

Agency and Personification: Core Analogical Operators in the Architectural Design Process

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ABSTRACT: This paper examines the intrinsic use of the analogical operators of agency and personification in architectural design. Agency, the capacity of an entity to exert power or force, and personification, the projection of human qualities on non-human entities, exist as examples of a larger set of conceptual tools humans used to interact with their environment. It is common in architectural design to discuss a form or a composition, which is a relationship between forms, as *acting on that (agency)* or *feeling like this (personification)*. The feeling or activity are part of the transfer of meaning between the designer's intentions and how another human interprets the design *intuitively*. The feeling or activity is only projected by the designer onto static forms and does not actually exist in the form or composition – the form is not capable of having human feelings nor does it physically engage in action. What they do is engage cognitive metaphors that are at the heart of human mental processing (Lakoff & Johnson, 1980).

By examining agency and personification, the paper will explore major cognitive metaphors and their existence as an inherent part of understanding architecture. The discussion will involve both the theoretical and the practical as well as an introduction to image schema – recurring cognitive structures used to connect patterns with understanding and reasoning. In architectural design, cognitive metaphors will be discussed as part of a toolkit of analogical operators which connect architectural design to architectural experience. These operators, it will be seen, use low-level knowledge categories, such as innate and sensorimotor content, to give meaning to architectural objects in context.

KEYWORDS: *latent knowledge, image schema, conceptual metaphor, analogical operators, innate meaning*

INTRODUCTION

The result of an architectural design process is the creation of a set of formal relationships which engage a territory and situation. Those formal relationships – a composition – and their context are then interpreted by individuals who occupy, use and engage the constructed spaces. One goal of an architectural designer is to transfer a proposal's intentions from the understanding of the designer to a successful interpretation by a user. However, while source material for the designer might come from many different 'inspirations', the *interpretation* of an architectural space is due to the way humans process our environment. This use of interpretation does not refer to the "true meaning" of the work (Sontag 1961), the use of interpretation as a critic (Bonta 1979), interpretation as a secondary event parallel to design (Colomina 1988), nor even architecture as interpretation (Snodgrass and Coyne 2006). It is addressing the sensorimotor translation of environment into human dimensions as a central operation of the design process. When an architectural designer speaks of a form *feeling like this* or *acting on that* as part of the design process, they are selecting objects, their properties and relationships in order to predetermine how a composition is interpreted. Compositional elements, in this way, are selected based on their latent content in order to transfer that content to another human *intuitively*. The form and its compositional elements do not need to be intellectually analyzed by the occupier in order to produce meaning. As such, the manipulation and interpretation of form belongs to a greater set of tools that humans use to interact with the world. These are called image schema – recurring cognitive structures used to connect patterns with understanding and reasoning. Many of the image schema that humans use are based in spatial and visual qualities. Image schema are also at the heart of another major tool of compressive mental processing – the analogy or cognitive metaphor (Johnson, 1987). There is a clear case for image schema and their analogical extension being involved in non-linguistic reasoning (Hurtienne and Blessing 2007), and by association, understanding architectural space.

While spaces are activated by an architectural designer through concepts of action and feeling, those concepts are not something that is *real*. In this sense, *not real* means that the feeling or action ascribed to the architecture isn't possible beyond being a projection of the human mind. The form, or situation the form

is in, does not actually act in the way described – the form is not capable of having human feelings nor does it physically engage in action. However, architectural designers give forms *agency*, the ability to conceptually act on their surrounding, and *personification*, the ability to take on human characteristics including emotions, as a standard way of designing. Both these are conceptual design tools that engage conceptual metaphors at the heart of human mental processing (Lakoff & Johnson, 1980). The processes use analogical operators that transfer meaning at a very basic level of human mental processing ensuring a successful dialogue between designer and user. However, the processing level seems to be so intuitive that it has been unconsidered and ill examined. Architectural designers, as well as most other individuals, use the mechanism without recognizing the theory or greater structure, thus losing access of inquiry to a significant tool.

This paper examines recent advances within cognitive science, focusing on factors relevant to the interpretation of architectural spaces as a process of design. The relationship between image schema, conceptual metaphor, analogical content, formal-to-human meaning transfer and designer-to-occupier content transfer is addressed, stressing *latent* rather than *explicit* interactions.

1.0 EMBODIED INTERPRETATION

1.1 The Experience Of Architecture in the Visual Field

In 1963, Le Corbusier completed the Carpenter Center for the Visual Arts at Harvard University. The building was designed to house studios for the visual arts with an intention to synthesize the arts and be an expression of freedom (Giedion 1971). As such, Corbusier designed the building with a dynamic relationship between public and private space, focusing on the use of a central ramp to activate the design. The ramp, in what could be considered the major design move, travels seamlessly from the site perimeter and moves through the main mass of the building in both plan and section. The ramp was meant to encourage public circulation and make interior private activity adjacent to more casual exterior movement. It is possible to move up and through the Carpenter Center, brushing against the interior activities, without ever actually entering the building (Fig. 1a).

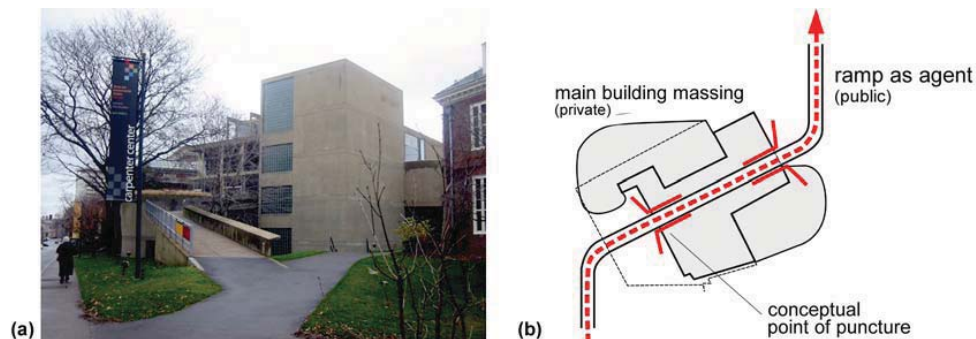


Figure 1: [a] Carpenter Center, Harvard University by Le Corbusier. Source: (Dsmack/Wikimedia Commons 2006), [b] Ramp as agent, building massing as context. Source: (Author 2012)

When viewing the Carpenter Center as an situation to be interpreted in the visual field, there are clear elements that can be recognized. The ramp is seen as both part of the ground lifted up to engage the building as well as part of the building. It is a discrete object when compared to the dominate massing and maintains a indeterminable relationship with the surrounding context. There is a clear sense of movement and speed to the ramp. There is also a point of puncture when the ramp moves through the building and slips out the other side to reengage the ground. Users of the space understand how the ramp operates as circulation and its relationship to the major massing (Fig. 1b). However, where do these ideas come from? The ramp isn't capable of movement or speed, it isn't separate to the main massing, it can't apply pressure and it doesn't physically puncture the mass as a foreign object. These are human interpretations of static objects, actions that are applied to objects incapable of those actions. In other words, the ramp has been given agency by human interpretation – the power to *appear* to act on its surroundings even though that action is impossible.

Agency can also be found in the Cesar Chavez Library (2008) in Phoenix, Arizona by Line and Space. The building was designed as a climatically responsible structure for the harsh Arizona sun with large overhangs and earth berms. Even though driven primarily to environmental factors, the designers choose to make the roof communicate to the users through its formal composition. Conditioned spaces are pulled back from the perimeter and nestled under the soaring plane of the roof structure. The relationship to the ground is reinforced by angled, intermittent structural connections roof and the physical disconnection of the roof from vertical elements like retaining walls. The overall effect is one of pressure between the exaggerated roof plan and the landscape. The program seems to be caught between the two as threshold space (Fig. 2). What do we mean when we say "creates pressure" or program is caught in a threshold? The roof doesn't change the density of the air, there isn't an increase in kPa (PSI) nor is there a change in gravitational forces or any real change in the physical environment. Again, what we are speaking about is the *interpretation* of force which is based in the way humans interpret our surroundings. A person adjacent to the library interprets the angle and volume of the roof as having *agency* on the surrounding space. The roof is considered as an active player which physically acts on its surrounding but without actually being able to do so.

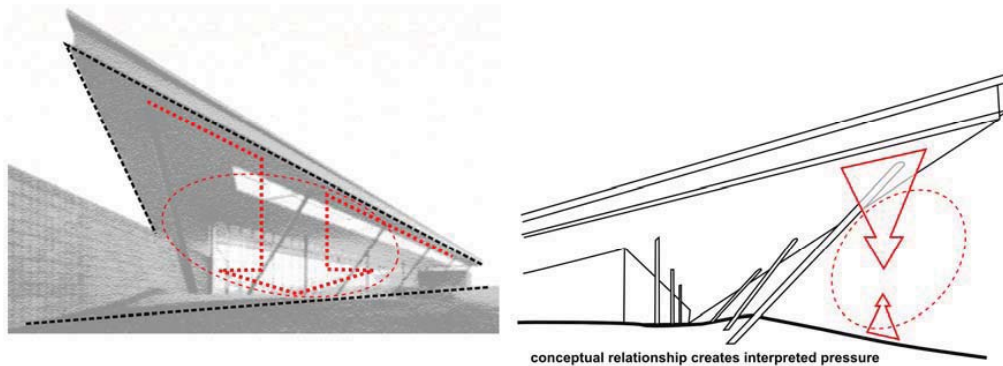


Figure 2: Cesar Chavez Library. Source: (Author, 2012)

Le Corbusier's only American project and the Chavez Library are not an isolated incidences. Examining a single aspect of a much more complex project, the steeple/belfry tower at Sainte Marie de La Tourette is another clear example of agency (Fig. 3). The monastery involved many of Corbusier's philosophical positions towards architecture driven by sequential understanding of space and playfulness between rationality and sculptural effect that marked his later work (Potié 1997). However, in the steeple there is an isolated event which is clearly engaging visual interpretation. While there isn't the same sense of a circulation path pushing into an architectural mass or pressure created by a elevated plane, the steeple still appears to act on its surroundings with agency. It can be considered an agent as it creates a sense of pressure under its extended side while implying rotation away from the main massing of the steeple. There is dynamism in the event of the belfry due to the visual interpretation of asymmetry given by an *interpreted sense* of the unbalanced loading of gravity. This composition can be considered to *be* an event due to the application of agency onto the static forms.



Figure 3: Sainte Marie de La Tourette by Le Corbusier. Source: (James Stevens, 2010)

Agency can take many forms working with solids, voids, circulation and other primary architectural content to make a connection between designer intention and user's interpretation. Since the source for agency comes from human cognition, it is often combined with the projection of human characteristics onto non-human elements, or *personification*. Objects with agency can be given the conceptual overlays of sight, emotion or personality. When we speak of an architectural object projecting or presencing on its surrounding, we give that object characteristics that it is not capable of having and base those characteristics on what is known to the observer – the human experience. An example of this analogical operator of personification is seen in urban space and monuments. If two monuments, or prominent objects, are within “sight” of each other (visual field), they are considered to be “looking” at each other. The conceptual understanding of that sight creates a implied physical connection which is driven by the objects having agency and personification. The objects conceptually extend beyond themselves. Agency and personification analogies can be found in Peter Zumthor's Val Thermal Baths (1996). The architectural presence of the Baths is one of a close relationship with the situation in which it resides – the mountains. The building appears to be either sinking into the slope of the mountain or emerging out of it. Either way, there is a very close association being made between the architectural forms and the context it resides. The building is given personality by the viewer that relates it to the mountain (the mountain likewise is given a personality). Zumthor engages agency and personification when he stated that the project was “a hot springs and bath born of the mountains” (Copans 2001). The building can not physically push out of the mountains, this is an implied movement. The project is personified when considered to be born. Buildings are not born (in the human sense) and are not the offspring of mountains – at least, not without being heavily processed first – which makes the building interpreted as if it were personified as a human.

2.0 THEORETICAL STRUCTURE

How does personification and agency work? If we look at the previous examples, there is a transfer of knowledge from a non-architectural domain of knowledge to overlay architectural content. When Zumthor speaks of birthing a building, he is mapping both human characteristics and the action of animal procreation onto a building. When a belfry is given agency to exert pressure through rotation and void, this is a mapping of domains of locomotion and force schemata onto a domain of formal composition. Any mapping from one domain to another in order to enrich and clarify the later is considered a conceptual metaphor. Conceptual metaphors use analogical mappings in order to transfer meaning from a known domain to a less known domain. The process has been shown to be fundamental to human cognition (Lakoff & Johnson, 1980; Lakoff & Turner, 1989; Lakoff & Johnson, 1999; Gibbs, 2008). It is an act of compression of data and an aid to comprehension of the less known domain of knowledge. Agency and personification are, in essence, both analogical mappings. They engage the conceptual metaphors that are at the core of human mental processing of our environment. Conceptual metaphors, in turn, operate using image schema.

2.1 Image Schema

Image schema are elements in a set of foundational conceptual tools humans use to interact with the world. Technically, they are mental patterns that are embodied in our cognition. When we innately understand space – be it walking around a table, catching a ball or knowing something is overbalanced and will fall – we are using image schema to process our environment. Image schemata are used to understand paths, containment, center-periphery relationships, cycles (starting and endings), forces, balance and spatial orientation (Johnson 1987, Croft and Cruse 2004; St. Amant et al. 2006; Hurtienne and Blessing 2007). Image schema are also at the heart of how humans use conceptual metaphors to map one domain onto another. When justice is considered as a balance and represented as a set of scales, this is a metaphorical transfer using force and balance schema. Force schema involves physical or metaphorical causal interaction and includes direction, intensity, path and target of the force along with a sequence of causation (Loos et al 2003). Justice isn't actually a scale and isn't balanced – this is a human conceptualization. It is image schema that allows the analogy of a balanced scale to be mapped onto the idea of justice.

In the same way, when an architectural designer proposes a spatial composition in order to have it interpreted in a certain way, that designer actively uses image schema. The same mental patterns that allow for justice to be understood as a scale operate in architecture to allow formal relationships to be interpreted in a consistent way. It might be considered that architecture has an exclusive formal language unique to its discipline. However, architecture's formal language is not its own. Nor is it intellectually disconnected from our world but an embodied process that relies on a set of conceptual operations housed in the relationship between our mind, body and environment. Foundational exercises in architectural thinking manipulate form and sets up dialogue (a personification) between various elements in the compositional system. Primary formal elements such as cube, sphere, pyramid are reinterpreted as architectural objects such as wall, column, vault, dome, arch, and so on (Ching, 2007; Prina, 2008). The objects are then associated with each other using basic operations to be considered when pursuing formal composition. Standard reference books

used to teach formal architectural design reference the operations as ones of paths, containment, center-periphery relationships, cycles (starting and endings), forces, balance and spatial orientation (Hanlon 2009, Lavine 2008, Ching, 2007, Conway and Roenisch 2005, Eisenman 1999, Tschumi 1994). They are not architectural operations but applied image schemata.

As image schema has been shown to play a strong role in metaphor generation (Johnson, 1987), architectural operations of composing form can also be understood as analogical transfers or conceptual metaphors. When a static object, such as a roof, is given agency to conceptually act on its surrounding, this is a mapping of force and orientation schemata onto a target domain to produce conceptual action. The roof becomes more than a surface to keep out the elements. It is enriched and produces stable meaning by engaging low-level conceptual understanding in the human comprehension system.

2.2 Analogy Operators Supporting Agency and Personification

Although not the only way that meaning is transferred, conceptual metaphor as an analogical operator is persistent in all aspects of our experience as the “most fundamental values in a culture will be coherent with the metaphorical structure of the most fundamental concepts in the culture” (Lakoff & Johnson, 1980). As formal architectural space is primarily “read” in the visual field, humans use the same conceptual rules found in processing the rest of the physical world.

According to Lakoff and Johnson, there are three major generic-level metaphors operating as the engine behind agency and personification in architecture. These are **EVENTS ARE ACTIONS**, **ACTIVITIES ARE CONTAINERS** and **STATES ARE LOCATIONS**. Generic-level metaphors are important because they provide a skeletal structure with little specific detail allowing for basic cognitive understanding. Generic level metaphors have no fixed source or target domains and no fixed lists of entities specified in the mapping. They can be applied to a conceptual formal domain by taking the skeletal structure and relating it to relevant schemata for the situation and adding parameters.

The operation of these analogical operators can be seen by looking at the Diamond Ranch High School (1999) by Morphosis (Fig. 4). The building was to merge with the site topography to create a hybrid landscape/structure while aggressively addressing programmatic organization on a limited budget. As Thom Mayne stated, “Diamond Ranch High School engages architecture in the act of education; it speaks to students experientially through a physically kinetic architectural language that makes no references to traditional typology, but rather looks elsewhere to encourage student inquiry and provoke curiosity.” (Mayne 2006). There are already analogies found in the intention of the work by the use of terms such as ‘speaks’, ‘kinetic’ and ‘look’ – acts that architecture is not capable of performing except through analogy.



Figure 4: Diamond Ranch High School by Morphosis. Source: (Highsmith Archive, Library of Congress 2005)

Agency uses generic-level conceptual metaphors in order to give authority and imply behavior to architectural forms. **EVENTS ARE ACTIONS** is at the core of any activation of a static object. The basis of the analogical operation is the conceptual translation of something that is inert and static into something that acts upon the surrounding environment (Lakoff and Johnson 1980). This conceptual metaphor primarily uses the image schema domains of locomotion (momentum, path, visual inertia), balance, containment, and force (compulsion, blockage, diversion, counterforce, restraint, resistance, attraction, and enablement). As a

generic-level shell, there is neither an expected scale nor a fixed source. The agency generated by EVENTS ARE ACTIONS might be at the scale of building to environment, at the smaller scale of elements to another element or an aspect of the architectural massing. The event is the engagement of formal elements in the composition created by the architectural designer.

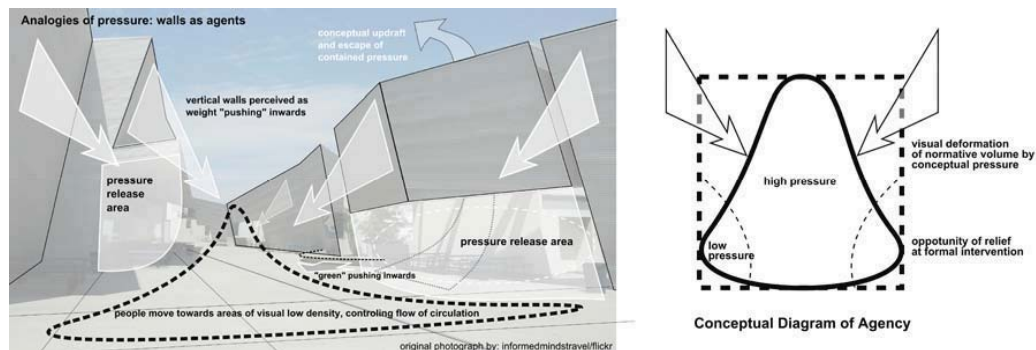


Figure 5: Analogy of pressure created by the conceptual metaphor EVENTS ARE ACTIONS. Source: (Author)

At Diamond Ranch, one example of EVENTS ARE ACTIONS is in the creation of pressure through the formal composition of the walls in the central street (Fig. 5). The idea of the street is an analogy itself, as Morphosis sought to transfer urban ideas of density and activity to a suburban context where that situation does not exist (Mayne 2006). To take the idea further, the buildings fronting the central circulation lean inwards to produce a contained space akin to a canyon (another analogy used by Morphosis in this context). The sloping buildings are described as “compressing” space. But that compression isn't literal – again, there is no change of air pressure or physical density. The compression is achieved through giving the walls agency, the ability to be perceived as pushing even though the walls do not move and cannot push. This is an analogical transfer using the conceptual metaphor EVENTS ARE ACTIONS. The event is the relationship between the walls and central circulation while the action is the act of creating visual pressure by walls that lean inward toward the visitor..

Agency does not only need to use physical objects and defined formal elements as its target domain. Architectural design leverages containment schemata heavily in order to address two of its most fundamental criteria in architectural composition – occupation (how a space is used) and circulation (how a space is moved through). A critical requirement for architectural design is the ability to communicate both spatial qualities of occupation – traditionally called the *distribution* of program – and movement as a relationship of formal composition to human interaction. The attempt is to make both of these intuitive to the user. Considering that conceptual metaphors are used as communication devices acting below conscious awareness to connect design intentions to natural understanding (Blackwell 2006), this makes their involvement critical in interpreting circulation and program by a user. Good analogical transfers are not apparent, they simply work.

The major conceptual metaphor that engages programmatic elements and occupation is ACTIVITIES ARE CONTAINERS. This mapping uses containment schemata and operates by creating a conceptual boundary around activities that do not have a physical boundary. Once the activity has been conceptually bounded, it may be either given agency or be acted upon by force or identity schemata such as compression, intersection, interlacing, expansion, or superimposition. Activities, through this conceptual metaphor, take on characteristics of formal objects and can be manipulated in the same way. At Diamond Ranch, the central exterior circulation, conceived as a pedestrian street, operates using ACTIVITIES ARE CONTAINERS (Fig. 6).

Morphosis considered the street as providing “the primary opportunity for students to interact haphazardly or by plan with one another, with teachers and with administrators as they move about the campus.” (Mayne 2006). In order to operate in this way, several different types of activities were considered to co-exist within a space which did not formally define territories with physical demarcation – there where no walls, barriers or “lines in the sand” to show the location of these activities. Instead, the activities were conceptually bounded and then engaged through overlap, interlacing and superimposition. There is nothing *making* the central street operate as supporting any activity other than circulation except through human perception of differentiated space. The creation of perceptual pressure using EVENTS ARE ACTIONS supports

ACTIVITIES ARE CONTAINERS through overhangs and angled walls which create interpreted pockets of spaces. These spaces become meeting areas, seated discussion locations, informal discussion locations and gathering points. The large monumental stairway moving from the street to the upper level playing fields doubles as an outdoor amphitheater. In this way, the stair acts as both circulation and seating – metaphorically an act of superimposition with two containers – the stair of movement and the stair of spectator occupying the small space but having different purposes. It must be noted, however, that the spaces don't need used in the way suggested as there is nothing physically present to make it so (except some movable tables for the seated discussion). The interpretation of a space within the major circulation as supporting interaction is due to perceiving that space as fundamental different to its immediate surroundings as a conceptual act.

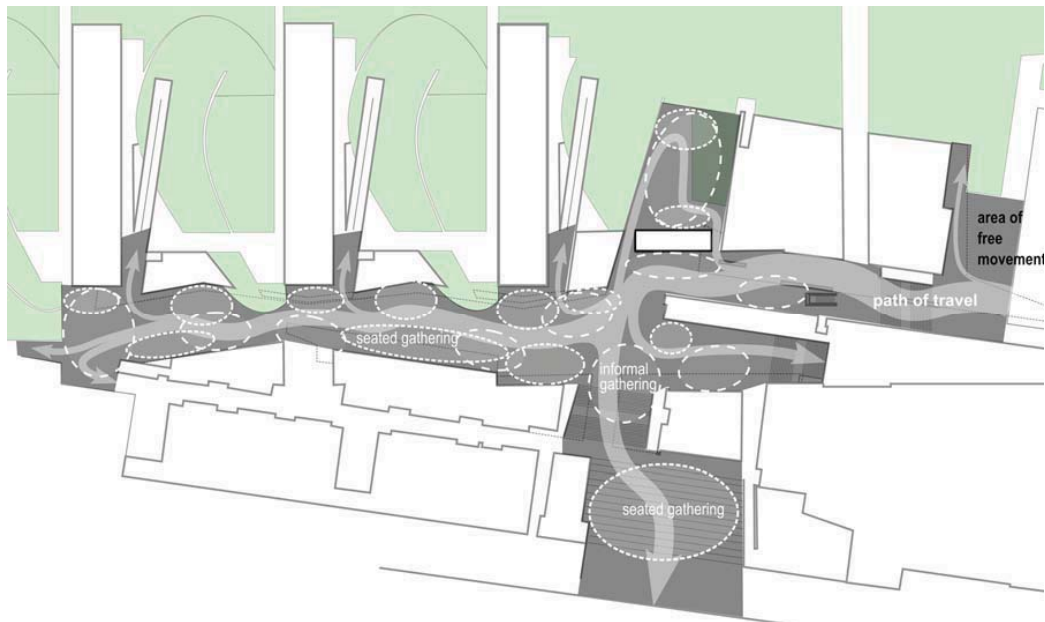


Figure 6: Conceptual bounding of activities in demarcated circulation space using the conceptual metaphor ACTIVITIES ARE CONTAINERS. Source: (Author 2012)

There is often personification involved in agency when EVENTS ARE ACTIONS or ACTIVITIES ARE CONTAINERS are engaged as analogical operators. When a building is discussed as 'feeling' in a particular way, looking in a certain direction, or having a relationship with its context, these are statements of personification. As an example, some students complained that Diamond Ranch High School "looks like a prison, though, all concrete and cold." (Borow 2003). The intention in this statement was not that the building was physically cold but it was interpreted as being *emotionally* cold. Yet, as noted, it is impossible for a building to have emotions as this is a human projection. The primary ability for an architectural space to be personified comes from the conceptual metaphor LOCATIONS ARE STATES. This conceptual metaphor operates by mapping a state of mind or personality onto a location, programmatic boundary or bounded space. It isn't necessarily as straightforward as a space "feeling" inviting, noble, serious, somber or nurturing as in the traditional use of the term *character*. When Thom Mayne of Morphosis described the lower courtyards of Diamond Ranch as "buffers" which act to engage the classroom with the landscape (Mayne 2006), he was stating that the courtyard space had a particular personality and state of being that was different to its context (Fig. 7). A buffer is a recognizable *space of difference* from the immediate adjacency and the only way that difference can exist is through interpretation of human dimensions. In addition, the courtyard contains two different 'personalities'. The east side is 'tame' or 'polite' and acts as an extension of the classroom. The west side reinforces the idea of buffer by being conceptually separated from human space by appearing 'wild' or 'natural'. The act of buffering could also be considered an event but it operates through the difference of emotional state between the two spaces (identity schema), and not through force schema. In the end, however, these are all human conceptualization of space.

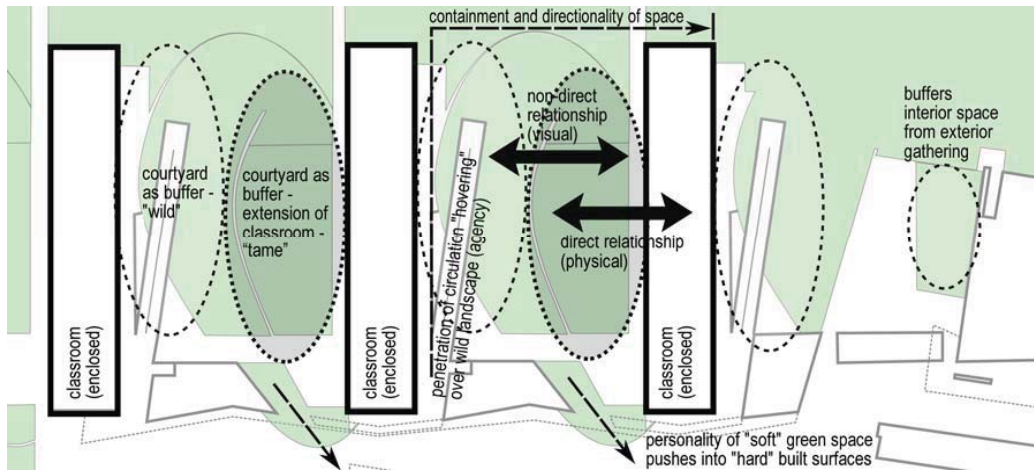


Figure 7: Personification of architectural space by the conceptual metaphor LOCATIONS ARE STATES. Source: (Author 2012)

CONCLUSION

To adapt a statement from Lakoff and Johnson – since the processing of our physical surroundings is based on “the same conceptual system that we use in thinking and acting” (Lakoff and Johnson, 1980), those same conceptual structures are used in architecture whether we admit it or not. Interpretation, both generative by the designer and experiential by the occupant, will be easiest transferred through basic conceptual functions – the role that analogy and metaphor fills in our cognition. The most active understanding of analogies in architecture comes from the use of agency and personification. While these are not the only conceptual tools behind the shaping of architectural space, they seem to provide an essential link in the transfer of intentions and how space is moved through and occupied. This is because through analogy, the concepts transfer at a low level and without the need for active interpretation. They engage innate and sensorimotor levels of comprehension. If these analogical operators are not present in architectural spaces, the question is: could there be any meaning generated by that architectural space, considering architectural meaning is a relationship formed between the space, elements and human cognition?

ACKNOWLEDGEMENTS

The commentary and discussions provided by my graduate research group extended my initial research in this area. Ramzi Almatrahi, James Case, Youyou Chen, Jared Chulski, Rosie Curtis, Christopher Davis, Tony El-Hadi, Sarwan Grewal, Glenn Gualdoni, Mary Lancaster, Erin Smith, Mark Vandamme, Audrey Werthan, Stephen Winter, and Jing Xu are hereby gratefully acknowledged.

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