arq (2021), **25.1**, 83–92. © The Author(s), 2021. Published by Cambridge University Press.
doi: 10.1017/S1359135521000129

A 3D film by Wim Wenders of the Rolex Learning Centre provides a deeper phenomenological reading of SANAA's distinctively minimalist architecture.

How do buildings talk? Embodied experience in the Rolex Learning Centre

Jing Yang, Jonathan Hale, Toby Blackman

The Venice Architecture Biennale in 2010, curated by Japanese architect Kazuyo Sejima, co-founder of Tokyo-based practice SANAA,[1] included a remarkable twenty-four-minute 3D film by the German director Wim Wenders depicting the practice's Rolex Learning Centre in Switzerland. Entitled *If Buildings Could Talk*, the film ran in a continuous loop, without a tangible beginning or end, much like the building itself. Invited by SANAA to develop the film, Wenders found himself confronted with a new type of space that he had no prior experience of, and no vocabulary to describe: 'The Rolex Learning Centre', said Wenders during a talk given at the Biennale, 'is more landscape than building.'[2]

In general terms, the relationship between film and architecture is usually thought of as problematic. Conventional wisdom has it that an immersive medium such as architecture – designed to be experienced in three dimensions as a sequence of spaces unfolding in time – is not well served by the flattening and desensitising effects of photography and film. Despite this, it could also be argued that the recent proliferation of digital technologies allowing the instantaneous circulation of virtual images has begun to transform our understanding of reality. Since an increasing percentage of architectural works are experienced solely through digital media, some critics have even suggested that there is a type of architecture that is primarily, as claimed by Juhani Pallasmaa, 'aimed at (creating) a striking and memorable visual image':

> *Instead of an existentially grounded plastic and spatial experience, architecture has adopted the psychological strategy of advertising and instant persuasion; buildings have turned into image products detached from existential depth and sincerity.*[3]

Today's designers have unprecedented means to present their ideas, including computer-aided drafting, photo-realistic rendering, and virtual reality simulations. The danger is that they become fixated on the creation of idealised 'Photoshopped' images, and architecture is effectively reduced from spatial to graphic design. The embodied presence of architecture is erased and eclipsed by its image, as the multi-sensory phenomenology of human perception is reduced to the merely visual. As Pallasmaa again suggests:

> *The observer becomes detached from an incarnate relation with the environment through the suppression of the other senses, in particular by means of technological extensions of the eye, and the proliferation of images.*[4]

In contrast to this conventional criticism of the dangers of architectural image-making, in this article we propose a more positive reading of the relationship between the representation and the building. By analysing the 'real' and embodied experience of the Rolex Learning Centre alongside the version presented in Wenders's 3D film, we aim to identify a number of complementarities between the two, rather than simply restating the typical contradictions suggested above. In doing this, we will begin by addressing the following research questions: how can we best characterise the visitor's perceptual experience within the Rolex Learning Centre itself? How has SANAA attempted to transform our sense of the physical space through their unconventional choices of layout, material, surface treatment, and lighting? We initially attempt to answer these questions with reference to research on the biology of human vision, specifically the fact that vision operates through two distinct but integrated systems, each dealing with different kinds of visual information. We then consider how the building tends to encourage the user's exploratory bodily movement, as way of trying to reduce the initial disorientation caused by the appearance of perceptual ambiguity.

In the final section of the article, we go on to consider how the representational strategies adopted in Wenders's film manage to transcend some of the typical limitations of a two-dimensional medium, and how, without attempting to replicate the experience of the building, the film offers a series of clues as to how we might better understand it. So, rather than simply thinking of the film as a reductive and disembodied representation, we argue that it should instead be seen as a way of celebrating – and even exaggerating – the bodily experience of

https://doi.org/10.1017/S1359135521000129 Published online by Cambridge University Press





1 Rolex Learning Centre.

2 Interior of the Rolex Learning Centre.

https://doi.org/10.1017/S1359135521000129 Published online by Cambridge University Press

SANAA's distinctive architecture. The apparently 'disembodied' space of the real Rolex Learning Centre turns out to offer a more intense embodied experience than many conventionally ('phenomenologically') articulated buildings, and likewise, we would claim, Wenders's work pushes the boundaries of what was previously thought possible within the predominantly visual medium of film.

The ambiguity of experience in the Rolex Learning Centre

The Rolex Learning Centre, completed in 2010, is located on the campus of the Ecole Polytechnique Federale de Lausanne (EPFL) in Switzerland. As a multi-purpose 'laboratory for learning', it provides a seamless network of services, including libraries, social spaces, study areas, restaurants, cafes, and outdoor spaces. One of the reasons Wim Wenders labelled it 'a new type of space'[5] is that the building leaves behind many elements typical to conventional architecture, such as flat floors and solid walls with rectangular window openings. Instead, it uses freestanding volumes and undulating floor slabs as spatial separators, as well as other features borrowed from landscape design. Although the boundary of the building is clearly defined by its regular rectangular plan, the entrances are set back within this overall form. The main space consists of just one large undulating floor plate, rising from the ground level at various points around the perimeter, providing entry to the lower storey 'buffer zone' *[1]*. Once inside the building, the visitor is confronted with an apparently non-hierarchical open-plan space, one that has neither clear borders nor obvious contours, and without any fixed circulation paths *[2]*.

The biology of vision

In the book *Vision and Art: The Biology of Seeing*, Harvard neurobiologist Margaret Livingstone explains the biological basis for the fact that colour, detail, and luminance play distinct roles in the perception of art, and of the visual world as such.[6] According to Livingstone, the evolutionarily older large-cell subdivision, which is predominant in peripheral vision, is responsible for our perception of motion, space, position, depth, figure/ground segregation, and the overall organisation of the visual scene, which she refers to as the 'Where' system. The newer small-cell subdivision, most active in central (or foveal) vision, is responsible for our ability to recognise objects, including faces, in colour and in complex detail, which Livingstone refers to as the 'What' system. The Where and What systems differ not only in the kind of information they extract about the environment, but also in the three fundamental ways in which they process the signals they receive. First, in colour selectivity, the What system gathers and carries information about colour differences in order to help detect borders, whereas the Where system is effectively colour blind. Second, in contrast sensitivity, the What system requires larger differences in brightness in order to detect variations in luminance, compared with the Where system, which has a much higher luminance sensitivity. And third in visual acuity, the What system creates a narrow area of sharp focus in the centre of the field of vision. This helps explain why our eyes typically make rapid scanning (or saccadic) movements between a succession of fixation points, as we attempt to assemble these small patches of fine detail into a reliable 'picture' of the scene in front of us. The What system therefore trades off sensitivity to light and shade in favour of discernment of colour and detail.

Margaret Livingstone offers what is perhaps the best illustration of the potentially profound interaction between central and peripheral vision in her explanation of the legendary inscrutability of the Mona Lisa's famous smile. Both casual viewers and critics have often remarked that Leonardo's painting seems to come alive as the viewer's eyes move across its surface, with the mouth apparently losing its smile when vision is fixated directly on it. By a clever piece of digital processing, Livingstone created two different versions of the painting, separating out the tonal information from the finely drawn detail. Seen side by side, it becomes clear that there are also two versions of Mona Lisa's mouth included in the original painting, one overlaid on the other: an upward curving smile painted in soft gradations of light and shade, and an alternative 'straightened' version more finely drawn in line and colour. The first is more visible to the peripheral Where system, while the second becomes more apparent within the What system's detail-focused central zone. As Livingstone explains:

> *This explains its elusive quality – you literally can't catch her smile by looking at it. Every time you look directly at her mouth, her smile disappears because your central vision does not perceive coarse image components very well. People don't realize this because most of us are not aware of how we move our eyes around or that our peripheral vision is able to see some things better than our central vision. Mona Lisa smiles until you look at her mouth, and then her smile fades, like a dim star that disappears when you look directly at it.*[7]

Although our understanding of the science behind these effects is still relatively incomplete, we propose to explore the tensions between these two aspects of the visual system – the Where (tonal) and the What (colour and detail) – in the perception of the Rolex Learning Centre. We believe this will provide a useful framework for analysing the role of bodily movement in the perception of architectural space, as well as a better understanding of the relation between the building itself and Wenders's 3D film.

Flatness and the 'Where' system: the ambiguity of even luminance

> *One of my favourite things is to catch the light and help you feel it better.* [...] *I love the light, and forgive me if I sound immodest, but the light loves me.*[8]
>
> (The 'voice' of the Rolex Learning Centre, from *If Buildings Could Talk*)

In the Rolex Learning Centre, an overall impression of whiteness and transparency appears to offer few clues to spatial orientation and depth. As so much of this background 'atmospheric' perception relies on

https://doi.org/10.1017/S1359135521000129 Published online by Cambridge University Press



3 ©2010 Neue Road Movies, photographed by Donata Wenders. Kazuyo Sejima and Ryue Nishizawa in front of the Rolex Learning Centre on Segways.

peripheral rather than focused vision, our first task was to investigate the building's luminance condition and its effect on the 'Where' channel of the visual system. A luminance mapping survey was undertaken within the building in order to assess the contribution of luminance contrast in providing information regarding spatial depth, the location of three-dimensional forms, and their apparent motion relative to a moving observer.

Luminance values were recorded by using Photolux, a luminance mapping software that measures reflected light in cd/m^2.[9] We looked at a typical undefined space between the programmed areas, and at two programmed areas, the library and cafeteria. Figures *[4–6]* compare photographs and mapped luminance views of each of the spaces. Even though the functions of the spaces are different, the luminance distribution pattern of each is remarkably similar. In each of these spaces, light is relatively evenly distributed, which leads to a generally flat visual appearance. To give a sense of how different this is compared with more typical conditions, *[7]* shows a similar analysis we performed of the interior of the Walt Disney Concert Hall designed by Frank O. Gehry. The mapping shows that the luminance ratio between the brightest part of the white wall and the darkest part of the column is about 15:1. This indicates a particularly high brightness contrast, mainly due to the exaggerated volumes and fragmented forms that the architect is famous for. In contrast, SANAA has created a surprisingly even and diffused light condition in the interior of Rolex Learning Centre, through the manipulation of form and colour, along with the suppression of structural elements and gradients of surface texture. Even where there are slight luminance differences within these almost evenly lit areas, this does little to stimulate the visual system, which is selectively sensitive to discontinuities. Therefore, it could be argued that this space appears flat because it is poorly perceived by the Where system, which normally judges depth and shape through degrees of luminance contrast.

Typically, most buildings employ strong luminance contrasts to help choreograph routes and aid navigation. In this case, as with many of SANAA's buildings, there are few obvious visual clues to scale and orientation. What is present is an all-pervasive atmosphere in which the user is immersed, rather than simply located, and where light itself becomes the dominant element of the space. The flatness of the light suggests a flatness of the space itself, implying a number of possible references to characteristics of Japanese culture. For example, according to Kisho Kurokawa, the very basis of Japanese aesthetic consciousness – be it painting, music, drama, and even buildings and cities – lies in this two-dimensionality, or frontality. He described it as a quality of timeless non-sensuality, produced by the reduction of three-dimensionality to a kind of planar world.[10] Critics have also linked the graphic, diagrammatic simplicity of SANAA's architecture with the abbreviated visual language of Japanese Manga

https://doi.org/10.1017/S1359135521000129 Published online by Cambridge University Press

comics. SANAA's architecture is therefore considered by some to be part of so-called 'superflat' culture, a term first coined by the artist Takashi Murakami.[11] While the Rolex Learning Centre might be seen as a 'superflat' two-dimensional space, it could also be read in the opposite way as a space of infinite depth. For example, SANAA's contemporary, the Japanese architect and theorist Sou Fujimoto, described the concept of 'architecture as cloud' in his influential manifesto 'Primitive Future', in relation to his design for House N, built in Oita, Japan, in 2008:

> *House N is a white, hard, square construction that, due to its layering, interestingly feels as if you are surrounded by a genuine cloud. The area around you grows gradually hazy and distant. Wherever you go it is endless. The exterior envelope of the house is indefinitely delayed, and the concept of exterior envelope is erased. The light that shines into this house from somewhere above seems to shine from nowhere.*[12]

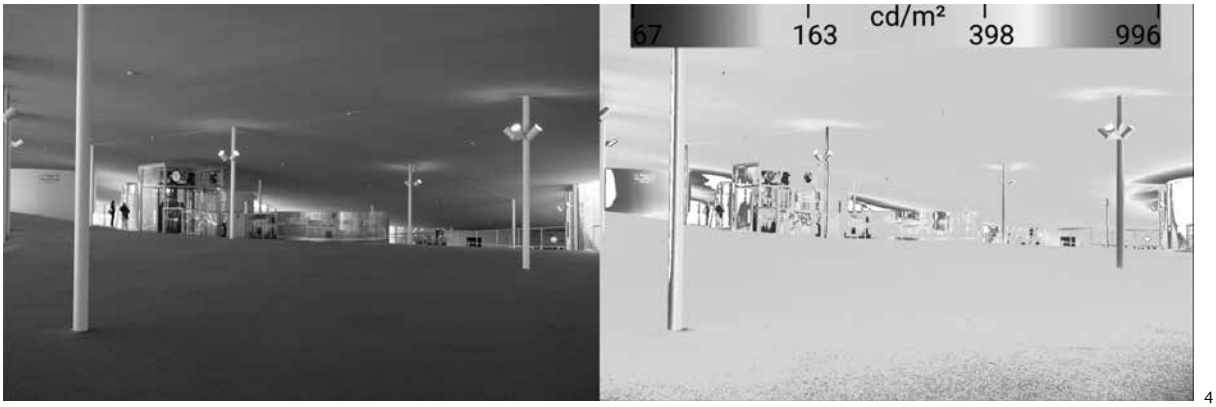
Cloudiness and the 'What' system: whiteness and the search for detail

The architectural theorist Mark Wigley has also talked about the quality of cloudiness he identified in SANAA's work: 'This sense of being in a cloud is very much the point with SANAA, who so deeply share Le Corbusier's early affection for the thin coat of white paint and disinterest in revealing structure.'[13] For the early modern architects, this dominant whiteness allowed a celebration of pure form and volume. Le Corbusier relied heavily on the use of whitewash to transform his architecture into 'the magnificent play of forms under light', stripped back to allow the appreciation of 'sufficient geometry to establish a mathematical relationship'.[14] He thereby reduced the sensuality of the surface

4 Luminance pattern and mapping data of undefined in-between area.

5 Luminance pattern and mapping data of library.

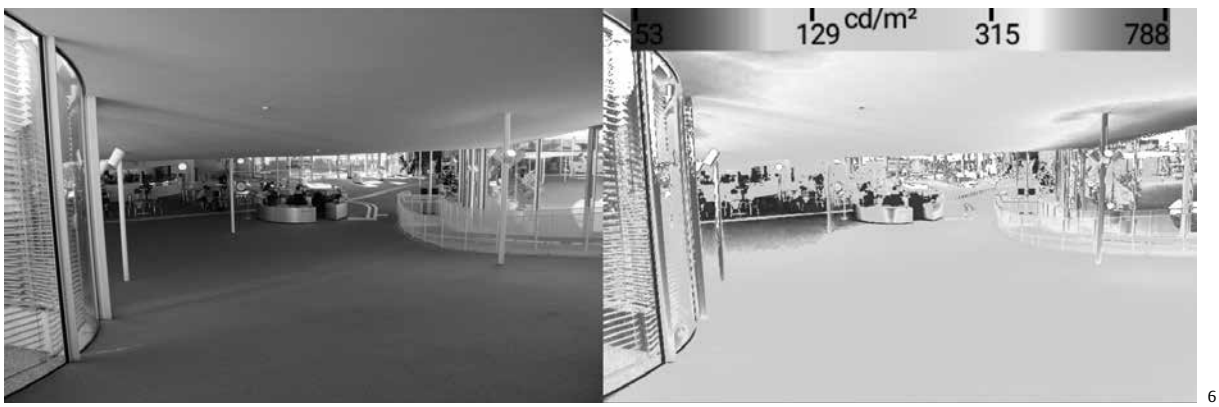
6 Luminance pattern and mapping data of cafeteria.



4

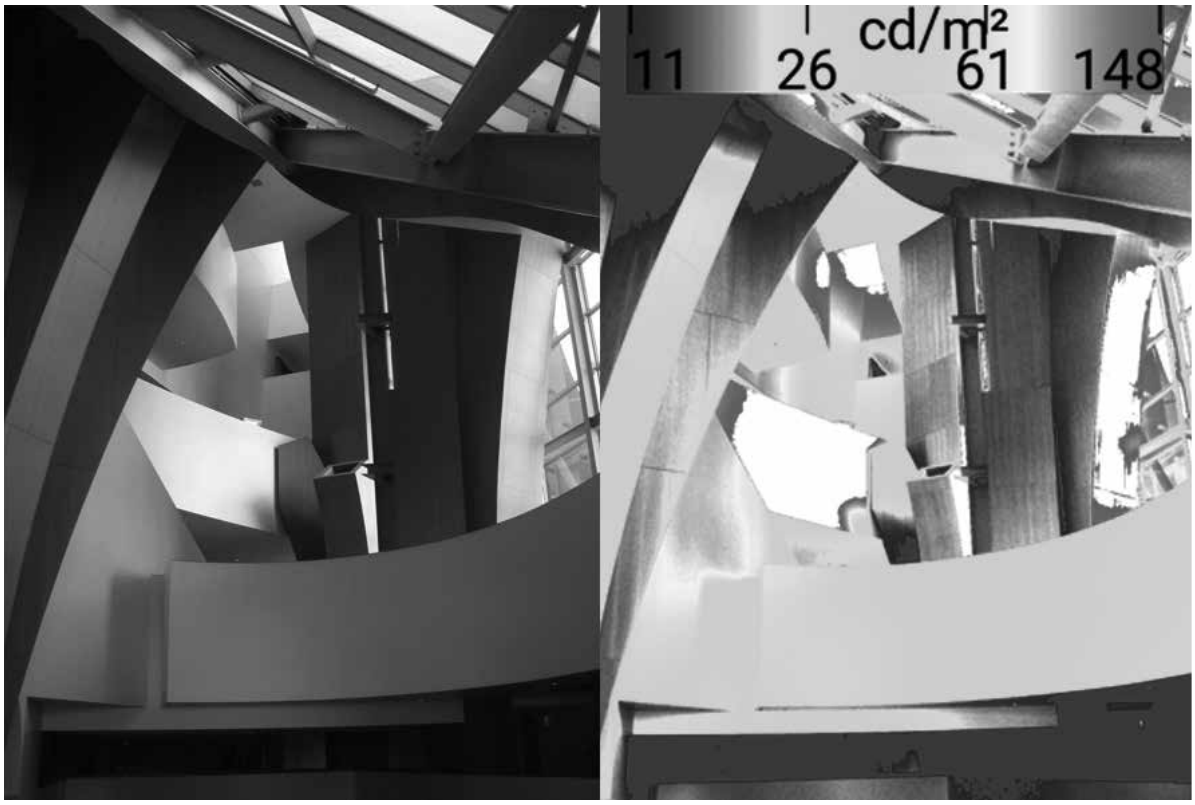


5



6

https://doi.org/10.1017/S1359135521000129 Published online by Cambridge University Press



7 Luminance pattern and mapping data of Walt Disney Concert Hall.

material in order to foreground the abstractions of formal composition and proportion.

For SANAA, however, rather than a celebration of form, whiteness is used to blur the sense of spatial depth and volume within the building. In the Rolex Learning Centre the smoothly finished ceiling and ground planes are allowed to undulate in parallel, transforming a normally stable datum of two-dimensional surfaces into a three-dimensional topography. By distorting conventional linear perspective, the designers also expand the proportion of whiteness within one's field of vision, making it impossible to identify with certainty the horizon, background, limit, outline, form, or central focus of the space. This quality coincides with the notion of close vision in Gilles Deleuze and Félix Guattari's concept of 'smooth space', where the eye not only has its optical role but also fulfils non-optical functions. According to their formulation, in the pure haptic smooth space of close vision, all orientation – such as landmarks and the linkages between things – are in continuous variation. Unlike in Euclidean space there is no stable set of referents that can be observed, quantified, and conceptualised from the exterior, instead smooth space must be identified from within, through a tactile encounter with sound and colour, accessed via a process of embodied ambulation that resists the reproduction of an abstract spatial matrix pre-existing the act of traversal. Where there is close vision, in this sense, space is no longer visual, or rather the eye itself takes on a haptic, non-optical function.[15] The typical saccadic movements between sequential fixation points should therefore be seen as an extension of the sense of touch: the eyes palpating or 'brushing over' the surface of the space in search of perceptual information.

If the whiteness of early modern architecture produced a predominantly visual language, the whiteness of the Rolex Learning Centre could be said to endow the eye with a haptic, non-optical function – a reminder of the evolutionary origin of the eye in the specialisation of light-sensitive skin.[16] Besides this whiteness of surface, there is also an unusual thinness of structural elements, which contributes to the quality of 'cloudiness' already touched on above. The slender tubular steel columns have a diameter of just 127 mm, and these are arranged in a 9 x 9 metre grid following the geometry of the concrete slabs and shells. These columns are also painted white and therefore have little visual presence within the space, adding to the combined impression of flatness and infinite extension. As the Spanish architects Cristina Diaz Moreno and Efren Garcia Grinda suggested in 2004, in many SANAA projects the structural elements seem to be 'atomised' and 'dispersed' throughout the building.[17] Wigley has also pointed out that this thinness acts as a kind of amplifier of the building's internal atmosphere, dissolving the solidity of its mass at the same time as it 'thickens the air'.[18]

To the visitor, impelled to explore their ambiguous surroundings in an effort to orientate themselves more securely, moving through this thickened air feels something like walking in a cloud. However, this is a very different type of cloudiness from that produced by Diller and Scofidio for their Blur Building in 2002. This temporary pavilion on Lake Neuchatel built for the Swiss Expo, consisted of a grid

https://doi.org/10.1017/S1359135521000129 Published online by Cambridge University Press

of pipes and high-pressure spray nozzles creating an artificial mist of water vapour. This 'cloud' enclosed the structure completely and shrouded it from view, enveloping visitors in a watery fog and even hiding them from each other. In this kind of 'white-out' condition the physical depth of space seems to collapse completely, effectively flattened onto the surface of the eyes, like the oppressive velvet blackness of a photographer's darkroom. By contrast, in the Rolex Learning Centre, the cloudiness is more transparent. Rather than blocking the view completely it offers a space in a state of erasure, with tectonic elements almost eliminated, boundaries blurred and solid volumes rendered indistinct. It appears that the architects have taken great care in crafting empty containers devoid of unnecessary elements. This is, according to the graphic designer and curator Kenya Hara, another important aspect of traditional Japanese aesthetics; an atmosphere of emptiness can be a powerful way of expressing a sense of latent energy and stored potential.[19]

What seems most powerfully latent here is a sense of perceptual resolution delayed or indefinitely deferred, as the information normally available to human vision is lacking for both the 'where' and the 'what' systems. The lack of luminance contrast in peripheral vision creates a basic uncertainty about the spatial structure, inviting the eye to scan in search of texture and detail from which to begin to build a sense of place and orientation. This search also proves largely fruitless because there is no detail where one expects more detail, and no obvious datum or perspective vanishing points for the eyes to fixate on. No texture, no contours, no shapes, and no horizontal or vertical axes, almost eliminating what the psychologist James Gibson described as the effect of 'optical flow'.[20] It is impossible to say precisely where one is within the building, or to describe its shape and proportions, or tell someone how to get to a certain point. However, one of the few things to provide some focus within this otherwise disconcerting cloudiness is the familiar sight of other people who are also searching for their own reference points. People appear to float in a cloud between layers of whiteness and transparency, but gradually a sense of place begins to emerge from the patterns of movement and clustering of people according to the various activities going on within the building. Figures [5, 6] both illustrate how this happens. Distinct from the surface of the space in colour, detail, and luminance contrast, these human figures can easily be detected by both subdivisions of the visual system. Thus they become the clearest objects visible within the otherwise ambiguous cloud, and perhaps even an inspiration for Kazuyo Sejima's overall Biennale title 'People Meet in Architecture'. The following section considers the role of bodily movement in the perception of spatial form and structure, as a precursor to a final analysis of Wenders's Biennale film. This, we suggest, can be read as a kind of 'users' guide' to the embodied perception of the Rolex Learning Centre itself.

Perception and embodied experience in architecture and art

According to the French phenomenologist Maurice Merleau-Ponty, bodily movement is central to the process of spatial perception and, as we now know, this includes movement at a range of different scales.[21] First, the movement of the eyes within their sockets sends information from the optical muscles to the brain's primary visual cortex, such that the moving image on the retina can create the sensation of a stable world. Second, the movement of the head on the shoulders allows the vestibular system of the inner ear to provide proprioceptive information. And third, this proprioception also involves the integration of a complex array of musculo-skeletal signalling, allowing the tracking of the whole body's movements in relation to the changing visual scene. The effective integration of visual and bodily information is vital to the reliable perception of a three-dimensional world, as powerfully demonstrated back in the 1960s by Richard Hein and Alan Held's famous 'kitten experiment'.[22] More recently, the theory of 'enaction' that has emerged within the field of cognitive science maintains that the effective perception (of an object or a space) involves grasping precisely how the scene changes according to the viewer's movement in relation to it.[23]

We are, therefore, not merely passive recipients of incoming spatial information. Instead we actively construct a sense of space through our own exploratory bodily movements. This more dynamic form of vision is dependent on maintaining a flow of movement, as we attempt to resolve through bodily interaction what might have initially appeared as ambiguous or indistinct. This is what Merleau-Ponty also described as responding to the 'solicitations' of our surrounding environment; as we are drawn into a process of bodily engagement as a direct response to perceptual uncertainties.[24]

Some visual artists have also usefully explored this phenomenon, generating illusory sensations of spatial flatness or infinite depth in order to stimulate the viewer's bodily movement. The contemporary American artist James Turrell, for example, in a number of early works challenged the viewer's perception of space by the manipulation of light and colour. These works deploy the so-called Ganzfeld effect, a condition of perceptual deprivation in which the visual system effectively shuts down when everything in the visual field is the same colour and brightness. To do this, Turrell creates conditions that we rarely meet in the natural world. For example, in a piece entitled *Pink Mist* (*Space Division*), from 1994, the viewer enters a darkened room with what looks like a rectangle of red light projected onto one of the walls. The vagueness of the scene compels the viewer's movement in order to confirm this initial impression, but for a while this rectangle remains stubbornly featureless and profoundly unsettling. Finally, the object turns out to be neither a projection nor a luminous surface, but actually a simple rectangular cutout in the gallery wall. This

https://doi.org/10.1017/S1359135521000129 Published online by Cambridge University Press

opening offers a view into a second uniformly lit gallery, which only becomes apparent at very close proximity when the eyes are able to focus on the space beyond. There is a perceptual disturbance here that draws the viewer into exploring the room and the 'object' within it, as if calling us to follow the invitation to resolve the ambiguity.

A similar condition is evident within the Rolex Learning Centre, even if it is not realised quite as perfectly as in a gallery-based artwork. The even luminance and lack of detail conspire to reveal only very limited visual clues, hence the urge for the body to move around in search of perceptual information. However, the unconventional organisation of the space also exaggerates this confusion, at the same time as it enables the user's free exploration. Deleuze and Guattari might have described this through the metaphor of the rhizome: a branching root system that can send out new shoots at any point, thus forming a potentially continuous non-hierarchical network.[25] This kind of structure is suggested in the plan of the Rolex Learning Centre, with its undulating surface punctuated by a total of fourteen doughnut-like elliptical cut-outs. Each of these offers views out and provides daylight to the external patio space beneath, while also creating islands around which the circulation paths are woven. The multiple entry points act like spreading tendrils and runner-shoots, which then criss-cross each other throughout the building, swirling around the patio cut-outs like the warped gravitational fields between black holes. People therefore have the freedom to choose their own routes in and out and how to move around within the building, while the loosely programmed spaces provide the possibility for users to create new spaces through their own actions. It is this clustering of users' bodies within an otherwise almost featureless 'landscape' that begins to create focal points that serve to guide ongoing movement.

Based on the above, we suggest that human vision is uniquely challenged in the Rolex Learning Centre, and thus to a large extent the other bodily channels of perception become more pronounced and significant. So, despite its lack of obvious sensory richness in comparison with more tectonically articulated architecture, it could be argued that its engagement of the human sensorium is in fact no less profound. In the final section of the article we develop this idea in relation to Wim Wenders's filmic treatment of the building.

From seeing like a camera to feeling like a building

Wenders has for a long time been interested in using 3D to make film, believing it offers a more 'human' experience and a more accurate sense of place. After seeing an early cut of the groundbreaking digital concert film *U2 3D* at Cannes in 2006, he first employed the new technology on a film about the experimental German dancer and choreographer Pina Bausch, finally completed after her death and premiered in 2011. In this example, one of Wenders's innovations was to take the performances out of the theatre and into the outside world, exploiting the 3D camera's ability to capture depth by filming foreground objects against the backdrop of distant horizons.

Wenders's fascination with iconic architecture has been evident since he used Hans Scharoun's Berlin Library as the setting for his award-winning feature-film *Wings of Desire* in 1987. He has since gone on to complete a larger 3D project, incorporating the 2010 Rolex film within a series of six thirty-minute architectural documentaries. Entitled *Cathedrals of Culture*, and completed in 2014, this involved five different invited directors each shooting a film about a building that inspired them. While the six directors have used 3D in different ways to explore and challenge the possibilities of the medium, what links them to the Rolex film is the use of a voiceover narration. However, instead of using the conventional impersonal 'it' in describing the buildings, they all use the first person 'I', as if the building itself is speaking. This approach plays down the perspective of the actors – and even the camera itself, as a surrogate for the viewer – and instead encourages the spectator to empathise with the 'personality' of the building itself. These films therefore also enact a kind of 'alien phenomenology' in their suggestion that all buildings are – in a sense – living beings, and able to respond in various ways to things happening within and around them. This would therefore imply that they might even possess some form of quasi-human sentience as suggested by Wenders's choice of the title for the Rolex film: *If Buildings Could Talk*.[26]

Wenders points out that there are overlaps between the work of film directors and that of architects. However, he warns that: '[buildings] really determine and condition people's lives. Films sometimes form people's visions and dreams, but don't have such an immediate impact on their reality.'[27] As a way of trying to increase the impact of the Rolex film upon the viewer's immediate reality, Wenders agreed with Kazuo Sejima, the Biennale curator, to project the film on a large wraparound screen near the entrance to the main exhibition. In this way the visitor would find themselves caught in a state of transition from the world outside, handed a pair of 3D glasses and immediately thrust into the midst of the film's continuously rolling twenty-four-minute loop. The intention was for the viewer to stand or walk around while watching the film, interacting with other spectators while enjoying a bodily evocation of movement on the screen.

The typical result of putting architecture on film is a rather disembodied form of experience. A passive spectator seeing the world through the cyclopean eye of the camera is usually a poor substitute for a fully embodied exploration of a real space. Wenders, however, takes a different approach, deciding against using a hand-held camera to try to replicate the real-life experience of walking through the building. Instead, he employs a 'steady-cam', rather like a typical movie 'tracking shot', allowing the viewer to glide effortlessly through the space. By filming continuously from a rolling camera he gives viewers a fluid and continuous experience, echoed by the sight of the architects Sejima and Nishizawa riding on

https://doi.org/10.1017/S1359135521000129 Published online by Cambridge University Press

motorised Segways around the building [3]. While the effect of rolling on a moving Segway is very similar to the floating steady-cam, the increased speed of movement compared with walking, helps to counteract what was described above as a deficit of visual information within the Rolex Building. The exaggerated up-and-down oscillations of the visual horizon, coupled with the stronger sense of motion parallax produced by the few fixed vertical elements, both combine to offer greater visual clues as to the structure and organisation of this otherwise ambiguous space. The film therefore celebrates one specific response to the building's quite literal solicitations, as the camera/viewer and both Sejima and Nishizawa become three characters in an unfolding drama: as if swept along in a game of cat-and-mouse by the mischievous behaviour of the building.

A further consequence of the film's accelerated movement is a heightened awareness of what Gibson called 'visual flow', as well as a greater sense that the expansion and compression of space happens in both vertical and horizontal directions. Horizontally, this is due to the moving body passing through the narrow passages between curved surfaces, such as the glazed screens enclosing the patio light-wells and the solid white walls around the office spaces. The sense of compression is even more pronounced when it occurs both vertically and horizontally together, as with the patios that touch the ground and also have one side elevated. Here, the body is compressed by a combination of the curved wall and the rising floor. The undulating soffits also occasionally create a bodily sensation of weightlessness, due to the illusion that one is climbing a ramp when in fact the floor is almost flat. Further exploration tends to correct this misreading as the gradually increasing incline of the floor eventually triggers an awareness of the physical effort required to walk up the slope.

The sense of hearing also plays an important navigational role here, more so than in many more conventional buildings, as the sound conditions help to identify functional zones within what is effectively a 'one-room' space. Likewise, in Wenders's film, the soundtrack also plays a crucial role, with the softly sensual female voiceover acting as the main focus of the narrative. As with previous films, Wenders's starting assumption is that all places have stories to tell, and he allows the building itself to speak as way of engaging the user in a form of dialogue.

Within the building there are few physical boundaries separating noisy and quiet areas, so the architects have used carpeted floors and sound-absorbing ceilings to ensure comfortable acoustic conditions. While some areas, such as entrances and cafes, create quite distinctive pools of sound activity, the general condition is a soft or 'dead' acoustic that reduces the level of background noise. The effect of this is to suppress the normal feedback from the sound of the visitor's own movement, a form of unconscious 'echolocation' that is a key element of all architectural experience.[28] So, while visitors to the real building might easily be disorientated by its unfamiliar attenuated acoustics, another implication of Wenders's film is to encourage everyone to listen more attentively to whatever the building might be saying.

In comparing the actual experience of the building with the representation of it in Wenders's Biennale installation, we suggest that the film transcends some of the typical limitations of a two-dimensional medium. At the same time, we believe it extends our understanding of the nature of bodily experience in architecture. While the sensory aspects of SANAA's buildings seem to be limited by their formal vocabulary, Wenders's film suggests that they are still able to engender a deep phenomenological experience. It could be argued that SANAA sees the user as an active participant in the realisation of their architecture, as people are encouraged by the solicitations of the buildings to embark on a personal journey of discovery. The deliberate ambiguities these spaces initially present actively engage the participatory imagination of the user, reminding us that only through embodied exploration and continual movement can we confirm the veracity of our ongoing perceptions.

In summary, we have argued that visual perception within the Rolex Learning Centre is profoundly ambiguous, given that what Livingstone called the 'where' and the 'what' systems are both equally challenged. We suggest, however, that Wenders's film constitutes both a celebration and a correction of this condition, as the ambiguities evident in both cases serve to encourage active bodily engagement, soliciting the visitor's exploratory movement as a means to confirm their perception of the space. Within the building this exploration initially yields further layers of ambiguity, such as the rhizomatic organisation of the space and its landscape-like topography. Gradually the other channels of embodied perception become more pronounced and significant, including an awareness of the user's bodyweight, the sense of compression and expansion, and the subtle acoustic differences that signify changing patterns of occupation.

Within the film, many of the features that make the Rolex Centre different from conventional buildings are exaggerated through the speed and smoothness of the moving steady cam. The film could therefore be read as both a demonstration and a resolution of its ambiguous effects. Perhaps Wenders is right to propose that buildings are able to talk directly to their users, but rather than speaking through the 'normal' channels of sound and reflected light, we might better understand this as a form of communication from one body to another.

https://doi.org/10.1017/S1359135521000129 Published online by Cambridge University Press

Notes

1. SANAA stands for 'Sejima And Nishizawa Architects Associates', the office of the partnership of Kazuyo Sejima and Ryue Nishizawa.
2. Wim Wenders, Kazuyo Sejima, Ryue Nishizawa, Talk on the *If Buildings Could Talk* architecture and film project, 12th International Venice Architecture Biennale, Venice, 27 August 2010.
3. Juhani Pallasmaa, *The Eyes of the Skin* (Chichester: John Wiley & Sons, 2012), p. 33.
4. Ibid., p. 29.
5. Wenders, Sejima, Nishizawa, Talk, Venice, 27 August 2010.
6. Margaret Livingstone, *Vision and Art: The Biology of Seeing* (New York: Harry N. Abrams, 2002), pp. 68–77.
7. Ibid., pp. 72–3.
8. The 'voice' of the Rolex Learning Centre, from *If Buildings Could Talk*, dir. by Wim Wenders (Berlin: Road Movies, 2010).
9. Cd/m^2 refers to the amount of light reflected from a surface, expressed in candelas per square metre. The candela is the SI unit of luminous intensity.
10. Kisho Kurokawa, *The Philosophy of Symbiosis* (London: Academy Editions, 1994), p. 127.
11. 'Superflat' is a term that the Japanese painter Takashi Murakami coined to describe the artworks of his studio, in which the lack of depth found in traditional Japanese painting is brought together with a similar lack of depth in early manga, forming a visual product that is characterised by a lack of perspective, an extreme planarity, and an interest in particular kinds of movement, expressed graphically. Architectural critic Taro Igarashi borrows the term from Murakami, describing the works of architects such as Toyo Ito, Kazuyo Sejima, Jun Aoki, and Kengo Kuma as 'superflat'. See: Taro Igarashi, 'Superflat Architecture and Japanese Subculture', in *Japan Towards Totalscape: Contemporary Japanese Architecture, Urban Planning and Landscape*, ed. by Taro Igarashi and Moriko Kira (Rotterdam: NAI Publishers, 2001), pp. 98–101.
12. Sou Fujimoto, *Primitive Future* (Tokyo: INAX, 2008), p. 137.
13. Mark Wigley, 'How Thin is Thin', in *El Croquis*, 179–180. *Sanaa 2011–2015 Kazuyo Sejima, Ryue Nishizawa: Sistemas De Continuidad / Continuity Systems*, ed. by Fernando Márquez Cecilia and Richard Levene (El Croquis Editorial, 2015), pp. 26–39 (p. 37).
14. Le Corbusier, *The Decorative Art of Today* (London: The Architectural Press, 1987), p. 207.
15. Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia* (London: Athlone Press, 1988), p. 494.
16. Richard L. Gregory, *Eye and Brain: The Psychology of Seeing* (Oxford: Oxford University Press, 1998), pp. 24–6.
17. Cristina Diaz Moreno and Efren Garcia Grinda, 'Ocean of Air', in *El Croquis*, 122–123. *SANAA 1998–2004*, ed. by Fernando Márquez Cecilia and Richard Levene (El Croquis Editorial, 2004), p. 27.
18. Wigley, 'How Thin is Thin', p. 37.
19. The Japanese notion of emptiness is an indication of latent energy and potential. Kenya Hara, a Japanese graphic designer and curator, elaborates on the importance of 'emptiness' in both the visual and philosophical traditions of Japan, and its application to design in his book *Designing Design* and *White*. See: Kenya Hara, *Designing Design* (Zurich: Lars Müller, 2014) and Kenya Hara, *White* (Zurich: Lars Müller, 2015).
20. James J. Gibson, *The Ecological Approach to Visual Perception* (Hillsdale, NJ: Lawrence Erlbaum Associates, 1986), pp. 123–5.
21. Jonathan Hale, *Merleau-Ponty for Architects* (Abingdon: Taylor & Francis, 2016), p. 21.
22. Richard Held and Alan Hein, 'Movement-Produced Stimulation in the Development of Visually Guided Behavior', in *Journal of Comparative and Physiological Psychology*, 56 (October 1963), 872–6.
23. Alva Noë, *Action in Perception* (Cambridge, MA and London: MIT Press, 2004), p. 2ff.
24. Maurice Merleau-Ponty, *Phenomenology of Perception* (Abingdon: Taylor & Francis, 2012), pp. 322–3.
25. Deleuze and Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, p. 21.
26. Ian Bogost develops an object-oriented ontology that puts things at the centre of being – a philosophy in which nothing exists any more or less than anything else, in which humans are elements but not the sole or even primary elements of philosophical interest. Alien phenomenology takes for granted that all beings interact with and perceive one another. This experience, however, withdraws from human comprehension and becomes accessible only through a speculative philosophy based on metaphor. See: Ian Bogost, *Alien Phenomenology, or, What It's Like to Be a Thing* (Minneapolis: University of Minnesota Press, 2012), pp. 106–09.
27. Geoffrey Macnab, 'Robert Redford and Wim Wenders on New Architecture Film Cathedrals of Culture', *Independent*, Wednesday 12 February 2014 <http://www.independent.co.uk/arts-entertainment/films/features/robert-redford-and-wim-wenderson-new-architecture-filmcathedrals-of-culture-9122224.html> [accessed 30 August 2016].
28. Pallasmaa, *The Eyes of the Skin*, pp. 49–51.

Illustration credits

arq gratefully acknowledges:
Authors, 1, 2, 4–7
Road Movies GmbH, 3

Acknowledgements

The authors would like to thank Benson Lau and Yiwen Kang for advice and help in the luminance study of the cases. The authors also appreciate the thoughtful comments of the referees.

Competing interests

The authors declare none.

Authors' biographies

Jing Yang is an Assistant Professor at the Department of Architecture, Xi'an Jiaotong-Liverpool University, China. She holds a PhD in architecture at the University of Nottingham. Her research focuses on architectural theory and criticism, the relationship between architecture and the body, and materiality and perception.

Jonathan Hale is Professor of Architectural Theory at the University of Nottingham. He holds a PhD from Nottingham and an MSc from the University of Pennsylvania. His research interests include phenomenology and the philosophy of technology, perception, and embodiment. His book *Merleau-Ponty for Architects* was published in 2017.

Toby Blackman is a Senior Lecturer in the School of Architecture, Planning and Landscape at Newcastle University. Toby is an architect and artist working at the intersection of film, photography, and the built environment. He is particularly interested in the production of space and time through scripts, lyrics, and text.

Authors' addresses

Jing Yang
jing.yang@xjtlu.edu.cn

Jonathan Hale
jonathan.hale@nottingham.ac.uk

Toby Blackman
toby.blackman@newcastle.ac.uk

https://doi.org/10.1017/S1359135521000129 Published online by Cambridge University Press