

# Buildings that move: Motion metaphors in architectural reviews

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## Abstract

In this paper, I explore the ways in which built space is described by means of motion metaphors in one of the prototypical genres of architectural communication, namely, the architectural review. I describe motion metaphors as meeting two main needs. In the first place, buildings described as “hunkering down”, “easing into”, or “heaving up” their sites instantiate visual or image metaphors whereby particular layouts or appearances (the metaphorical targets) are seen as reminiscent of the kind of movement encapsulated in the verbs (the metaphorical sources). Motion metaphors also help reviewers organize their commentary in the review genre, which is often done as if it were a virtual tour inside the building at issue. In turn, this contributes to recreating in textual form how people “feel” buildings while interacting with and inside them, i.e. a more holistic experience. This use of motion metaphors is congruent with contemporary architects’ and reviewers’ enactive – embodied – approach to architectural space.

**Keywords:** motion metaphors, form is motion, image metaphor, embodied architecture.

## Resumen

*Edificios en movimiento: Metáforas de movimiento en reseñas de arquitectura*

El presente artículo presenta un estudio del uso de metáforas de movimiento en la reseña de arquitectura, uno de los géneros prototípicos del discurso de la disciplina. La discusión se centra en dos usos típicos en el contexto arquitectónico: en primer lugar, construcciones de movimiento como “hunkering down”, “easing into”, or “heaving up” se usan para describir el

aspecto externo de edificios o parte de los mismos y, en este sentido, responden a lo que se conoce como metáforas visuales o de imagen. En segundo lugar, las metáforas de movimiento también ayudan a los reseñadores a organizar su comentario en las reseñas, el cual se presenta como si se tratara de un tour virtual dentro del edificio reseñado. Este “viaje” contribuye a recrear, de forma textual, la percepción de la gente cuando interactúa con un edificio y dentro del mismo, es decir, proporciona a los lectores una experiencia más holística, todo lo cual es congruente con el enfoque enactivo y corpóreo hacia el espacio arquitectónico de los arquitectos y reseñadores contemporáneos.

**Palabras clave:** metáforas de movimiento, form is motion, metáfora de imagen, arquitectura corpórea.

## 1. Introduction

The human body, arguably the oldest and most traditional notion in building, has become a trending topic in architecture, and so has one of the actions intrinsically related to it: motion. Of course, the architect’s preoccupation with space dynamics is far from new, and goes back to the discussion of space and spatiality in German aesthetics, the application of Newtonian mechanics into building design or the work of modern architects in the 1920s and 1930s (Forty, 2000; Caballero, 2006; Gerber & Patterson, 2013). However, the motion-space contract has gained full momentum, and the claim that the latter cannot be understood without the former seems to be more alive than ever, as suggested by architectural firms called Motionspace Architecture + Design, En-Motion Design, Fluid Motion Architects or Architects in Motion.

Buildings may be experienced in many ways, among which two stand out. On the one hand, we can approach, look at and contemplate buildings as objects, and appreciate their looks or the way they integrate with their surroundings. Yet, we mostly experience buildings by actually moving along, up, or through them. While the first experience may be qualified as somewhat tourist-like, the second is the real *raison d’être* of most private and public buildings. The following description of a temple complex in Monte Alban (Mexico) by Bloomer and Moore (1977: 86-88) underlines this point:

The temple complex [...] seems to have been built around the act of climbing. There, thousands of feet above the valley floor, a flat plaza was made from which each temple was entered, up a flight of steps, then down,

then up again higher to the special place. To arrive at the largest temple, one went up, then down, then up, then down, then farther up again. [...] getting there is all the fun. (*Italics in the original*)

In like manner, Yudell (1977: 59) claims that “all architecture functions as a potential stimulus for movement, real or imagined”, a belief that led him to state that basic architectural experiences have a verb form.

These views are fully compatible with architectural descriptions and their frequent use of motion lexis – particularly, but not exclusively, verbs – for discussing spatial artefacts – from the conventional reference to tall buildings as “high-rises” to sentences like “the new block runs north-south.” Since buildings are static artefacts, such descriptions do not express real motion, but illustrate a phenomenon approached in various ways.

Functional Systemic scholars explain such expressions as a way of construing and expressing the semantic notion of LOCATION in dynamic – relational – terms rather than using customary – and static – copular patterns with “be”, “lie” or “be located” (Halliday, 1985/1994; Eggins, 1994; Thompson, 1996; Martin et al., 1997). For instance, in Thompson (1996: 81) we find the use of verb “run” in “Hope Street runs between the two cathedrals” explained as “blending” relational and material processes, that is, “the relational (‘state’) meaning is dominant but the wording brings in a material (‘action’) process colouring.” The choice of a motion verb to express a circumstance like LOCATION is implicitly attributed to the rhetorical demands imposed on authors, who may seek “a more dynamic tone” in their descriptions “especially if there are a number of similar choices in that area of the text”. The implicit view is that the use of a motion verb is subservient of other textual considerations and, therefore, dispensable, rather than the natural or first option to linguistically convey a given situation.

This use of motion verbs has also been explored by cognitive linguists, who refer to it as “fictive motion” (Talmy, 1988, 1996, 2000; Matlock, 2004; Matlock & Bergmann, 2015), “abstract” or “subjective motion” (Langacker, 1986, 2000; Matsumoto, 1996) or the more comprehensive “non-actual” motion (Zlatev et al., 2010; Blomberg & Zlatev, 2014). These scholars have explained fictive-motion cases as motivated by different types of mental processes. In Lakoff and Turner (1989: 142) we find them described as instances of the particular image metaphor FORM IS MOTION whereby “a form is understood in terms of the motion tracing the form”. Thus, they

explain that in a description like “the roof slopes down” the inclined, slanted shape of a roof (the target in the metaphor) is understood by drawing upon (mapping) the shape of a real slope (the metaphor’s source). Put differently, our understanding and description of certain spatial arrangements derives from a more basic understanding of particular ways of moving.

Other cognitive scholars, however, have argued against the metaphorical quality of the phenomenon. Thus, Langacker (1986, 2000) explains fictive motion as a means to foreground the path-like configuration of certain entities – “trajectors” – by evoking simultaneously all the locations that make them up – a cognitive process he calls “sequential scanning”. For instance, when we say that a road “travels” or “runs” along the coast, we draw attention to all the places or spots along the coast occupied (“travelled”) by the road thus described, i.e. as if we were moving along it. His discussion focuses on entities related to motion in two main ways: on the one hand, entities that allow the displacement of other objects (e.g. roads, paths or trails) and, on the other, spatially extensible entities (e.g. cables, hoses and the like). The type of trajector is important in that those intrinsically related to motion (e.g. roads) allow for manner of motion verbs such as “sneak”, “climb” or “plunge”, whereas trajectors not associated with motion (e.g. cables) are seldom predicated by manner verbs (Matlock, 2004).

Finally, fictive motion has been extensively discussed by Talmy (1988, 1996, 2000), who claims that our “general cognitive bias towards dynamism” (Talmy, 2000: 101) is manifested in language and in what he calls “general fictivity”, a representational framework that may well encompass other figurative phenomena such as metaphor. Talmy discusses six main categories of fictivity according to dimensions such as the type of entity, observer, perspective, etc. involved. For instance, a description like “the trees cluster in the patio” illustrates an “advent path”, explained as describing the location of an object (“the trees”) in terms of its arrival or manifestation (“clustered”) in its location (“the patio”). In turn, many of the fictive motion cases introduced earlier, for instance, descriptions like “the river snakes along the valley” or “the staircase zigzags from the first to the third floor” focus on the configurations of river and staircase and fall into the category called “coextension path” and defined as “a depiction of the form, orientation, or location of a spatially extended object in terms of a path over the object’s extent” (Talmy, 2000: 138).

Indeed, given the importance of motion, spatiality, perspective, and visual apprehension in both Talmy's work and architecture as a discipline, many fictive cases in architectural discourse may be used to illustrate the detailed, fine points differentiating fictive categories in Talmy's work, even if his fictivity framework is too technical to bring into this paper. Two insights from his work, however, fall within the scope of this paper. The first of these is Talmy's suggestion that fictive motion cases concerned with spatial descriptions may be metaphorically motivated regardless of whether they evoke actual motion or otherwise. By framing the expressions within the broader notion of "ception" (which encompasses both perception and conception), Talmy's views bring to mind Lakoff and Turner's FORM IS MOTION metaphor, while drawing attention to the perceptual – visual – plus conceptual quality of the phenomenon. In the second place, and most interestingly, Talmy also stresses the experiential dimension of fictivity, and claims that it is not a stable phenomenon but, rather, may be experienced differently by different people, that is, allows for variation across individuals and even across temporal spans (what may be fictive at some point need not be equally regarded at some other). This suggests that different cultures, for instance, architects, may be more dynamically biased than others.

As it is, the motion predicates in architectural discourse exhibit a number of idiosyncratic features worth investigating. The first of these concerns the type of entity or "trajector" involved in the expressions. In general discourse, fictive motion typically occurs with either entities that are spatially extensible or entities that allow for motion and, therefore, evoke the image of people or vehicles moving along them whenever they are predicated by motion verbs. Architectural trajectors fall in the second type and, therefore, some fictive cases in architectural discourse do recreate the potential – physical and factive – motion in such spaces. However, many other cases are exclusively concerned with describing what built structures look like, a use often ignored in cognitive linguistics (for a detailed discussion, see Caballero, 2006, 2009). A second point of contention concerns the verbs involved in fictive motion cases, which in general discourse only incorporate manner when predicating trajectors intrinsically related to motion since they evoke the potential motion effected along them by real animate entities capable of running, climbing or soaring in space. Interestingly, manner of motion verbs are the norm in architectural texts regardless of the constructions' focus – i.e. their use to recreate the motion potential of architectural spaces or to describe the buildings' visual traits. Finally, in contrast to the typically elongated shape of

the trajectors in general discourse, the trajectors in architectural texts need be neither long nor rectilinear, but also involve bulky, massive buildings or very tall ones – all of which motivate the type of motion verb used in their predication.

My take on fictive motion cases in the particular context of architectural texts is that they are informed by two types of metaphor. On the one hand, descriptions of buildings as “hunkering down”, “easing into”, or “heaving up” their sites are visually informed and point to the presence of the image metaphor FORM IS MOTION. In turn, reference to buildings’ inner spaces as “routes” (usually co-occurring with “circulation”) or “itineraries” departs from this visual scenario to focus on the motion possibilities of the building’s future users, describing them as part of a journey and, therefore, in the more holistic, dynamic, and function-based terms advocated by Bloomer and Moore (1977) above. Finally, such prospective – virtual – tours inside buildings may be used by writers to organize their texts, that is, play a textual role in the genres where they occur. In the following sections I describe the metaphors underlying motion expressions in architectural texts, and the different needs and goals they meet in the building review genre.

## 2. Methodological considerations

The discussion in this paper draws upon my previous work on metaphor in the discourse of architects, where I combine the procedures followed in Conceptual Metaphor Theory (CMT) and Genre Analysis in order to describe architects’ use of metaphor in architectural reviews (Caballero, 2006, 2009, 2014, forthcoming). The data used come from a corpus of 150 texts (120,000 words) retrieved from print magazines written by and for architects and enjoying a high status within the community (*Architectural Record*, *The Architectural Review*, *Architectural Design*, *Architecture*, *Architecture Australia*, and *Architecture SOUTH*) and architecture websites (<http://www.arcspace.com>, [www.archdaily.com](http://www.archdaily.com), <http://architizer.com>, <http://www.architectmagazine.com>). Since the corpus has been part of former and current projects, it is constantly expanded, which means that some texts go back to 1999 while some others are more contemporary.

As discussed elsewhere, the architectural review is one of the most popular genres in architectural communication and plays a critical disciplinary and educational role in the discipline. This is largely due to the comprehensive

nature of the topics covered by reviews: while the texts are mainly devoted to describing and evaluating noteworthy buildings, this endeavour often involves bringing in those issues addressed by the buildings under focus (for instance, how those buildings solve a particular construction problem, represent a design typology or trend, etc.). Together with discussing how the technical and constructive properties of architectural projects meet private, social and/or urban demands, a well-crafted review also attempts to translate into words a holistic experience of buildings. Thus, reviewers often start by assessing the building's visual properties and, then, gradually guide the readers through its inner spaces – a tour that may not only help readers better understand them, but points to the fact that buildings are first and foremost spaces for human interaction.

Given this “dynamic” concern, the presence of motion language for describing people's potential displacements inside buildings – what is known as “circulation” – should not be surprising (for instance, nouns such as “route” or “progression” and verbs like “lead”, “follow”, “go up” and the like). A different question is the use of verbs such as “meander”, “scatter”, “stagger”, “sweep” or “undulate” to describe the same such spaces, which points to a different focus within the review genre.

For the purposes of this study, I considered any term whose semantics included motion – irrespective of whether this is their core meaning or conflates with other notions. This is the case with verbs “unfold” or “stretch” (mainly concerned with change of state, yet often co-occurring with dynamic and/or locational prepositions such as “out” or “through”), touch verbs like “nuzzle”, “poke”, or “punch” whose core meaning is contact by impact (see Levin, 1993 for a thorough classification of verbs following their semantic profile and syntactic behaviour). I also included cases where nouns are converted into motion verbs by adjoining a path particle to them (Filipovi , 2007), as happens with the English verbs “fan out”, “rake up” or “scissor down”. All such verbs were considered worthy of consideration for the purposes of this paper, and regarded as motion verbs.

### 3. Motion language in architectural reviews

The corpus yielded 1,931 motion instances (i.e. tokens) that describe built spaces in dynamic terms. As shown in Table 1, motion lexis mostly

comprises verbs, followed by nouns, adjectives and adverbs. The full lists of terms are provided in Appendix 1.

Lexical category	Number of instances	% in corpus
verbs	1,481	76,7%
nouns	374	19,3%
adjectives	66	3,5%
adverbs	10	0,5%

Table 1. Distribution of motion data across lexical categories.

Motion language fulfils several purposes in architectural reviews, as shown in the following description of a bank in Klagenfurt (Austria)<sup>1</sup>:

- (1) One geologically contoured part of the building *beaves up* from the site like surrounding pre-Alpine hills rising out of the valley, while another part *thrusts toward* the *intersection* in an *eruption* of *angled* volumes caught in seismic upheaval. [...] Despite the external complexity, the basic part of the bank building is a three-sided doughnut, with corridors that *triangulate around* a light well [...]. “You’re always moving across bridges, through thresholds. From one building to another, *you’re experiencing movement as part of a journey*,” claims the architect, who always deploys *orientation devices* – views, openings, corridors– to make the *path* of the constantly changing *officescape* self-guiding and cogent.

Example (1) relies on motion verbs (“heave”, “thrust”, “triangulate”) and nouns (“orientation devices”, “path”, “officescape”) as well as a quotation where the architect describes the interactional properties of his building by explicitly equating them with a journey. However, these motion terms are not equally concerned and, thus, while the verbs describe the physical – both external and internal – appearance of the bank in terms of vertical, forceful motion, the nouns focus its interactional properties, that is, the “orientation devices”, “path” and “officescape” offered to its users. These two dimensions of motion are addressed in the essay “Stillness” by the architectural firm Jones, Partners Architecture:

In considering the possibility of movement in a project, the first hurdle is feeling a need to justify it programmatically, to understand that movement’s contribution to a design need not be mere functionality. Movement is not only a means but can be an end in itself; not simply alteration of spatial relationships [...] but a pleasing visual or haptic sensation. (Jones, 2001. URL: <http://www.jpacessays.info/stillness.html>)



Taking into account these considerations, the motion data in the corpus may be further classified according to whether they are mainly focused on the building's "visual sensation" or on functionality. Table 2 shows the distribution of motion lexis across their various foci:

Focus	Verbs	Nouns	Adjectives	Adverbs
visual traits of built space	1,235	115	25	2
people's interaction with space	73	223	5	
mixed / vague focus	86	33	36	8
abstract motion	84	3		
real motion	3			
<b>Total</b>	<b>1,481</b>	<b>374</b>	<b>66</b>	<b>10</b>

Table 2. Distribution of motion data according to lexical categories and rhetorical focus.

As illustrated in the table, cases of real and abstract motion are the least frequent. The former involve the verbs "rotate" and "turn" and, as shown in examples (2) and (3), are cases of motion caused by mechanical means. In turn, abstract motion is not exclusive of architecture, but happens any time we talk about the evolution of ideas, improvement of conditions etc. and do so by means of terms such as "advance", "progress(ion)", or "step forward", that is, as motion along a path and towards a goal. Example (4) shows the occurrence of such cases in the architectural realm:

- (2) [The] tower will be Glasgow's tallest structure and is designed to *rotate* gently according to wind direction, like a giant weather vane.
- (3) *Rotating* thermal chimneys *turn* according to wind direction and [...].
- (4) [The building's elements] collectively constitute a modest *advance* (for the UK) in environmental responsiveness. The jubilee Campus *extends* an English tradition of elegantly-wrought pavilions within a romantic landscape, but also *embraces* an environmentally responsible architecture fit for the new millennium.

The third group in order of frequency comprises motion lexis that presents built spaces as "fluid", "flowing", "dynamic", "kinetic" or "moving" entities, but remains vague as to whether the traits motivating such terms concern the space's physical or functional traits. Thus, while "tilted in two directions" in (6) clearly refers to the building's shape, the exact meaning of its ability to "break through a static corner" or its "dynamism" remains unclear. Likewise,

although example (5) deals with how the old and the modern have been combined in a design, interpreting “speed” and “slowness” remains relatively flexible:

- (5) The anonymity and *speed of the free plan* have been counteracted by the personalized *slowness of craft*.
- (6) *Tilted in two directions*, the design *breaks through* a *static* urban corner with a gesture that posits *dynamism* as its fundamental thesis.

Sometimes, motion verbs have to do with the effect of built arrangements on sensory elements such as light (e.g. “bounce”) or sound (e.g. “disperse”). Their more elusive quality contrasts with the clearly visual focus of the remaining lexis in passage (7):

- (7) By inverting the long-span trusses and *reversing their direction* so the undersides *rise* and *fall*, the architects created an *alternating* rhythm of *angled* surfaces to *bounce* light and *disperse* sound.

All in all, however, the motion language discussed so far illustrates the tendency of architects to describe space in dynamic terms. The more idiosyncratic, and salient, use of motion language involves descriptions of what buildings look like and how their internal spaces are organized for people’s use, as addressed in the following sections.

### 3.1. Visual focus of motion language

Motion language is mostly concerned with describing the external appearance of built space, a task often accomplished by means of verbs. This is illustrated by the high occurrence of this lexical category (1,235 instances) versus the scarcer use of nouns, adjectives or adverbs.

Motion verbs exhibit various degrees of dynamism, innovation and graphicness. Thus, versus the neutral – and to a large extent expected – use of verbs such as “lie”, “sit”, “rest”, “stand” or “rise”, we also find descriptions with more dynamic and less conventional verbs like “hunker”, “ease”, “sweep”, “sprawl”, “inch out”, “clamber” or “unfur”. Indeed, the choice of verb in architectural descriptions appears to be largely determined by the spatial trait in focus. For instance, while any building may be described as lying, sitting, or resting in its site (that is, statically via posture verbs), predicates such as “rise”, “stand”, or “loom” foreground traits such as height

and verticality, and “heave”, “thrust”, “emerge”, “surge” and “blast” add the component of force and often predicate bulky buildings. The italicized expressions in the following examples illustrate this use:

- (8) *Thrusting towards* the sky and into the urban streetscape the street frontage of the building is an expression of [...]
- (9) [The building is] *a mesmeric swell* of concrete *surging around* two glass rocks.
- (10) [A] glazed canopy [...] that *blasts out from* the corner of the building [...].

In turn, projected motion on a horizontal plane is usually expressed by means of verbs like “project”, “reach”, “cantilever” or “corbel” (the last two denominal verbs typical of architectural discourse), and verbs such as “melt”, “splay”, “spill”, “sprawl”, “expand”, “sweep” and “spread” combine the attributes width and continuity or extension and, therefore, often qualify short, wide spaces:

- (11) Holl *suspended* the northwest corner of the addition, allowing the gently *sloping* interior garden *to spill out under* the building *toward* the wooded vale below.
- (12) Even the *sweeping* concrete ramps that *lead* to the parking levels *cantilever from* the rectangular container to emphasize their additive nature.
- (13) The Price House has concrete-block walls that *corbel out* as they *rise* [...].
- (14) Arcades *sweeping around* the west side of the building, and concentrated around the south end, accommodate shops and restaurants.

Motion verbs may also highlight salient properties of the building sites, as happens in example (15) where the verb “tuck” draws attention to the tight, narrow quality of the space occupied by a building, and the verb “perch” in (16) suggesting the difficulties involved in erecting buildings in certain places:

- (15) *Tucked between* existing structures on a tight site, the addition [...].
- (16) It houses the campus radio station, *perched* apparently precariously *over* the south and west edges.

The descriptive – indeed, graphic – potential of many of the motion verbs found in the corpus results from the fact that they often incorporate manner in their semantics. Manner of motion is figuratively attributed to the

buildings thus predicated to highlight some of their salient traits. This is the case of the careful, gentle motion of the library and wall in examples (18) and (19), the sinuous motion of a ceiling and a staircase in (17) and (20), the difficult, forceful motion of the conservatories in (21), and the slow, inch-by-inch outward projection of the blocks in (22):

- (17) An *undulating* ceiling *ripples through* the lecture theatre.
- (18) The new library *eases gently into* a Wild West landscape [...].
- (19) One wall *slides back* on a flush-mounted track to open the room to the outdoors.
- (20) A concrete stair *weaves between* the structural supports and an undulated gunnite roof.
- (21) [T]wo giant linked conservatories which *clamber up* the crags on the northern side of the pit.
- (22) [T]he masonry blocks *inch out* from the vertical plane as they *rise*.

The main function of these motion verbs is to describe what built artefacts look like, which points to the metaphor FORM IS MOTION (Lakoff & Turner, 1989), where particular layouts or appearances (the metaphorical targets) are seen as reminiscent of the kind of movement encapsulated in the verbs (the metaphorical sources). Put differently, the description of spatial arrangements and topologies draws upon our more basic understanding of particular ways of moving.

However, motion is best understood in action, that is, by actually moving or by observing the entities capable of moving in the process of doing so. In this regard, it is far from surprising to find that some of the motion verbs discussed so far go beyond the metaphor FORM IS MOTION and co-activate other metaphors as well. This is the case of verbs that express motion by specific limbs and, therefore, typically predicate the animate beings thus endowed:

- (23) Based on a boomerang shaped plan, the new building *steps down* from a prow at its south end to *embrace* a new public space.
- (24) The building responds to this with the lightweight living block *shunting forward, reaching out* to all of these elements.
- (25) The box containing a reading room and administrative offices *totters* precariously above the building's entrance canopy.

Together with instantiating a motion metaphor, the verbs “step”, “embrace”, “reach out” and “totter” above incorporate legs and arms in their semantics and, therefore, also evoke the metaphor BUILDINGS ARE ANIMATE BEINGS – itself one of the most entrenched metaphors in architectural discourse.

In turn, verbs like “hover”, “oversail” and “float” bring to mind mechanical artefacts such as boats (passages 27 and 28) or planes (examples 26 and 29) and suggest the metaphor BUILDINGS ARE MOBILE ARTEFACTS – a metaphorical frame sometimes reinforced by the expression’s co-text, as in examples (26) and (28):

- (26) A couple of squashed zeppelins [i.e. building’s roofs] *hover over* the solid structures.
- (27) Organization of the teaching pavilions which *oversail* the lakeside promenade is similarly direct.
- (28) At the north-west end, each block *curves* to a point, *like a pair of sleek ocean liners nosing gently into dry dock*.
- (29) Sheltered by the hillside, the structure seems to *have just alighted*.

Other motion verbs point to an all-purpose MALLEABILITY metaphorical frame whereby space is portrayed as tangible matter that architects shape or mould as if it were clay, stone, or wood and, accordingly, buildings are described as plastic artefacts (see Caballero, 2006). The metaphor is instantiated by predicates characterizing buildings and their parts as pliable (“fold”, “unfold”), soluble (“melt”), or flexible (“stretch”, “splay”, “spread”, “flex”, “extend”, “expand”) solids whose “movement” results from the application of an external or internal force causing a change of shape or state:

- (30) Santiago Calatrava’s *kinetic* building parts *fold* and *unfold*, *spread* and *glide*.
- (31) The new building [...] will *stretch behind* the old school.
- (32) They have created a building that almost *melts*, as if in permanent drought.
- (33) Each end of the footbridge is supported on pairs of smaller silhouetted columns which *splay out* to frame the north school entrance.

A related final group of motion verbs comprises verbs like “flow” and “cascade” which, as happens with “float”, suggest the metaphor built SPACE IS A FLUID:

- (34) In the Reyes-Retana House, rooms *flow* freely *into* each other [...].
- (35) [The library is] a free-standing inverted cone which *floats on* a polygonal timber deck within the lake [...].

The discussion so far has shown that motion expressions are far from simple and may co-instantiate figurative schemas that go beyond motion. Nevertheless, regardless of the number of metaphors suggested by the expressions, all the examples above are concerned with visual information. Put differently, buildings may be directly or indirectly likened to boats, zeppelins, and animate creatures, but the only characteristic of the entities involved in the metaphor is (an aspect of) their particular spatial configuration (often shape) rather than other mechanical or behavioural properties. The verbs that best illustrate this visual concern are denominal verbs such as “rake”, “bunch”, “ramp”, “cascade”, “scissor”, “funnel”, “line”, “fan”, or “corbel”. The corpus yields examples like the following:

- (36) Customers descend to the store from the parking levels by elevators or by stairs that *scissor down through* the three-story space.
- (37) At north and south ends are stands for hardier (and poorer) fans, unshaded and *raking up* at a steep angle.
- (38) Left and right of the lobby stack, office areas *press forward* to the permitted building limit. Here, the walls *curve* gently *backwards* until they *get to* the seventh floor, where they *crank* quite severely *back* to obey planning profile rules.
- (39) The driveway *slips in under* the west courtyard wall and then *ramps up* steeply to the entrance level.

In all cases, the movement expressed by the particles is given a shape via the denominal verbs co-occurring with them: the main trait mapped onto spatial arrangements is the whole configuration or shape of scissors, fans, and any other entity that may be used to convey a shape or configuration or topology. For instance, in (38) the particles “backwards” and “back” express motion (particularly, the direction of motion) while “curve” and “crank”, both denominal and, when turned into verbs, expressing manner of motion, specify the shape of the walls thus predicated.

Together with clearly illustrating the visual bias of motion constructions in general within the architectural realm (and, therefore, the metaphor FORM IS MOTION introduced earlier), these verbs are interesting in that they

point to metonymy as the cognitive schema motivating the metaphor FORM IS MOTION. For instance, the only trait involved in a description of a parking lot as “fanning out” is the shape of an open fan, which suggests that the description relies on a metonymic selection – “activation” – of some of the features characterizing the entities involved in the metaphor. A detailed discussion of the relationship between metonymy and metaphor in such cases, however, falls outside the scope of this paper (but see Caballero, 2009).

### 3.2. Interaction focus

The second largest set of motion language points to the scenario MOVING WITHIN A BUILDING IS MAKING A JOURNEY whereby buildings’ inner spaces are described according to the interaction, motion possibilities they afford to users. This is illustrated in example (1) shown earlier where the architect himself explains that the building was designed as a “translation” of the town where it was built – an urban metaphor that motivates the ensuing description of the experience inside the building as if it were a “journey”. This functional focus foregrounds the two-fold quality of space as both a means for and an enhancer of movement, as explicitly voiced in the passages below, which show motion language used to describe the visual and functional traits of a supermarket and a library respectively – the latter specifying the building’s “journey” as a sea voyage or trip:

- (40) Zapata’s supermarket is a beautiful object – it hums with *kinetic* energy, *sweeping along and up the street like an elegant, silvery comet*. But it is more compelling as *the crystallization of a series of movements and circulation systems*.
- (41) After years of Post-Modernism [...] Wilson has shown us the value of letting the building articulate its own content, of making its parts recognizable and *its spaces navigable*.

The metaphor MOVING WITHIN A BUILDING IS MAKING A JOURNEY is usually instantiated by nouns rather than verbs, among which the most recurrent are “circulation”, “route”, “itinerary”, “path”, “promenade”, “direction”, and “orientation”. “Circulation” is particularly interesting in that it illustrates what Ciapuscio (2011) calls “nomadic” metaphors, that is, metaphors used in different scenarios and, accordingly, subjected to various formal and conceptual transformations. Thus, the

nineteenth-century architect and critic Viollet-le-Duc drew an analogy with the body's cardiovascular system and popularized "circulation" for describing the different ventilation and heating systems buried within the walls of buildings. Through use, the "distribution" meaning of the term started to cover both the arrangement of volumes within the overall plan of the building and the communication among different spaces within the whole. At the same time, architects started to use it to refer to the – prospective – human movement within or around a building (for a diachronic description of this and other metaphors, see Forty, 2000).

This functional approach is a most sought-after trait in large-scale buildings designed for public uses such as libraries, museums, hospitals and the like and, accordingly, their description is often organized as a virtual tour inside the building. This is the case of examples (42) and (43) dealing with a museum and a hospital respectively:

- (42) *Circulation* is handled subtly, via multiple *paths*, views of the spaces beyond, and little arrows pointing to the galleries above the escalators. The collection is no longer shown in chronological order. Contemporary works are on the double-height first floor and visitors are taken back in time, upwards through increasingly intimate galleries [...]. Instead of *the old directed route*, there are now choices, and more opportunity to wander. Being able to see from one gallery to the next means it is easy to choose *a route* and difficult to get lost.
- (43) Despite the size of the complex, *central circulation* remains relatively short and clear. Skewed walls in the connections to the treatment wings consistently indicate the major *direction*, so from the shape of the space you know which way to go. Real complications start at ground floor, with two skewed *routes* played off against the column grid. The main pedestrian entrance *arrives* from the front of the [...]. The other main entrance is nearby [...]. Where *the two routes intersect* is the main stair, set inside its own glass cage but still fully visible, *rising right up* the centre of the building. On the south side, a row of doors *leads out* to the southern garden space embraced by the right-angle of ward wings. A long curved wall swings in *to meet* the entrance, almost seeming to continue the line of the ramp opposite across the hall.

As to the verbs related to this journey schema, the examples above show "arrive" and "lead", both of them alluding to the arrival and progression towards a given direction ("lead") of the people using them. Other verbs thus concerned include "give onto", "open", "direct", or "join", as in the



following examples, which, nevertheless, combine the interactive potential of the spaces at focus (reinforced by the co-text) with visual notions – for instance, if a space gives onto another space, it not only leads you there, but also offers views to it:

- (44) Reading rooms *give on to* an inner glazed *promenade* around the forest.
- (45) The corridors *open out to* wide spaces that *pool* students like piazzas in the city.

Finally, in passage (42) we find spaces taking visitors “back in time, upwards through increasingly intimate galleries”, a description where going up in space involves going back in time. Indeed, space and time as mediated by architectural form is a critical concern in architecture. Before taking this point further, consider example (46):

- (46) Based on an angular version of a Möbius strip, [the house’s] parti *drives* the conventionally two-dimensional floor plate into the third and fourth dimensions: *Looped circulation* that is always *rising* or *falling* erases the distinction between floors, turning them, literally, into a *rotating, revolving continuum of linked space, form, and time*. The *Möbius strip* implies a *continuously evolving surface*, and by subsuming all the rooms in the *circulation ribbon*, the architect creates a relational environment of forms and spaces juxtaposed in evolving relationships. [...] The *Möbius circulation* starts at the top of the entrance stair, one flight up from the lowest level, where the main bedroom and one of the studies are located. *The path splits* at this landing *with a corridor that passes* an informal kitchen and a large dining area [...]. *The path continues* to a tall living room of variable height; the ceiling and floor *shift* at the center, *splitting* the room into low and high ground. *The path doubles back on itself and climbs* a half level to a corridor that serves the second home office, two bedrooms, and a bathroom. This corridor *continues* to a stair that *descends* to the second-floor entrance hall to complete *the circuit*. All the rooms comprise a *loop*, “a 24-hour cycle of sleeping, working, and living,” to use Van Berkel’s phrase. [...] *The flow* of space is simultaneously *centripetal* and *centrifugal*. [...] The house engages the senses by inviting *promenades that set the parts into kaleidoscopic rotation*. Spaces [...] *succeed each other* in this time-based concept of a house understood through experience.

This house by Ben van Berkel and Caroline Bos was designed after the mathematical notion known as the Möbius strip or band, a diagram packed with both visual and “abstract” implications. Regarding the former, the

reviewer uses the Möbius strip to describe the building's parti, that is, its basic scheme or concept, and later refers to the whole building as a "ribbon" or "loop". However, the architects' choice of this geometrical configuration goes beyond its topological properties. Rather, as stated in the text, the Möbius strip is a graphic representation of the time-space continuum and befits both the discipline's and van Berkel and Bos's aesthetics plus function agenda. Accordingly, the reviewer's commentary pivots on notions of temporality and motion: he recreates the circulation routes in the building, making extensive use of motion nouns ("path", "circuit", "promenade"), verbs ("rise", "fall", "pass", "continue", "shift", "double", "descend", "succeed") and adjectives ("rotating", "revolving", "evolving") in order to evoke the idiosyncratic journey afforded by a house which, as claimed in the text, needs to be experienced in order to be understood (see also Harris, 2002).

Together with being congruent with architects' concerns with motion, example (46) is a good illustration of the use of motion language to organize spatial descriptions in texts. This textual function usually involves motion lexis with an interactional focus, which is often used by reviewers to guide their readers outside and inside the building's spaces. The following is a brief extract from the review of Luxor theatre in Rotterdam, introduced as "a rich internal landscape of interacting layers that combines contingencies of site with the rituals of theatre going":

- (47) Depositing their coats at the counter to the left, [people] *turn to start* on one of the three batteries of stairs *rising* to higher levels, *going to left or right* depending on *destination*. As they *rise through* the building, each new stair invites them to the next stage of the *promenade* until they find the appropriate level for their seat. Unprecedented is the delightful *sloping route along* the south edge on top of the lorry ramp, which is treated as a series of very long steps [...]. It *winds* irresistibly *round*, *gathering* more stair *connections as it goes*, and *culminates* in a double-level bar and restaurant [...]. Further stairs within this volume *lead to* an upper bar level and to a whole additional foyer *leading back the other way* to another bar above the entrance. The *sequence of spaces*—every bit a contrived *promenade* architecturale—is enriched by careful framing of views with various scales of window. Like the Philharmonic in Berlin [...] it provides a kind of *internal landscape* of interacting layers where the people of Rotterdam can parade in their finery to see and be seen, creating a theatre of the interval almost as important as that of the stage.

This passage does not describe a real scene but, rather, an imaginary, prospective one. Through the use of verbs like “turn”, “start”, “gather” or “lead” and nouns such as “destination”, “promenade”, “route” or “landscape” this reviewer offers his/her readers a virtual tour to Luxor theatre which describes the function of the various spaces under focus, helps organize his description in a coherent way and, most interestingly, engages his readers and – presumably – may help them imagine what experiencing its spaces may actually feel like.

#### 4. Concluding remarks

As pointed out by Forty (2000: 57), “the notion that architecture represents implied movement within forms that are not themselves in motion has been a conventional part of modernist thinking, and still seems to be widely taken for granted”. What exactly is signified by motion terms when applied to buildings is, nevertheless, a complex question. In the present paper I explore two of the main uses of motion language in spatial descriptions, and the metaphors underlying those. Following the assumption in contemporary architecture that perception and understanding of three-dimensional space can only be achieved through motion, either of the eye or of the body in space, I first discuss the image metaphor FORM IS MOTION as used to describe what buildings and their spaces look like. However, space is ultimately understood by actually moving in it, which points to the second metaphor informing motion language in architectural descriptions, namely, the less visual, more interactive scenario MOVING WITHIN A BUILDING IS MAKING A JOURNEY whereby moving inside a building is described as an imaginary, virtual tour in its various spaces – a tour which may also be used as a blueprint to organize the reviewer’s commentary in textual form. Together with illustrating architects’ bias towards dynamism, the holistic use of motion language to describe spatial experiences may well problematize the privileged status of sight versus other sense modalities, thus opening interesting avenues for further research in both people’s – both expert and non-expert – experience of space and the way they use language to describe it. Indeed, not only does architecture involve several realms of sensory experience which interact and fuse into each other, but by foregrounding the kinetic dimension of built space, contemporary architects vindicate the critical role of the haptic system in mediating our sensory experience in and with space, vision included: “haptic experiences [the entire

body] give fundamental meanings to visual experience, while visual experiences serve to communicate those meanings back to the body” (Bloomer & Moore, 1977: 44).

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## NOTES

<sup>1</sup> Unless otherwise indicated, my discussion is based on previous research (Caballero, 2006, 2009, 2014) and the examples are taken from these published works. To avoid confusion, only the expressions under discussion have been italicized.

## Appendix 1

### REAL MOTION (3 instances)

verbs (3): *rotate* (2), *turn* (1)

### ABSTRACT MOTION (87 instances)

verbs (84 instances): *extend* (9), *advance* (8), *emerge* (8), *double* (V) (7), *drive* (6), *embrace* (5), *turn* (4), *fall* (3), *rise* (3), *accompany* (2), *break free* (2), *disgorge* (2), *elevate* (2), *escape* (V) (2), *grow* (2), *propel* (2), *reach* (2), *claw one's way back* (1), *come* (1), *dump* (1), *edge* (V) (1), *expand* (V) (1), *get out* (1), *go* (1), *hinge* (V) (1), *intercept* (1), *join* (1), *lean* (1), *roll* (1), *set out* (1), *shift* (V) (1), *spring* (1)

nouns (3 instances): *journey* (2), *route* (1)

**PEOPLE'S INTERACTION WITH SPACE (301 instances)**

verbs (73 instances): *lead* (53), *give access* (6), *give on(to)* (6), *give way* (3), *direct* (V) (2), *bring in* (1), *gather* (1), *join* (1)

nouns (223 instances): *circulation* (58), *route* (30), *passage* (27), *path* (20), *promenade* (20), *transition* (15), *street* (10), *landscape* (9), *direction* (6), *circuit* (5), *journey* (4), *orientation* (4), *arrival* (3), *pathway* (2), *congregation* (1), *crossroads* (1), *dispersal* (1), *gateway* (1), *hinge* (1), *itinerary* (1), *officescape* (1), *signpost* (1), *topography* (1), *way* (1)

adjectives (5 instances): *transitional* (4), *alternate* (1)

**VISUAL TRAITS OF BUILT SPACE (1,314 instances)**

verbs (1,235 instances): *surround* (69), *run* (55), *rise* (47), *curve* (36), *extend* (29), *slope* (27), *float* (25), *stand* (24), *suspend* (23), *sit* (22), *line* (21), *project* (21), *hover* (20), *angle* (19), *emerge* (19), *elevate* (18), *stretch* (17), *flank* (16), *flow* (15), *step* (14), *cant* (13), *follow* (13), *raise* (13), *tuck* (13), *undulate* (13), *adjoin* (12), *expand* (12), *lie* (12), *span* (12), *sweep* (11), *wrap* (11), *fall* (10), *soar* (10), *tilt* (10), *unfold* (10), *align* (9), *penetrate* (9), *spread* (9), *climb* (8), *fold* (8), *go* (8), *meet* (8), *shift* (8), *stagger* (8), *turn* (8), *cantilever* (7), *come* (7), *hinge* (7), *intersect* (7), *oversail* (7), *reach* (7), *slide* (7), *taper* (7), *wind* (7), *appear* (6), *cluster* (6), *continue* (6), *cross* (6), *descend* (6), *disappear* (6), *embrace* (6), *grow* (6), *hang* (6), *loop* (6), *protrude* (6), *rake* (6), *rest* (6), *spiral* (6), *incline* (5), *interrupt* (5), *poise* (5), *radiate* (5), *splay* (5), *surge* (5), *thrust* (5), *tower* (5), *draw back* (4), *lean* (4), *nestle* (4), *overhang* (4), *perch* (4), *recess* (4), *spill* (4), *swing* (4), *swoop* (4), *terminate* (4), *alternate* (3), *arch* (3), *bend* (3), *cascade* (3), *contract* (3), *crank* (3), *cut through* (3), *hug* (3), *loom* (3), *meander* (3), *pulsate* (3), *ring* (3), *rotate* (3), *scatter* (3), *straddle* (3), *swell* (3), *thread + prep* (3), *break through* (2), *bulge out* (2), *butt up* (2), *change* (2), *cling* (2), *coil* (2), *culminate* (2), *drop* (2), *enfold* (2), *fan out* (2), *flutter* (2), *fly* (2), *gyrate* (2), *hunker* (2), *inflect* (2), *intrude* (2), *jut (out)* (2), *melt out* (2), *merge into* (2), *press* (2), *push out* (2), *ramp up* (2), *revolve* (2), *ripple* (2), *sandwich* (2), *set in motion/rotation* (2), *set forth/off* (2), *slip* (2), *sprawl* (2), *swirl* (2), *throw* (2), *topple* (2), *touch* (2), *travel* (2), *tumble* (2), *weave* (2), *accompany* (1), *advance* (1), *alight* (1), *ascend* (1), *bifurcate* (1), *billow* (1), *bite into* (1), *blast out* (1), *branch out* (1), *bunch up* (1), *carve into* (1), *circle* (1), *clamber* (1), *contort* (1), *corbel out* (1), *crash* (1), *crawl* (1), *criss-cross* (1), *crop up* (1), *crouch* (1), *dig into* (1), *dip down* (1), *disperse* (1), *double back* (1), *drape over* (1), *drift* (1), *drive* (1), *ease into* (1), *encircle* (1), *enter* (1), *erupt* (1), *funnel* (1), *get to* (1), *heave up* (1), *inch out* (1), *joggle* (1), *join* (1), *jostle* (1), *link through* (1), *list* (1), *lock into* (1), *loft off* (1), *lower* (1), *maintain a distance* (1), *march off* (1), *nod* (1), *nose into* (1), *notch into* (1), *nuzzle* (1), *overlay* (1), *pause* (1), *peel away* (1), *pivot on* (1), *plug into* (1), *poke into* (1), *pop up* (1), *proceed* (1), *pull past* (1), *punch into* (1), *recede* (1), *recline* (1), *ride* (1), *round* (1), *scissor down* (1), *scurry* (1), *scythe* (1), *settle* (1), *shaft in* (1), *shoot out* (1), *shunt forward* (1), *skirt* (1), *slant* (1), *slice through* (1), *snake* (1), *spin off* (1), *spring* (1), *sprout* (1), *straggle* (1), *submerge* (1), *succeed* (1), *swim* (1), *totter* (1), *trace* (1), *trail* (1), *traverse* (1), *triangulate around* (1), *trickle* (1), *twist* (1), *unfurl* (1), *warp around* (1)

nouns (115 instances): *elevation* (41), *extension* (20), *high-rise* (11), *sweep* (6), *progress* (5), *extrusion* (4), *projection* (4), *sprawl* (4), *shift* (3), *alignment* (2), *flow* (2), *interruption* (2), *intrusion* (2), *dance* (1), *eruption* (1), *expansion* (1), *rotation* (1), *suspension* (1), *tunnel* (1), *incline* (1), *inflection* (1), *stealth* (1)

adjectives (25 instances): *free-standing* (10), *sunken* (6), *lean-to* (2), *buckled* (1), *centrifugal* (1), *centripetal* (1), *diverging* (1), *erratic* (1), *floaty* (1), *intrusive* (1)

adverbs (2 instances): *centrifugally* (1), *sweepingly* (1)

**MIXED / VAGUE FOCUS (163 instances)**

verbs (86 instances): *open* (32), *arrive* (3), *pass* (3), *bridge over* (1), *cradle* (1), *pool* (1), *reverse direction* (1), *carry* (15), *move* (15), *bounce* (3), *change direction* (3), *alternate* (2), *drive* (1), *emanate* (1), *locate* (1), *stop* (1), *take flight* (1), *take one's place* (1)

nouns (33 instances): *intersection* (9), *progression* (6), *fluidity* (5), *motion* (3), *release* (3), *dynamism* (2), *agitation* (1), *interpenetration* (1), *repose* (1), *slowness* (1), *speed* (1)

adjectives (36 instances): *dynamic* (16), *fluid* (8), *static* (8), *kinetic* (3), *reposeful* (1)

adverbs (8 instances): *alternately* (3), *dynamically* (3), *fluidly* (2)

Table 3. Motion data.