view of a garden; it is an affordance that swells our mood, perhaps with memories. Giovanna Colombetti argues that emotion pervades cognition through and through, and thus emotion “is integral to both perception and action.”13


Architects can exploit this connection. We can design spaces that are permeable, or offering different courses of action. We can modulate these spaces through the play of light, scale, color, texture, relation, materiality, movement, sound, olfaction, and the depth of layering effect upon effect. A long and indirect approach to a building or a narrow path into an expansive room—both build a mood of anticipation or arousal, thereby intensifying the hopeful emotion of delight upon one's arrival. Similarly, beautifully crafted detailing also pleases everyone. Why? Because with our mirror systems we emulate the talent or hand-crafted effort that went into the ingenious result.

Mood also varies with the experience of atmospheric and conceptual effects. For instance, in medieval France there was a 12th-century movement called Marianism, a Christian fondness for the Madonna, which resulted in a bevy of Gothic churches dedicated to “Our Lady” or Notre Dame. Why was this the case? One reason was that Christian theology up to this time had been emphasizing the idea of the Last Judgment, the possibility of fiery and eternal damnation. Mary, with her head slightly tilted to the right, thus came to be seen a merciful intercessor on one’s behalf, someone more empathetic and approachable. Thus, this stained-glass window of Mary in the chancel of Chartres Cathedral, one of the original windows of the 12th-century church (later rebuilt after the fire of 1194), is a masterpiece of color and light, because it fosters the mood of hope and salvation. It did so with the demeanor of the Madonna, but also with the seemingly supernatural nature of light filtering through, which was entirely fitting for a building that medieval architects viewed as the doorway to paradise, if not paradise itself. Aalto no doubt applauded the efforts of this master craftsman of glass.

Mood can be manifested in many other ways. Hans Scharoum’s Berlin Philharmonic Hall, despite its cosmopolitan location, evokes the spirit of a small town’s music festival. Not only does the tent-like ceiling project the festive mood of a special holiday and its provisional structure, but the stepped tiers on all sides afford one to experience not only the orchestra and its powerful auditory vibrations but also the view of another’s response to what you are experiencing. Scharoum’s building is thus intensely social in its mood.

Not all emotional experiences, however, have to be so intense or expressive. Jørn Utzon’s own house in Mallorca achieves its emotional power or through its utmost simplicity: the social anticipation of conversational seating, exposed stonework, and a sublime Mediterranean view exploited with a deep perspectival frame (Figure 3.5). Robert Adam was another master of mood, someone who could dramatically alter one’s mood from one room to another. Can one think of a more compelling artistic production than his library at Kenwood, Hampstead, London.

Another master of mood was Henri Labrouste in this design for the Bibliothèque Nationale in Paris, now unfortunately retired for its original purpose. Once again, a festive mood was exploited with the books, the paradisiacal gardens depicted in the murals, and the porcelain umbrellas filtering natural light for reading. Not to be overlooked in this regard was the tactile sensation of the infill panels of the desktops—glare-free and a soft, perfectly muted surfaces for the requisite lead writing instrument. What could be more paradisiacal for the work of the scholar. Architects of the 18th and 19th century knew how to exploit mood in subtle ways that many designers have since forgotten. The library at Mount Angel Abbey in Oregon, is approached from a courtyard paradise on the entrance side, but the reading room is situated on a hilltop to survey an agricultural landscape interrupted by treeescapes along rivers and streams. Aalto, it seems, viewed buildings as experiences.
VI.

Let us turn to the idea of beauty, and in an unconventional way. Architects typically do not like to speak of beauty, yet they do talk, sometimes endlessly, about the aesthetic inspiration underlying their designs. And in this regard, we already have a level of corruption creeping into practice. The English word aesthetic comes from the Greek word *Aisthētikos*, which has the meaning of “perception, feeling, or sensible cognition.” In this regard, its meaning is grounded not in reflection or judgment but in the sensory or corporeal senses. Alexander Baumgarten, who first plucked the word from the past and introduced it into the German language in the 1750s, understood this very well. He emphasized its emotional coloration by defining aesthetics as the “science of sensible cognition.”

Problems became apparent a few years later, however, when a host of philosophers debated whether the judgment of beauty was objective or subjective, whether it resided in the outlines or contours of the artistic form, or in the mind of the viewing subject. In almost all cases, the idea of beauty was bound with the idea of making a judgment. Immanuel Kant, in his *Critique of Judgment*, considered the issue of beauty and went to great lengths to preclude the idea of “feeling” or “emotion” from the act of judgment. At one point, as we suggested earlier, he even proffered the ghostly notion of “aesthetic ideas”—that is, conceptual ideas involving the imagination without any “definite concept.” Yet only a few pages later, he flatly contradicted himself by invoking the philosopher Epicurus, who had insisted that all aesthetic “pleasures, at heart, issue from a bodily sensation.” Kant’s reasoning aside, this 18th-century fascination with “judgments” of taste or beauty has kept Western thought in its lurch until the present day. Conceptual art is but one manifestation of this disease, which unfortunately seems to have no expiration date.

Yet the idea of affordance, which involves the “fit” between the human organism and the sensory or action-related qualities of the environment, allows us to approach the idea of beauty in a different way. When people outside of the arts say that their lover is beautiful or that this artistic work is aesthetically satisfying, they are not making a conceptual statement. They are referring to a sensory impression, one that fits with the action-related qualities of their immediate environments, and one whose intense feeling they have a genuine desire to express. When someone stands before this particular mural in the church of San Vitale in Ravenna, one is immediately attracted to the colorful mosaics, but upon further study one is also drawn into the enlarged eyes of the people within the retinue of Empress Theodora. These are eyes into which we read the souls of people who lived almost seventeen hundred years ago. Art history books may refer to this particular mural as iconographic, but art historians often miss the point. This mural is paradisiacal because it is deeply social in its bearing. We say it is beautiful because it tells us something profound about ourselves.

As another example, let us take the painting *Primavera* by Sandro Botticelli, a work of the early Italian Renaissance (Figure 3.6). He was closely associated with the Medici family in Florence, one of whom seems to have commissioned the work for a wedding. Once again, art history textbooks devote nearly all discussion to its iconography. The title of the painting, *Primavera*, of course, refers to the season of spring, and the rounded bellies of most of the ladies portray the ripeness of the new season. The male figure of Zephyrus on the right, who represents the cooler winds of winter, is about to kidnap the nymph Chloris, whom he will wed and transform into the goddess of spring, Flora, who (after her transformation) is the woman in the floral gown scattering rosebuds on...
It is when we come the haloed figure in the center—Venus, the goddess of love—that we realize something else is going on here. The intense sexual overtones of the figures surrounding her are there to induce a particular passion, a lustful feeling for love, yet Venus stands apart. The gesticulation of her right hand is a pose that many early Renaissance painters chose for the Madonna in the Annunciation, and the head tilt to the right and the facial structure of Venus is nearly identical to that of Mary we saw in the Chartres Cathedral. We have here a very interesting passage between two cultures: the high morality of Christianity and the more carnal or pagan underpinnings of the new Humanism taking hold—and not without its peril to the career of Botticelli himself.

We can see this also in Botticelli’s painting of a few years later, The Birth of Venus, also commissioned for a wedding celebration. A few of the earlier figures reappear, but here the deity born in the clam shell off the isle of Cytherea, which incidentally was always portrayed in mythology as a garden paradise, is given center stage. In her full nudity, we have a more human and sensuous figure, yet once again she has the head tilt and the somewhat Gothic appearance of the Madonna. My point is that both paintings by Botticelli are social expressions in their subject matter, expressions that we experience not through words but through our own social and emotional natures. And it is no mystery why these two works remain widely recognized as beautiful today. Although executed within a distant and somewhat remote culture of the past, they retain their emotional power because of the rich social expression they so elegantly convey. From the perspective of an affordance, we can say they perfectly define the “fit” between the human organism and the sensory or “action-related” qualities of the social environment in which we too, in our own way, are living.

It is certainly no coincidence that both paintings were completed during the time that another Renaissance writer was completing his erotic novel Hypnerotomachia Poliphili, set in a series of gardens, through which Poliphilo must wander to find his true love Polia. He eventually weds her at the altar of Venus on the island of Cytherea. The interesting thing about this novel, written in the spirit of troubadours, is that while the author devotes much time to describing the ravishing beauty of the nymph Polia, he spends an equal, if not greater amount of time, describing the various gardens he visits as well as the architecture that he discovers. This has led at least one architect, Alberto Pérez-Gómez, to argue that architecture originates in a similar erotic impulse. I do not contest him in this belief. In fact it might be a way to think of design once again in paradigmatic terms.

The point of my foray into the world of art is twofold. First, I believe the profession has today succumbed to what Max Horkheimer and Theodor Adorno once referred to as the “culture industry.” We are being forced into a dreary cultural conformity of Big Brother’s making, where the same “art objects” are being restyled or repackaged each new season. The city of Arles or the Philadelphia Museum of Art does not need another museum or addition by Frank Gehry to mark its cultural niche. To put it more simply—in focusing on buildings and objects and not on the environment field in which we dwell, our priorities are wrong. I believe that we need to turn our present thinking around, because Aalto’s dream of paradise, like it or not, is deeply imprinted within our encultured natures. Every social compact disassembles when people are unable to work within or enjoy their living environments.

Second, a viable culture of beauty has to be built on a solid social foundation. The current research on our mirror systems, for instance, is today demonstrating that we have a neurological resonance with the intentions and feelings of others, and “these other-within-self intersubjective representations,” as Jaak Panksepp and Colwyn Trevarthen explain the matter, “establish sympathetic resonances, and intersubjective contagions, probably by intrinsic affective systems situated much lower than the neocortex, making complementary adjustments to the intelligence and feelings expressed in gestures of other bodies and sensed by sight, sound and touch through neocortical processes that are epigenetically

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programed by experience.” The gist of this statement is that we are deeply connected to each other socially or culturally, although the drift of society today seems to be moving in the opposite direction.

Joseph Rykwert, back in the era of Robert Venturi’s fascination with the Las Vegas, warned architects not to succumb to “the techniques of advertising and the nightjoys of neon,” but rather attend to the physical form itself, “the stage on which the action occurs, in his words,” the “demarcation of a place as a social situation” (Figure 3.7). The task of good designers, he went on to say, is “to clarify, to reconcile, to fortify,” and “the savant exercise of their skill is the real contribution which they can make to the creation of a valid human environment.” Hans-Georg Gadamer has similarly argued that every genuine work of art “signifies an increase of being” or “sensuous abundance,” and when embodied in rituals or festivals, it brings people together in a swelling moment of conciliation.

Seen in this light, the search for beauty is nothing less than a moral and professional obligation. Beauty and the architectural making of culture are, in the end, forms of ritualistic behavior. And examples of human action free of this ceremonial instinct, as Wendy James has noted, “are impossible to find, because all human action relates in some way to arenas of culturally specified significance we participate in with others.” Beauty and culture are in their own way social activities underlying Aalto’s vision of paradise. Both are similarly affordances—those which allow us a moment of fit and fullness, and those which the designer should have the calling to create.

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The affordances of the environment are what it offers the animals, what it provides or furnishes, either for good or ill. The verb ‘to afford’ is found in the dictionary, but the noun ‘affordance’ is not. I have made it up. I mean by it something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment.

-J.J. Gibson

Introduction

Here is the plan. In the first section, I will present the two problems I think we need to solve in order to make good on the conference title. And I will also make a brief excursion into evolutionary theory. In §2, I will discuss Gibson’s notion of affordances and some of his claims about understanding the meaning of what we perceive. In §3, I will discuss the notion of functions as it applies to biology and those artifact kinds we call ‘works of art;’ and then discuss what the notion of function suggests about understanding the meanings of works of art. And, in §4, I will draw some conclusions about whether our problems are tractable.

But first, a word about some terms: In this presentation I will use the following terms: “design,” “designer,” “maker,” “product,” and “user.” For some of you this usage will be jarring. I mean them as you would apply them to those who design, make, and use video games. But, if you prefer, whenever you hear “design” think plan, program, or parti, or whatever term you prefer to suggest the thing you dream up (plans and drawings, for example) that you plan for someone to make. And, so, if you do that, whenever I use the term “product” think either whatever it is you subsequently present to clients or whatever you cause to be built. And, so, then whenever I use the term “user” think client and whenever I use the term “maker” think contracter or coder, and when I use “designer” think architect, engineer, product designer, graphic designer, game designer, or the like. I mean this comment to suggest some other ways you might take the terms I will use.

1.a. The problems

Recently, a speaker at a presentation at Kansas State University flipped a switch on the wall behind her in order to get more light into front half of the room in which she was speaking. Unfortunately, she flipped the wrong switch, and the half of the room she wanted to illuminate was still in darkness. Yet, by design, each of the two switches on that wall afforded some illumination of the room.

This case illustrates both of the questions I wish to address today, namely: (1) On behalf of users, those who would appreciate a product (for example, a building or a design element) — how do you come to have very high credences that a particular thing, or aspect of it, is useable in some particular way if, in advance, you were not told to expect that it is? And (2) – on behalf of designers (for example, product designers or...
architects) and perhaps makers — what data would you need to encounter to increase your credence that you could either use some “contraption” in the way it has evolved or design some contraption so that it can be used the way you intend it to be used?

Our two questions are epistemically related: for the data a maker or designer would need to encounter to increase her credence that she could either use some contraption, design one, or create one to fit users’ needs requires those needs first be understood. In addition, for a variety of reasons teachers of designers and makers must think about this relation and pay attention to the fact that the second half of it is further divided into two parts: on the one hand, there is “the issue of translating user-research information in design practice,” and, on the other, there is the issue of “educating students how to understand the complexity of user’s perspectives in their design thinking” (Tvedebrink and Jelic, 2018: 7). The second of these can easily mislead someone if they are already prone to think that user appreciation is purely aesthetic or sense-based. And, while I will not discuss this here, the distinction between our aesthetic preferences and our artistic verdictive judgments is both large and complex. Be that as it may, the first task, that of “translating user-research information in design practice,” directly confronts the problem regarding when and how to talk about purposes. And that issue is even further complicated by the fact that it only looks amenable to metaphysical solution, whereas it is clearly an epistemic matter. (See Schrijver and August 2017, 1; and, for a characterization of metaphysics, see Fine 2017, 98-101.)

1.b. A not entirely unrelated side trip into evolutionary theory

In the natural context, no purpose is responsible for any change in any biological factor; and presumably, when we enter into the “non-natural” context, factor changes are often the result of genuinely intelligent design: that is, for example, in breeding dogs, cats, seeds. This brings out the fact that the only purposes that can be discovered are those responsible either for artifacts or for entities that are deliberately manipulated in the manner in which artifacts are. I mention this in part because it is basic to our understanding today that we are concerned with artifacts. Buildings and elements of design, product designs, bits of furniture, avatars, signage, indeed, all these “architectural” or “design” objects are artifacts.

The importance of this comes out by thinking a bit more about Darwin. In a 1986 review of Richard Dawkin’s The Blind Watchmaker, the philosopher and historian of biology, Michael T. Ghiselin remarked that Darwin succeeded in replying to Paley in part by showing that natural selection could achieve in small steps, over geological time, what Paley assumed could only be the “contrivance” of “a contriver.” The other part of his reply was that Darwin “turned the argument from design on its head: Nature produces what we might call contraptions rather than contrivances. In other words, natural selection predicts both adaptation and maladaptation.” It is not too big a leap, nor disrespectful, to remark that design by makers does the same thing: it predicts, or at least yields, both adaptations and maladaptations, if I may call them that, to our needs. But this also highlights the fact that, the fact they are adapted or maladapted is not, by itself, enough to ascribe purposes to their being the way that they are. We will come back to this.

2. Affordances with a brief note about two views on the strategies of neuroscience

We could of course set competing accounts of how to do neuroscience side-by-side and see what we think, based on our intuitions. But this runs the “risk that [the discussion] will decay into the dull thud of conflicting intuitions” (Bigelow and Pargetter, 1987: 196). Such a

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1. I am neither assuming that only human beings make artifacts nor that dogs, cats, and other non-human animals cannot be artifacts (see Sperber 2007).

2. Ghiselin comments that Dawkins “succeeds admirably in showing how natural selection allows biologists to dispense with such notions as purpose and design”.

3. Even with respect to artifacts is it not plausible to describe all changes as the result of aiming at some purpose or even as the result of having achieved a purpose; otherwise, for example, there would be no unintended consequences of our actions.
conflict could emerge quite naturally by setting Bruineberg and Rietveld and others in the 2014 special edition of Frontiers in Human Neuroscience on “radical embodied cognitive neuroscience” (Bruineberg and Rietveld 2014, 1) alongside Vartanian and his colleagues, who offer accounts of how specific mechanisms underlie “systematic variations in architectural features [leading] to behavioral outcomes” (Vartanian et al. 2015, 10446). For that reason, were I adjudicating between them as empirical views of perception, I would stress the importance of the theoretical grounds for and against the various tendencies in neuroscience and neuroaesthetics.

However, I will discuss the topic of this section only within the constraints of a particular account of what “affordances” are, and I will not attempt the daunting task of asking which of those two views of neuroscience, if either, reflects the correct empirical (or metaphysical) view.4

Many ecological psychologists themselves think that, at least to date, the notion of “affordances” is not explained well, and there are various accounts of how his notion of affordances leads, or doesn’t, to Gibson’s notions of “direct perception” and “atmosphere” (McGrenere and Ho 2000, Chemero 2003, Scarantino 2003, Tvedebrink and Jelic 2018).5 Even when they say they are “going back to J. J. Gibson’s early formulation,” there is still quite a bit of what might be called “selection” going on. Be that as it may, we can still make some progress by focusing on this definition offered for “affordances” by Gibson himself:

The “affordances” of the environment are what it “offers” the animal, what it “provides” or “furnishes,” either for good or ill. The verb to “afford” is found in the dictionary, but the noun “affordance” is not. I have made it up. I mean by it something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment (Gibson 1979/2015, 119; emphases in original).6

On the other hand, Gibson took phenomenologists to assume that “the valence of an object is bestowed upon it in experience, and bestowed by a need of the observer” (Gibson 2015, 130).7 But he denied this, claiming instead that an affordance can be present in an environment even if an agent never perceives it (Gibson 2015, 130).

The relation of Gibson’s idea of affordances to the phenomena describable in the standard terms of physics deserves special mention. As Gibson notes in the quotation above, and in many other places in his discussions, the idea of affordances is not within the sphere of what can be described in standard physics. But it is consistent with it – he was not suggesting we go back to the ages before Galileo, Descartes, Newton, and Darwin. The abstractions that were embedded in those scientific achievements came at a cost, namely, that what was available in the ages before the scientific revolution was a way of describing the lived in world

4If it is treated as an entrée into the metaphysical debate about the nature of perception, then, in fact, I believe that can only result in the dull thud effect; for, I suspect, the metaphysically inclined have only their intuitions upon which to rely and there is no genuinely impartial and empirical way to determine which of them has greater utility.

5Chemero 2003 (182-184) has a very nice introduction to some other ways of understanding affordances.

6Note that it is Gibson’s idea that I am discussing, not the more popular and widely used idea of “affordances” found in the work of Donald Norman. (Norman 1993/2013).

7This looks like a metaphysical view about the nature of our perceptions, and perhaps that is what it is. If so, it is outside my purview to adjudicate between that view and its competitors – and if it is not a metaphysical view then it is an empirical view (and none of us at this mini-conference is in a position to render views about empirical matters).
that was precisely what was abstracted from in order to make those achievements possible. That such abstraction achieved a great deal in gains with respect to offering true theories of mathematics and about the world is undeniable. But every achievement requiring abstraction has objective losses as well as and gains. And here, Gibson focuses on losses.

In particular, what was lost in the subsequent account of perception was the fact that perception came to be thought of as independent of the life of the perceiving animal and of the function of the object being perceived as well. In contrast he claimed that perception is “relative” to both (Gibson 2015, 120).

“If we assume that [an object] can be distinguished as having just these properties [of affording us a place to sit], it should look [like it can be sat on, and] if the surface properties [of that object] are seen relative to the body surfaces, the self, they constitute a seat and have meaning” (Gibson 2015, 120).

And, so, he was led to this:

I now suggest that what we perceive when we look at objects are their affordances, not their qualities. We can discriminate the dimensions of difference if required to do so in an experiment, but what the object affords us is what we “normally pay attention to.” The special quality of objects into which an object can be analyzed is ordinarily not noticed (Gibson 2015, 126, emphases added).

In this and a number of other passages Gibson might appear to conflate “perception,” which can be sub-personal (i.e., occurring below the level of personal awareness) and “attention,” which almost never is – and, whether he did so or not, this has likely been the cause of much mischief when others have been tempted to adopt various of these ideas. But what it comes to is just that what we normally perceive when we look at objects are not the features of an object that would be useful in “discriminating the dimensions of their difference” nor noting the “special quality of objects into which an object can be analyzed,” but only those features of an object that are useful to us as living creatures in a lived environment.

However, what I want to call attention to and challenge in this presentation is the idea that one can get an understanding of the object in any important sense for free just by perceiving or attending to an object. This can be seen by asking what sort of meaning it is that arises from perceiving or attending to whatever makes some object look like, for example, a seat? To be sure, Gibson’s attention was elsewhere when he wrote this book. Indeed, he thought that: “The central question for the theory of affordances is not whether they exist and are real but whether information is available in ambient light for perceiving them” (Gibson 2015, 132).

Consequently, Gibson spent a good deal of space and time examining, or at least confirming, that such information is indeed available in ambient light. And then in an attempt to make his theory internally consistent, and get at what he called “direct perception,” he described what he calls “information pick up” as an alternative to “information processing” (Gibson 2015, 139-161). But I am not going to discuss that aspect of his view; and instead will concentrate on the distinction I have just mentioned between perceiving one kind of “meaning” and gaining “understanding.”

Figure 4.2: Performative Affordances. As opportunities for action, affordances always imply bodily coupling, they are shapes in the world that shape the body and vice-versa. Performative affordances are designed with a specific purpose, to evoke a prescribed response. This does not mean that the affordance will not perform other unforeseen gestures and responses, but that it is configured according to a very specific purpose. An outstanding example of an umwelt with nested performative affordances that work in concert in a dynamic system is Alvar Aalto’s Paimio Sanatorium—this is a rare example of a building that was intended to do, rather than being an assemblage of “esthetically pleasing forms,” yet whose outcome is exceedingly pleasing.
3. Functions

You will recall that we said we would come back to the point that adaptations and maladaptations – even to needs – do not, by themselves, entail the presence of purposes such as the meeting of needs. This is reflected, perhaps, in Gibson’s idea of affordances. It is certainly behind the debate about the functions, purposes, and goals of artifacts, as that has played out among historians and philosophers of science. And I want to use a brief rehearsal of the philosophical discussion of functions to bring out the problem I have just hinted at that can be rooted in Gibson’s idea of how human beings and other animals perceive, and what it is they perceive, by rehearsing a bit of the philosophical discussion of functions in biology as well as in artifacts.

3.a. Functions in biology

Philosophical discussions of functions have been around since Aristotle who held the commonsense view that functions are in objects by means of the designs of their designer(s). It followed, as William Paley noted, that if you could discover a function in biology (such as the function of the eye), you could assume there was a designer lurking in the wings. (Although, even based on this evidence alone, you might not know how well-designed the object is compared to other such organs and, so, how good, bad, or mediocre, the designer was.) But, ever since Darwin, this kind of explanation of at least natural functions – which seem endemic in biological theories – will no longer work. Either one no longer sees room for functional explanations in biology, and so declares all functional talk among biologists to be metaphorical, or one gives some sort of “naturalistic” account of the term and so makes it possible to continue to understand it literally (Godfrey-Smith 1993, 189-191).

The notions I will quickly sketch here are all attempts at providing a naturalistic account of the term. Some of them are grounded in what everyone might say – and so are connected to the project of offering so-called “conceptual analyses” of the term and are refutable by counterexamples. Others restrict their discussion just to what biologists and others need in order to continue talk about functions in some literal way and tend to be disconnected to conceptual analysis offering, in contrast, theoretical definitions of the term which are only refutable if they turn out to have less utility for scientific uses.⁸

Of the former kind, one should list Larry Wright’s 1973 account in an essay on the use of functional terms in biology in which he focused attention on the idea that functions are appealed to when explaining the presence or continued existence of a feature in some organism. Such an explanation, in particular, allowed us to distinguish between functional properties that an organism had and the accidental properties it might well also have. “The function of the heart is pumping blood,” Wright wrote, “not producing a thumping noise or making wiggly lines on electrocardiograms, which are also things it does” (Wright 1973, 141). Robert Cummins nearly immediately noted that “an attempt to explain the presence of something by appeal to what it does – its function – is bound to leave unexplained why something else that does the same thing – a functional equivalent – isn’t there instead” (Cummins 1975, 745). He offered the contrasting view that “the function of an organ or process (or whatever) is appealed to [in order] to explain the biological capacities of the organism containing it, and from these capacities conclusions are drawn concerning the chances of survival for organisms of that type” (Cummins 1975, 751).

Peter Achinstein offered yet a third view in 1977 arguing for a substantially different idea and denying that “function sentences,” as he called them, rarely are offered to explain the existence or continued existence of any features. “Function sentences” all aim to attribute a function to some means to an end and such that “for any function there is an associated end which can be formulated in a propositional way” (Achinstein 1977, 360, my emphasis). Almost a decade later, John Bigelow and Robert Pargetter 1987 offered a new account which they called “forward looking.”

“Functions,” they noted, “can be characterized by reference to possibly nonexistent future events. Furthermore, they should be characterized that way, because only then will they play the explanatory role they need to play, for instance, in biology. The way to construe functions in a forward-looking manner, we suggest, is (roughly) to construe them in the manner of dispositions (Bigelow and Pargetter 1987, 189).

⁸There is more to this, with respect to explaining “capacity” talk, for example. But this suffices for present purposes. Also see Godfrey-Smith 1993, 201-207, for an explanation of why there is no unification of these several ideas about the functions of natural or artifactual objects.
This view has come to be called “the propensity” account of biological functions. What marks it off from the predecessors was not only that it targeted what biologists would be inclined to say – rather than just everyone – but also that it was offering a theoretical definition, one whose relative correctness would be measured not by how well it squared with everyday talk but would be measured only by its utility among biologists and other scientists.

The last view I will survey in this brief account occurs in Ruth G. Millikan’s historical-biological account of functions which holds that:

[T]he definition of “proper function” looks to history rather than merely to present properties or dispositions to determine function. Easy cases of items having proper functions are body organs and instinctive behaviors. A proper function of such an organ or behavior is, roughly, a function that its ancestors have performed that has helped account for proliferation of the genes responsible for it, hence helped account for its own existence. But the definition of “proper function” covers, univocally, the functions of many other items as well, including the functions of learned behaviors, reasoned behaviors, customs, language devices such as words and syntactic forms, and artifacts (Millikan 1989, 289).

This too is intended to be a technical definition, focusing on the actual histories of the actual organisms and artifacts that we encounter in biology, psychology, art history, and so on.

The common theme that I want to stress in these various discussions of functions – both natural and artifactual, and both standardly analytic and theoretical – is a reluctance to endorse, even sometimes in the possibly non-existent case, to everyone). And this entails that it does not even get us to a sense of what the work – in this case a designed object has that function by nature or by design – do so by grasping the features of the objects that are responsible for what those objects are, why they continue to exist, or how the contribute to further functionally defined ends, independently of any knowledge (or lack of it) concerning how those objects came to have the functions that they did.

3.b. Functions in works of art

Interpretations of works of art – which correspond to what architects often call “readings” of buildings – are aimed at grasping the functions of objects – again whether the object has that function by nature or by design – do so by grasping the features of the objects that are responsible for what those objects are, why they continue to exist, or how the contribute to further functionally defined ends, independently of any knowledge (or lack of it) concerning how those objects came to have the functions that they did.

Instead, the functions of artifacts are determined by whether the objects so produced (i.e., produced intentionally) have features that continue to be responsible for what those objects are, why they continue to exist, or how they contribute to further functionally defined ends; however, they came to have those features. The epistemic corollary of this claim is that agents who grasp the functions of objects – again whether the object has that function by nature or by design – do so by grasping the features of the objects that are responsible for what those objects are, why they continue to exist, or how the contribute to further functionally defined ends, independently of any knowledge (or lack of it) concerning how those objects came to have the functions that they did.

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In other words, the same wariness of authorial intentions that is present in philosophical discussions of functions in biology and artifacts is now a commonplace view – although not the dominant view – within philosophy of art (Irvin 2006; Nathan 2006). Grasping the function of an
work of art, like grasping the function of any artifact that has one – such as a product designed to have a function (for example, a chair or a video game) – is not done by grasping the intention with which it was made but by grasping features of the object itself, the ones responsible either for its existence, its continued existence, or its contribution to other functionally defined ends. Interestingly, this comports well with what Gibson has to say when he claims we do not perceive the features of objects but only their affordances. This we have glossed as consistent with physics and the cartesian coordinate system – as Gibson seems to have intended – and as grasping those features of an object that appear to be useful to us as living creatures in a lived environment.\(^\text{11}\)

4. **Are the problems tractable?**

You may recall our two questions: (1) On behalf of users, those who would appreciate a product (for example, a building or a design element) — how do you come to have very high credences that a particular thing, or aspect of it, is useable in some particular way if, in advance, you were not told to expect that it is? And (2) — on behalf of designers (for example, product designers or architects) and perhaps makers — what data would you need to encounter to increase your credence that you could either use some “contraption” in the way it has evolved or design some contraption so that it can be used the way you intend it to be used? It will come as no surprise when I answer the first question with a “No,” at least not without understanding. But this requires inference. This form of understanding involves having prior expectations and then, crucially, updating conditional on the data you – the user – are presented. In this case, clearly a part of those expectations will be having been told what to expect, and the data will be the experiences the user has – which very well may consist largely of perceptions of the affordances of the objects the user is presented with.

The situation concerning question (2) is clearly more complicated. Even if you can count on people reasoning in accord with what you have built in to the design by way of affordances, affordances are, remember, relative to particular human animals. So this will require you to know who those particular human beings are, what their socio-cultural background is, what is common among them in terms of social biases, perceptual abilities or capacities (and incapacities as well – such as the blind spot that each of our eyes contains, the human susceptibility to “change blindness,” and the persistent effects of “inattentional blindness”), and so on. In short, even on a theory of affordances, there is much the designer must do by way of data collection and inferential reasoning in order to increase their credences that some contraption they have designed will work. There is no shortcut to understanding on the part of appreciators, and none on the part of designers who design things for them.

\(^{11}\) This seems to be what Gibson means, even though this result also seems to challenge some of what he says about “direct perception.”
Works Cited


**Affordances and the Potential for Architecture**

A symposium debating the significance of affordances, atmosphere and pruned behaviors within the design and sensory appreciation of measured spaces, i.e., architecture.

"An important fact about the affordances of the environment is that they are in a sense objective, real, and physical, world-values and meaning, which are often supposed to be subjective, phenomenal, and mental. . . . It is equally a fact of the environment and a fact of behavior. It is both physical and psychological, yet neither. An affordance points both ways, i.e., to the environment and to the observer." (J.J. Gibson, 1979/86, p. 129)

Fallen Angel, Igor Mitoraj, while on exhibition at the Opera Del Duomo, Pisa, February 26, 2015 (Photograph, Bob Condia)


**Agenda:**

8:19 Coffee and networking in the Regnier Hall lobby.

8:45 Introduction to Affordances in Architecture and the order of things.
  Bob Condia, AIA, APDesign, Kansas State University.

9:00 "Articulating Affordances: Towards a New Theory of Design."
  Sarah Robinson, Architect | Philosopher, owner Sarah Robinson Architects, San Francisco and Pavia, Italy.

9:45 "Just What Can Architects Afford?"
  Dr. Harry Francis Mallgrave, Architect | Historian, Illinois Institute of Technology (Emeritus)

10:30 Coffee Break

10:50 "How Do Designers and Appreciators Discover Affordances?"
  Dr. James Hamilton, Philosopher, Kansas State University.

11:40 Panel Discussion: Sarah Robinson, Harry Mallgrave and James Hamilton.
  Bob Condia in moderation.

12:30 Closing remarks and adjournment.

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**Architecture is Something We Do: A Postscript**

Bob Condia

As we are arranging this concise manuscript for publication, I sense, or better realize that it will be an important contribution to our thinking about architecture, space, and perception. Quite simply, Affordances and the Potential for Architecture discloses that our engagement with architecture or the built environment is a deeply rooted experience operating on many levels. In a biological and philosophical sense, it reveals that the mind is inseparable from the body, just as the body is inseparable from its environment. It displays the world before us as rife with potential movements, activities, engagements, for which we continuously rehearse the myriad possibilities and choose the best course of action. It defines our phenomenological natures through our readiness-for-action, and it thereby suggests that we can improve the spaces, buildings, and landscapes that we inhabit by mastering how we enact and understand them.

We are grateful to Andrea Jelić for her contribution, “Introduction: Designing Affordances for the Living-Lived Body?” She begins with the tender probe of “How architecture affords being-in-the-world?” And, as she suggests, its value lies in the pervasiveness of the question. Recognizing the general conceit of humans historically toward abstraction, toward separating the mind from the body and the body from its situation—she frames our scaffold for experience as one of environmental mutual dependency rather than of detachment. The primacy of our sensory perception nesting in the body is the story unfolding in the discoveries of the newer models of cognition, much along the ecological lines of James Gibson’s thesis of affordances. Can the idea of affordances contribute to the decisions that architects make? It will certainly add new dimensions to thought processes.

Sarah Robinson, in “Articulating Affordances: Towards a New Theory of Design,” makes the same case. Beginning as she does with the rocking chair’s animation of the porch, she demonstrates that one size doesn’t fit all. Even as our bodies are similarly constituted and share much in common, it is the specificity of differences between us that should instruct designers. There is no “average” body size or standard fighter
pilot. Instead, there is a poetic double entendre which asks professionals to understand perception as the active confluence of varying influences (from personal to bounded), all the while considering the particularities of the individual person. A theory of affordances recognizes that while the rocking chair will always provide an affordance of rocking, its activity depends on its location and the frame of mind of the person so engaged. Such real participation in life, like rocking in a chair, is the real beauty of an architectural moment.

In his essay “Just What Can Architects Afford?” Harry Mallgrave advocates that, after decades of reducing form to conceptual gamesmanship and usurping models with little kinship to design, one must raise the question of where this has left the practice of design? Has it improved our cities or our houses? In the face of the mounting evidence to a contrary, and in view of the complexity of human life, wants, and desires, shall we mindlessly follow the same track? The newer biological models disclose in no uncertain terms that our engagement with buildings and landscapes is “a whole-body experience,” one grounded not only in our multisensory, emotional, and visceral responses to the world but also in the phenomenal or “lived” nature of our being. Standing against the hollowing of human nature in contemporary digital practice—and with it our existential desire for seduction—Mallgrave offers the lesson that we are indeed active agents in the culture that we create, and this built world can indeed be attuned to our biological and social natures. Thinking of beauty, he suggests, is also something we do; it is yet another expression of the vital paradisiacal instinct grounded in human nature.

James Hamilton, isn’t concerned with beauty, but with, “How do Appreciators and Designers Discover Affordances?” He assigns to himself the difficult task of arbitrating for the ‘user,’ who might appreciate a building, while at the same time distrusting the designer to grasp the real intention of the things they make. In a scholarly way, he does so by examining Gibson’s claims for affordances, and questioning the basis for understanding how objects appear to us or are useful within a specific environment. It seems that affordances have much to do with the experience or understanding you bring to the artifact. You have to see a chair as a chair in order to sit in a chair. A secondary and more difficult notion here is that even if a designer designs a chair, it may still be at odds with the peculiarities of the individual. As he himself concludes, “There is no shortcut to understanding on the part of appreciators, and none on the part of designers who design things for them.”

I often hear architects say they must educate their clients, yet in order to make this strategy work, designers must be better educated in the needs, wants, and desires of their clients. Affordances are a way to understand the environmental actions and behaviors of our species, while recognizing that which makes us human with individual needs. One size never fits all, although it begins in a common humanity. Taken in sum, these essays consider the model of affordances within the context of architecture and provide a valuable contribution to this discussion of how to conceive, think, and better attune the human organism with the environment in which we dwell.

This symposium was the second Interfaces event of ANFA (the Academy of Neuroscience for Architecture, Salk Institute) held 28 March 2019 in the Regnier Forum of APDesign, Kansas State University. Instituted by the ANFA Advisory Council under the encouragement of the ANFA Board. The event was sponsored by the HOK Studio and the Regnier Chair in Architectural Research. In acknowledgement, let me extend our gratitude to Victor Regnier for his continued support to the Department of Architecture’s Regnier Chair for Research; to HOK Architects, especially the Kansas City Office, for their support of a thesis design studio offering the fruits of neuroscience for architectural consideration. A particular thanks goes to Michael Arbib, Chair of the ANFA Advisory Board, challenging the community of architects and scientists to increase our discussion. My personal gratitude goes the fine staff of PLaB2003S: Shea Ensor, Marilina Bedros, Dakota Smith, Jaasiel Duarte-Terrazas, and Alexandra Mesias for organizing the details and staffing the event. We deeply appreciate graphic efforts of Kaden Beilman, Dakota and Alexandra. A special recognition to Dr. Thomas Bell for the copy editing. We thank the ANFA Board for allowing us to carry their good name, particularly Fred Marks and Matthew Smith, and we salute Andrea, Sarah, Harry and Jim for their contributions to this symposium and advancing the oratory on affordances.
Andrea Jelić
Andrea Jelić is an architect and postdoctoral researcher at the Department of Architecture, Design and Media Technology, Aalborg University, Denmark. Her research focuses on exploring the nature of architectural experience from the integrated perspectives of architecture, embodied cognitive science, and phenomenology. She has published articles in this emerging interdisciplinary field in architectural and scientific journals, and guest lectured at international conferences and workshops in USA and Europe. Dr. Jelić is Advisory Council member of ANFA and faculty member in the master program “Neuroscience applied to architectural design” at IUAV University of Venice.

Sarah Robinson
Sarah Robinson is an architect practicing in San Francisco and Italy. She holds degrees in Philosophy with honors from the University of Wisconsin-Madison and University of Fribourg in Switzerland and an M. Arch from Taliesin, the Frank Lloyd Wright School of Architecture, where she served as the founding president of the Board of Trustees. She has written Nesting: Body, Dwelling, Mind, Mind in Architecture: Neuroscience, Embodiment and the Future of Design, with Juhani Pallasmaa and the forthcoming book, Home is Love, in addition to numerous literary and critical essays. She cofounded and edits the journal Intertwining and teaches in the NAAD program at IUAV in Venice, she lives in Pavia, Italy.

Harry Francis Mallgrave
Harry Francis Mallgrave is a distinguished professor emeritus from IIT and an Honorary Fellow of the Royal Institute of British Architects. Through the course of his early career, his publications largely dealt with the history and theory of architecture, but in recent years his focus shifted to the implications of the human and biological sciences for the future of design. He received his PhD in architecture from the University of Pennsylvania and is a recipient of the Alice Davis Hitchcock Award. His most recent book is From Object to Experience: The New Culture of Design (Bloomsbury: 2018). He is currently writing a book on the idea of “Building Paradise”- how utopian models have shifted in the past and in what ways they will shift in the future.

James R. Hamilton
James R. Hamilton, Professor of Philosophy at Kansas State University in Manhattan, Kansas, USA, works on aesthetic issues and issues in the philosophy of art. He is an empirically and formally oriented philosopher, working on topics that are to do with the nature of theatrical enactment, how to model the reception of performances in theater, music, and dance, the reception and aesthetics of architecture and scenography, and our interactions with puppets and other animated objects. He strives to make his work informed by related work in fields like decision theory, formal learning theories, cognitive neuroscience, psychology, anthropology, and history.