



Chapter I

Scale to Size: An Introduction

Joan Kee and Emanuele Lugli

Scale hides in plain sight. As much is made clear in Cildo Meireles's photograph of *Southern Cross*, the work made by the Brazilian artist between 1969 and 1970 (plate 1). Nine millimetres square, the wooden cube is so apparently tiny as to make it impossible not to think initially of its size. But its position on the tip of a finger calls specific attention to its scale, or rather to the experience that arises out of seeing the cube resting precariously on the tip of a finger, at the very point one expects it to succumb to gravity and fall away entirely.

Of its proportions, Meireles claimed they were both an attempt to draw 'attention' to the 'oversimplification imposed by the proselytising missionaries – essentially the Jesuits – on the cosmogony of the Tupí Indians', and a desire to move towards disappearance.¹ *Southern Cross* is made of oak and pine according to the Tupí belief that rubbing these woods together would produce a divine, and thus scaleless, presence. But the extended index finger unfurls to project the wooden cube into space, doing exactly the opposite of what Meireles claims about its disappearance. The hand presents *Southern Cross* not as a specimen for observation, but as a singular presence worthy of specific attention.

What exactly is the scale of *Southern Cross*? Perched on a finger or hand, *Southern Cross* appears so magnified and detached from any contextual reference as to invoke the divine presence to which Meireles's use of oak and pine alludes. The image reinforces the anthropocentric bias present in discussions of size and scale in visual art. 'Yes, the actual cube is really too small to be seen, and so we are blown up to help you forget that fact', the photographs seem to say.² When *Southern Cross* is photographed on an exhibition floor, the perspective from above merely confirms our own uprightness looking down at the world resting literally at our feet.

Another photograph has us look at the work as it sits on the floor, but from an obliquely lateral perspective, so that we seem to look with, and not upon, it (plate 2). A man's shoe and part of his lower leg appear enormous, but blurred and in the background. *Southern Cross* appears to bear out the truth of its name; its smallness ironically enables it to command its own area in a seemingly vast space. The suggestion recalls how Land Art was celebrated in 1960s America; works by artists like Michael Heizer and Robert Smithson appeared to demonstrate supreme 'indifference' toward 'one of the oldest and most solid notions – that of the human body as the point of reference for all measure'.³ Viewers who encounter *Southern Cross* may well step away from it, not only because they recognize the object as an artwork, but because they intuit how the scale to which *Southern Cross* refers fundamentally

**Detail from Michelangelo
Buonarroti, *Madonna of the
Staircase*, c. 1490 (plate 3).**

To Scale Edited by Joan Kee and
Emanuele Lugli © 2015 Association
of Art Historians.



I Cildo Meireles, *Cruzeiro de Sul* [Southern Cross], 1969–70. Wooden cube, one section pine, one section oak, 0.9 × 0.9 × 0.9 cm. Rio de Janeiro: Collection of the artist. © Cildo Meireles. Photo: Courtesy of Galerie Lelong, New York.

diverges from the measures according to which human scale is generally considered. The cube is somehow incongruent with a viewer's arm span, eye level, height, or even outstretched fingers.

As these examples briefly illustrate, scale has a way of displacing the viewer. Its ability to do so further depends on the medium of expression, an issue central to this special issue whose title raises questions about what it means to create an object 'to scale'. Broadly defined as the relationship between the actual physical magnitude of a thing and the way that magnitude is represented, scale requires that we think of how size enables a material and physical entity to function convincingly as an artwork. Although the need to distinguish clearly between size (absolute dimensions) and scale (proportions) has been emphasized on more than one occasion, the production of scale often depends on various articulations of size which themselves are far from stable.⁴ As Anne Wagner observes, enlarging or reducing the dimensions of an object can take place according to the most rigorously observed standards, 'yet the effects of these alterations are not necessarily either stable or predictable'.⁵ Further complicating the discussion is the distinction between absolute dimensions, or what might be called explicit size, and implicit size, or what the arrangement of parts in a given artwork suggests to a viewer about its proportions.

Scale therefore opens up onto an almost algorithmic process of recognizing not only how things and people occupy a given space in relation to one another, but also how artworks mediate the relations between things and people. What kinds of assumptions are inherent, for instance, when an object is scaled according to the proportions of an adult viewer? Or to those of a child? Or even to those of an entity that may not be human at all? In this same vein, to whom are particular scales directed and what do such scales imply about their users?

The plurality of responses to these questions provides another reason why this issue is called 'To Scale', a title which should be read less as an infinitive than as a proposition of movement, one that recognizes scale as a dynamic concept which humans cannot always control.⁶ Of particular importance are the ways in which scale transforms and is transformed in relation to the affective sphere, to the practical and social functions of objects, to the conceptualizations of measurements and other systems of ordering, and to techniques of imaging and reproduction. Consider, for example, the various photographs of *Southern Cross* that produce different, and often competing, viewing experiences. Olivier Lugon addresses the medium and formats of photography and their profound effects on scale in 'Photography and Scale: Projection, Exhibition, Collection', a survey of scale in art photography from its beginning to its widespread acceptance by the museum and gallery worlds of the 1970s.⁷ He argues against reproducibility as the key paradigm for thinking about scale in photography, instead proposing what he terms a 'flexible reproducibility', one better equipped to account for how the medium of photography interrogated the very idea of a picture's scale.⁸

The vastness of these questions necessarily requires multiple approaches, a core assumption behind 'Size Matters: Questions of Scale in Art History', a conference held at the Kunsthistorisches Institut in Florence in November 2012 and from which this special issue originates. It brought together specialists in Asian and African as well as European and American art who discussed a wide variety of topics, from the question of unmappable places such as the Garden of Eden to the relationship between artistic depictions of the built environment and their consequent impact on architecture in medieval Japan. The diversity of conference participants and attendees prompted considerable discussion over the instability of terms commonly used to refer to size and scale.

Yet the discussions also reflected the extent to which the issue of scale could join specialists working in and with different geographical and chronological areas. Indeed, the resulting agreements and disagreements regarding various approaches



2 Cildo Meireles, exhibition
view of *Cruzeiro de Sul*, Mexico
City: Museo Universitario
Arte Contemporáneo
(MUAC), 2009. Photo:
Cristiano Oliveira.

to scale highlighted the challenges of practising what is ambiguously described as world, or global, art history. In particular, disagreements concerning the differences between 'size' and 'scale' reflect various cultural hegemonies and values that put considerable pressure on what it is that 'global' is supposed to mean when paired with 'art' or 'art history'. The discursive implications of this pressure are readily present in the shift that took place in geography during the late 1990s and early 2000s when scale was increasingly considered as an epistemological matter. This shift reflected concurrent explorations regarding the validity of rubrics like 'nation', and perhaps most notoriously, the 'world' or the 'global'.⁹

While such interpretative models achieved much by way of showing how the scale of things can force reductive oppositions and hierarchies, they were comparatively silent on how to best address the visual nature of scale and its operation in the material world, questions that art historians are particularly well positioned to address. Responding to these questions requires thinking about the viewing experience produced by objects scaled to various measures as well as the movement of artworks and objects in and across disparate geographies.¹⁰ This special issue underscores what it is that art history and its methods have to contribute to a question that is both inherently interdisciplinary and in urgent need of attention from those trained in visual analysis.

Description Matters

One reason that scale works well as a common platform for thinking about what practising a global art history might entail is because of how it emphasizes the need to carefully rethink the terms used to describe visual phenomena. Regardless of their individual specialties and backgrounds, numerous conference participants repeatedly pointed out how the tendency to collapse scale into size was due to insufficient attention being paid to terms like 'miniature' and 'monumental'. This insufficiency not only concerns what words are used and why, but also the need to think about new approaches that take into account the visual nature of things. Why, for example, do literary views of scale still wield so much authority in art-historical treatments of the subject? Susan Stewart's discussion of the miniature and monumental conditions arguably remains the most widely cited source in humanities scholarship regarding scale. She defined the 'miniature' as 'an experience of interiority', and the 'gigantic' as a projection towards the exterior, clustering a series of opposite concepts around these two poles.¹¹ The former alludes to a reduction in scale that frames the viewing encounter as an act of possession, whereas the latter enacts a feeling of being possessed. Although richly evocative, the discussion is rooted in a distinctly text-based understanding of visual experience, which perhaps does not do enough to flush out the visual specificity of how the souvenir, the dollhouse or the miniature book shift from 'the monumental to the miniature'.¹²

This is not to discount insights about what words to use in discussing visual phenomena, a subject which frequently means thinking about invisible, non-tangible experiences. In pointing out how the colossal can also be a category of the miniature, Jacques Derrida argues that something so small as to appear invisible necessarily triggers the imagination, thus producing an experience of the sublime. However, Derrida prefers to speak of 'colossal' rather than 'monumental', as the term has a phonetic and semantic affinity to 'column', which he takes as its dialectical opposite.¹³ Again there is a polarity, for 'column' and 'colossus' produce alternative experiences of, respectively, that which can and cannot be measurable. The division reflects the two experiences of scale that Kant sets forth in his *Critique of Judgment* (1790): one



3 Michelangelo Buonarroti, *Madonna of the Staircase*, c. 1490. Marble, 567 × 401 mm. Florence: Casa Buonarroti. Photo: Creative Commons.

that relates to the human body (anthropocentric) and another exceeds sensorial apprehension (transhuman, or in Derrida's language, colossal). According to this framework, microcosms and macrocosms have a point of contact in their shared capacity to escape human scale and open up to the metaphysical.

Those who work directly with material objects often arrive at somewhat different conclusions. In wrestling with the problem of nonfunctional miniature objects, for example, some archaeologists consider their scale as evidence that such objects are substitutes for their full-scale counterparts.¹⁴ On a different plane, Melissa McCormick has observed of handscrolls in medieval Japan that they were half the size of standard picture scrolls, and that the miniature need not be correlated with size.¹⁵ Even a smaller version of a larger template was not necessarily indicative of miniaturization. What matters instead is the 'internal scale' that a particular size generates.¹⁶ This explains, for example, why Michelangelo's *Madonna of the Stairs* is a monumental work despite its size of approximately fifty-six by forty centimetres, roughly the dimensions of a desktop computer screen (plate 3).¹⁷ The Madonna fills up the entire visual field, touching with her feet and head the upper and lower frame. Her

height surpasses that of the steps receding into the background which Michelangelo added to force viewers to address how depicting depth and elevation depends on the materials used.

The example of the Madonna foregrounds the equally unstable meanings of 'monumental' and 'monumentality', modifiers frequently associated with perceptions of very large size, but which many scholars have convincingly argued are best understood as an affective condition derived from viewers' perceptions of scale. Thinking about monumentality as a force that arouses an emotional response stems from Edmund Burke's *Philosophical Enquiry into the Origin of our Ideas of the Sublime and the Beautiful* (1757), a treatise that has become a reference point for many accounts of the response to the size of an aesthetic object.¹⁸ Barbara Stafford's study of Hubert Robert's depictions of Egyptian colossi and Polynesian moai as ultimate embodiments of overwhelming feelings demonstrates the impact of Burke's ideas upon artistic practice in his time.¹⁹ Writing against the backdrop of the Second World War, where destruction took place at an unprecedented rate, Louis Kahn defined monumentality as 'a spiritual quality inherent in a structure which conveys the feeling of its eternity ... it cannot be added to or changed'.²⁰ Kahn internalized the teachings of Sigfried Giedion, who emphasized scale as that which was felt rather than exclusively seen. In contrast to Lewis Mumford and those who defined modernist architecture as being opposed to monumentality, Giedion advocated a new age for monumental buildings in which they would function as emotional symbols for contemporary society.²¹

Scale and Function

Thinking about scale in particular reference to architecture immediately brings up the relationship between scale and function, which requires consideration not only

of an object's purpose, but of the labour, materials and techniques involved in its production, as well as the time invested in its eventual use and reception. As Louis Marin points out, Derrida is Kantian in assigning the column to experiences that are not only human but also measurable and therefore utilitarian.²² Columns support buildings and for this they need to be sized properly. In contrast, there is the useless colossus, an undertaking (rather than merely a statue) which, as Darcy Grigsby has described in her accounts of the Suez and the Panama Canals, is necessarily a product of multi-generational, collective labour.²³ A colossus cannot be ascribed to one artist only, unless of mythical stature as in the case of Phidias, Brunelleschi or even Eiffel, whose tower Giedion defined as the only truly monumental work of the nineteenth century.²⁴

Yet, despite being the product of many hands, the colossus tends to represent a solitary figure, as even its pairing with another would obfuscate its towering greatness. Such realization drove Leon Battista Alberti to oppose and subordinate it to *historia*, a detailed representation of a historical event. The *historia* increases its capacity to excite with the number of, and difficulty in arranging, figures, actions and things. It is the complexity of a work that eventually affirms the greatness of the single artist.²⁵ Urging that *historiae* were to be executed in large size and exhibited publicly to a large audience, Alberti internalized the plurality and duration of their reception at the level of production. According to him, the *historia* thus collapses the distinction between duration of making and viewing experience, compelling its audience to spend as much time discovering the work's correlations and subtleties as it took the artist to conceive them.

Even more important in assessing the scale of a given object is a consideration of the physical properties of objects and materials involved in its creation as well as the techniques these properties enable. Recall, for instance, how Galileo Galilei criticized

architects for failing to understand the structural load of materials by thinking that they could enlarge a project to any scale.²⁶ Materiality and technology, he pointed out, determines the size of an object and – we might also add – the quality of its working. Take, for instance, the case of the porphyry sculptures that Emperor Constantine commissioned at the beginning of the fourth century (plate 4). Bernard Berenson took the coarser effect of their carving as proof of artistic ineptitude on the part of post-classical sculptors, while Ernst Kitzinger more diplomatically refrained from concluding such heaviness a sign of decline and instead considered it a deliberate rejection of the classical tradition.²⁷ Yet, regardless of their conclusions, both failed to consider the hardness of porphyry, its refusal to behave like the more pliable marble, and how its density determined the kinds of details Constantine's sculptors could produce.

The impact of technology, which Kant acknowledged in pairing measurability and usefulness, is a question that, when considered as a problem of scale, highlights the impact of form. In 'The Monumental Miniature: Liquid Architecture in the Kilgas of Cairo', Margaret Graves argues that

4 The Tetrarchs, c. 293–312. Porphyry, 130 cm (height). Piazza San Marco, Venice. Photo: Emanuele Lugli.



the decision to shape the *kilga*, a domestic water jar stand used in medieval Cairo, as an architectural water spout was motivated by a looser, more ‘whimsical’ intention to establish a ‘kinship of function and, to a lesser extent, form’. ‘The act of miniaturizing something large and complex’, Graves claims, ‘necessitates leaving things out.’ Missing from most discussions of miniaturization is reflection upon what she describes as a ‘shared sense of artistic licence between maker and user’. Moreover, *kilgas* ‘make direct and indirect reference to a number of architectural motifs and structures’, hence raising questions of scale and the symbolic function of the built environment.

The close relationship between scale and context is an issue that Joan Kee explores in ‘The Measure of the World: Scenes From a Journey to Kaesŏng’. She focuses on the album format, which in mid-eighteenth-century Korea was complicated by artists contending with two different approaches to scale. One was conditioned by longstanding conventions regarding Chinese ‘monumental landscape’ painting, which, Wen Fong suggests, were followed precisely because they showed the subjection of human will to ‘a larger principle, one that is expressed with a profound belief in communion with nature’.²⁸ At the same time, many Korean artists committed themselves to ‘true view’ landscapes, so named for their emphasis on painting from direct observation of a specific geographical location as opposed to copying other works, or works based on the artist’s imagination. This was not so much a prioritization of mimesis as an appeal to create depictions that viewers could believe were reflections of an artist’s personal experience with the land. In terms of the album format, this meant accounting for both the dimensions of the viewer’s hands and for the relationship created between them and the eye when a viewer turned over each album leaf.

By focusing closely on particular objects, Graves and Kee leave open the question of whether it is possible to assess the dimensional relationship between objects without necessarily referring them to individual perception or the dimensions of the human body. Such an issue has been explored in detail by post-war architects such as Jaap Bakema, Superstudio, Alison and Peter Smithson and Rem Koolhaas. While reflecting on the open society and the expansion of the welfare state, they focused less on the needs of individuals than on those of the masses.²⁹ In ‘Bigness or the Problem of Large’, Koolhaas endorses buildings so huge and so deliriously complex in order to sweep away architecture’s traditional relationships with viewers, makers, context, and even morals.³⁰ Koolhaas’s city-buildings, connected by elevators and fuelled by the money and technological dreams of neoliberalism, destroy the need for human scale, while deliberately rejecting the spiritual horizons implied by the sublime. But if technology has expanded the physical capabilities of human beings, does it still make sense to think of scale in anthropocentric terms? Koolhaas’s gestures are extreme, yet they can be interpreted as another iteration of a longstanding desire to regard scale in terms of its capacity to give physical form to abstract concepts. At what point does a work become transhuman? When one can no longer perceive it physically or when its complexity is such as to transcend one’s conceptual grip of it?

These questions lie at the core of ‘The Invisible Miniature: Framing the Soul in Chinese Art and Architecture’, in which Wu Hung proposes that the proliferation of miniatures in Chinese funerary art and architecture must be understood in connection to their intended user: the formless, invisible soul. Many of these objects were meant to function symbolically, to ‘connect yet separate realms of different temporal and spatial orders’. Wu argues, however, that their proper function depended on the perceived interaction between what is seen and what is unseen,

as well as a dialectical recognition of that which could be touched and that which was intangible by definition. Wu pays special attention, for example, to how objects intended for use by the dead, 'actually controlled people's imagination of the afterlife, which in turn determined the form and scale of tombs'. At the same time, the scale to which the sizes of various funerary objects were reduced seemed particularly arbitrary, hence emphasizing the role and personal imagination of the artisan responsible for creating the physical object. The vast scale to which the concepts of the afterlife and the soul alluded was made concrete by how artisans chose to imagine the size of the soul for which a particular funerary object was intended. The condition of being miniature, Wu suggests, is a function of compression and shrinkage; above all things, it is a fundamentally elastic condition.

Perspective and Measurements

Drawing a clear-cut distinction between 'size' and 'scale' rests on the belief that it is possible to measure things objectively. The division presumes that measuring practices are technical and self-evident rather than expressions of cultural assumptions and habits.³¹ Yet, however shared and accepted, the ways dimensional correspondences or discrepancies are discerned are inextricably tied to specific ideologies. While pretending to describe a set characteristic, articulations of size actually establish a relationship between an object and a specific political environment represented by a likewise specific standard of measurement. Considerations of 'size' therefore become urgent because of the political, and necessarily relative, framework on which they are based.

The result is a striking discrepancy between the purported objective of measurements and what the viewer actually perceives. The point is argued vigorously by Whitney Davis in 'Scale and Pictoriality in Ancient Egyptian Painting and Sculpture', where he explores how perspective and scale unsettle the position of the viewer. He focuses in particular on the role that virtual scale plays in many pictorial traditions: 'virtual scale is often the size on the plane of the picture: typically, the larger the depicted object in the pictorial field the greater its status in the world virtualized by the picture.' While scale has been used to establish social hierarchy, Davis is quick to note that its use also extends beyond mere symbolism. The stark differences between the actual proportions of the subject and how it (or he or she) appeared on a planar surface could actually help viewers imagine the subject in a myriad of different environments. These differences also shed light on 'the disjunctions of the real visible world' that conjoins the imagined world pictured on a surface.

A question that emerges here is the obligation of the viewer. To what extent should viewers be expected to resolve imbalances or variations of scale? If the creator was unable to adhere to a particular code of size because of technical or circumstantial difficulties, does the viewer then have a duty to fill in those gaps? In what ways is the creation of scale, and by extension, the operation of things, a collaborative process?

Davis claims that scale is a means of resolving the irreconcilable differences between what is real versus what is virtual. He points to the grid, a scaling device that 'allows one not only to scale depicted objects from one surface or environment to another while preserving their proportions. It also readily allows one to scale up (or down) any depicted object when replicating it in another context – that is, on another material plane – while preserving its proportions.' Put differently, it was a means of modelling 'the immanent ideal world' across, or perhaps, despite, 'replications of its (re)presentation'. Going back to the question of anthropocentrism, Davis implies how

the grid might support a theory of scale not based on the proportions of the human body, but rather on an external schema. Having ‘a device with which the world can be judged relative to the size and shape of things as measured in virtual pictorial space’ could replace the more frequently discussed model of visibility in which standards are rooted in terms of the weight, volume, and size of ‘real things in daily social use’.

The grid brings into view the often suppressed, but extremely salient, aspect of scale: the ascription of value to certain size-related terms, or in the circulation of notions such as ‘ideal scale’, ‘proper scale’, or even ‘life-size’. It explicitly underscores how scale acts as a medium of communication, an issue, as many contributors argue, that is intimately steeped in matters of claiming and preserving social and political authority. Measurements normalize size or, at the very least, make size a less alienating subject. The protocols of measurements, however, are determined not by the users, but from those having significant political authority. From the Roman tradition of safekeeping measurements in the temple to the practice of stamping seventeenth-century wooden measuring rods with the ruling family’s crest, measurements have been controlled and issued by those having political power in the name of maintaining their authority over others. Today measurements are largely considered as a subject for historians of economics and technology historians.³²

But art-historical engagements with measurements provide insight into the boundaries within which artists operate and people perceive. Standards of measurements, especially when assimilated through bodies, largely contribute to the creation of shared visual identity, in particular how these standards work to separate a sense of urban, versus regional or national identities.

Yet the ultimate purpose of measurements is not objectivity, but their dissemination, for only if accepted by everyone can they effectively contribute to enforcing the political agendas that they ultimately embody. Measurements turn space and bodies into extensions of power. Their seizure is merely descriptive (as the same distance can be articulated in different types of measurements). And yet, at every act of measuring, they contribute to increasing the power that legitimizes them, while producing dimensional relationships that eventually affect ideas and judgments, and trigger actions.³³ (The difference in width between Leonardo da Vinci’s two versions of the *Madonna of the Rocks* is different in character if described as two centimetres or as though falling between the edges of an inch.) Measurements, furthermore, are particularly effective as political tools because their widespread use easily makes them look as if untouched by prejudice or subjective opinions. Like currency, measurements lie at the very core of economic life whereby the members of a community have no choice but to endorse them. Each time they are used, measurements provide social affirmation as well imposing upon the world a dimensional homogenization of the real.

In ‘Measuring the Bones: On Francesco di Giorgio Martini’s Saluzzianus Skeleton’, Emanuele Lugli discusses how fifteenth-century architect Francesco di Giorgio Martini attempted to reconcile the dimensions of the measurements employed at the time with the proportions of the human body. Commerce and politics were not the sole authorities on Renaissance measurements, as Martini’s knowledge of standards was shaped also by medical, architectural and religious discourses. While highlighting the necessity to treat the issue of scale as a profoundly interdisciplinary matter, Lugli reconstructs the heterogeneity of the metrological landscape before the construction of scientific objectivity, which, as Lorraine Daston and Peter Galison have argued, aims at erasing all traces of cultural difference

or subjectivity.³⁴ More specifically, the essay focuses on the role of the body in mediating between notions of size and scale. Martini deconstructs the body – he cuts it, transforms it, reassembles it in multiple ways – his manipulations reflecting the body’s ambiguous status, oscillating between object and subject.³⁵ Indeed, a body belongs to someone, yet exists outside of her or his consciousness. It is thus both an element that can be measured and the very tool with which a person measures. Such multiplicity encourages reflection not only in terms of the dichotomy scale–size or subject–object, but to include a third way, one represented by the body as well as measurements. Indeed, measurements also emerge as ambiguous objects as well as cultural constructions reinforced over time by the ideologically supported accretion of practices and social beliefs.

Alessandro Scafi has considered these questions in his study of the mobility of earthly paradise in medieval maps. The more precise the world geography, the further Eden was pushed away from the centre of the atlas, an instability that reveals the anxieties of theologians seeking to reconcile Christian faith with a scientific worldview. After being moved from Africa to what is today known as the Pacific Ocean, Paradise was eventually thrown out of cartography altogether, its expulsion being justified by the efforts of mapmakers to achieve figural homogeneity and dimensional consistency.³⁶

But how do measurements affect the relationship between material objects and their social implications? How can we articulate the difference between how a space is experienced versus how it is represented, or managed through measurements? In “‘Freedom I do reveal to you’: Scale, Microarchitecture, and the Rise of the Turriiform Civic Monument in Fourteenth-Century Northern Europe’, Achim Timmermann focuses on a monumental cross in Cologne’s main square to discuss larger issues about the spatial and visual effects of late medieval monuments. The cross is ‘virtually identical’ to the giant pinnacles of the cathedral choir. It is as if the city had cut one of them down and re-mounted it in isolation, in the centre of its square, thus turning an architectural pinnacle into a *Hochkreuz*, a powerful marker of civic identity. If physically quite simple, the overall operation was, however, culturally complex as it required a transformation of meaning and, especially, an evaluation of ‘ideal scale’. The monuments needed in fact to be ‘large enough to serve as urban landmarks, but small enough to be unencumbered by the exigencies of structural mechanics’. By detailing this negotiation through a series of remarkable micro-architectures, Timmermann articulates the complex nexus between technology, space and visibility, one in which the power of scale lies.

Reproduction and Agglomeration

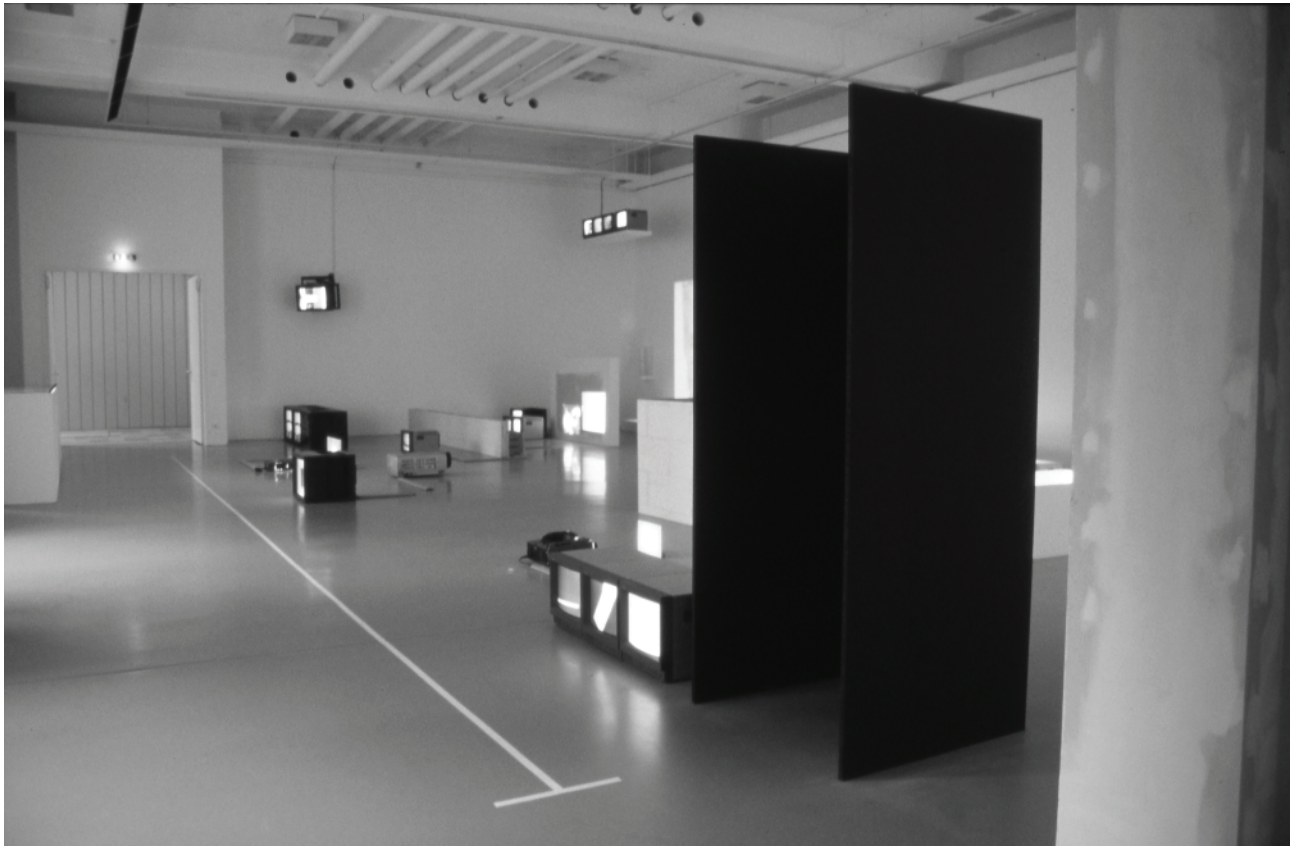
If the expulsion of Paradise from world maps or the erection of civic monuments can be seen as being regulated by rationalizing forces, doubt underscores how scale is actually experienced. Images are not uniform, nor are viewers consistent in how they perceive them. Landscapes, for example, may be painted from direct observation, but their representation might not always correspond to either how they actually looked or appeared on a map.

Techniques of image production and, particularly, the machines involved in them figure prominently in this special issue. The microscope, for instance, has not only revealed the ceaseless activity of cells and bacteria, but has made such activity relevant by scaling it to the eye and, when its images are printed in books, to the hand. The instant success of Darwinist Ernst Haeckel’s comparative prints of embryos at different stages of development was fuelled by the belief that their circulation

improved people's self-knowledge (plate 5).³⁷ His lithographs made human embryos appear less like cellular organisms, but more like actual babies, with legs, ears and, if one takes the foetus' faint smile literally, even a hint of emotional life. If by enlargement and detail Haeckel made embryos something to which one could relate, the dimensional uniformity across classes of vertebrates was harshly criticized by his scientific colleagues. For such parallelism presented humans as sharing both a common descent and evolutionary patterns with animals, including pigs and salamanders, even if no proof for such existed. Indeed, Haeckel's images were



5 J. G. Bach of Leipzig, Comparison of the embryos of various vertebrates at three different stages of development, lithograph after drawings by E. Haeckel from *Anthropogenie*, Leipzig: Engelmann, 1874, plates IV–V. Photo: Commons.



6 Joëlle Tuerlinckx, exhibition view at documenta II of *Segment de marche* '22 museal steps length' [Walking segment], Kassel: Fridericianum Museum, 2002, showing 'around Aqui Havia Historia – Cultura Agora O – a proposal for a room in the Fridericianum, with two doors and one open window'. Adhesive paper, 15' 07" width by 22 museal steps length. © Joëlle Tuerlinckx.

idealized, more illustrations of his conjectures than scientific documents. They also considerably departed from the theories of Darwin, who saw evolution as unfolding like the branches of a tree rather than in a linear fashion as did Haeckel. As Robert Richards observes, Haeckel's beliefs were strongly shaped by Johann Wolfgang von Goethe's metaphysical morphology, a theory according to which biological life was generated by a few archetypal principles, which determined the appearance of the same forms regardless of their size.³⁸ This conviction is today discredited scientifically, but had a considerable impact on artists, from architects who modelled their buildings on cellular patterns and organic tissues, to Robert Smithson who discussed his *Spiral Jetty* as a fractal, a formal configuration that aggregates into both snowflakes and coastlines.³⁹

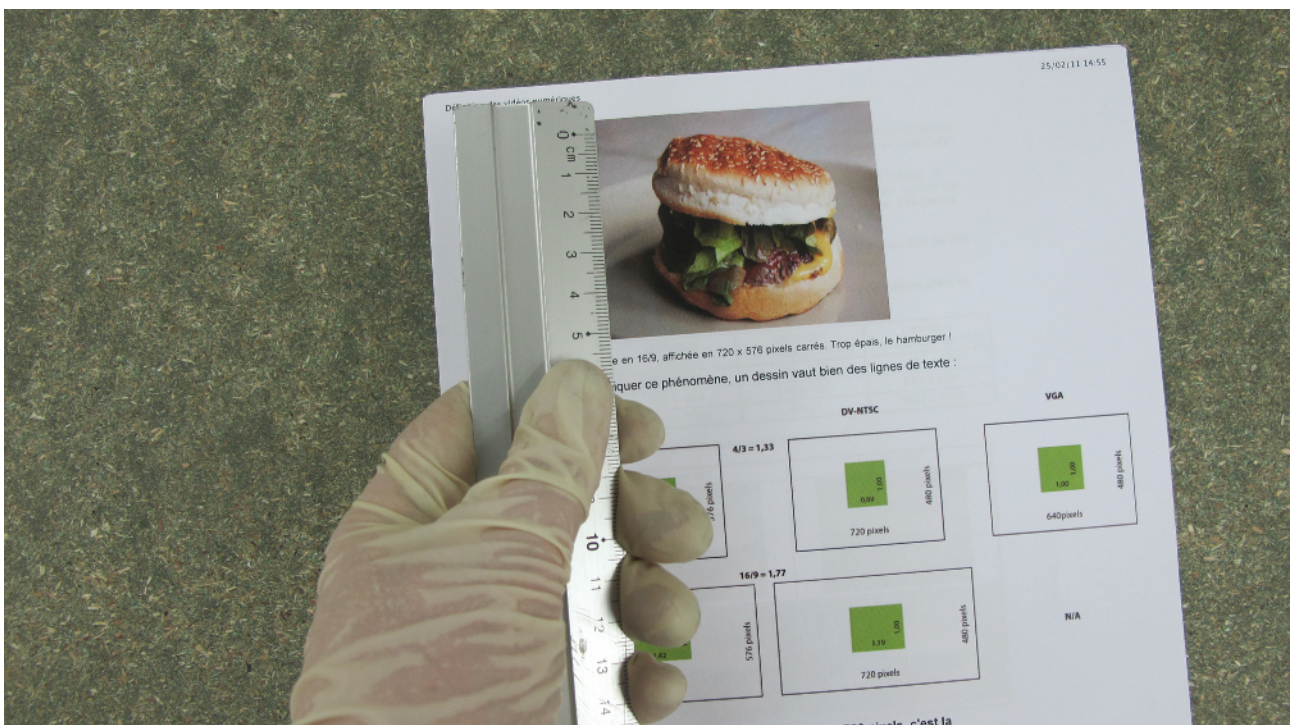
Not surprisingly, film scholars have been especially vocal in considering the relationship of new techniques of reproduction and scale. Of special interest is how the implications of scale depend on what is removed, changed, or added when images are reproduced. Consider Jean Epstein, who championed film for being more than a medium that was 'created out of obstacles and limits'.⁴⁰ Stressing 'relationships' over 'dimensions', he argued that what mattered most were processes of scaling as exemplified by the close-up.⁴¹ Epstein was careful to point out that the relative largeness of the close-up on screen was a symptom of scale, rather than size: the magnified image has the power to affect its viewers because it looks both physically larger and closer in relation to the proportions of the individual viewer.⁴² Mary Ann Doane extends the analysis of Epstein, emphasizing how the effect of the close-up also depends on its being divorced from other scales. The close-up 'does not tear away its object from a set of which it would form part, of which it would be a part, but on the contrary it abstracts it from all spatio-temporal co-ordinates, that is to say it raises it to the state of Entity'.⁴³

More recently, computer applications like PowerPoint and Photoshop allow users to manipulate the size of images so that all sense of proportion disappears.⁴⁴ Such applications have both improved the delivery and accessibility of images, particularly in the classroom. It may explain, however, why discussions of scale are fewer in comparison to discussions of other fundamental topics in art history such as style or colour. It has become far too easy to ignore scale, except when an artwork's size is so large or small as to verge on hyperbole. Indeed, the disappearance of scale from the broader arena of art-historical discussion begs further reflection on the relationship between vision and technology. In his survey, Lugon shows how monumentality in photography is 'disposable': demands for flexibility catalyzed the production of relatively fragile and temporary photomurals that could be easily discarded and replaced. In short, 'monumentality' is here distinguished by its inherent obsolescence. No matter how large or formally elaborate the photomurals, they were fated to be discarded and replaced by others. Because of this history, the large scale photograph was 'torn between two antagonistic models of the large scale: the billboard and the monument', between 'accelerated obsolescence' on one hand and 'historical durability' on the other.

In many respects, his essay is a rejoinder and complement to Michael Fried's influential account of how large scale in photography has become a sign of artistic dignity.⁴⁵ Lugon cites photographers who having previously only produced small prints started to expand the dimensions of them in order to impart to their works both 'collection value' and 'exhibition value'. He traces a history of scale in photography that considers how painting attempted to compete with photography at the end of the late nineteenth century, a relationship which changed profoundly in the interwar period when the photograph was no longer 'an image for the wall', but when the photograph itself was the wall, as exemplified through the proliferation of photomurals.

The matter of expanding photographs calls attention to the general issue of spaces of display. If space reproduces social hierarchy, as Henri Lefebvre has argued in his

7 Joëlle Tuerlinckx, Lecture on 'Pixel, Dot, Ratio', 2011–13. 577 digital images, duration and display variable. © Joëlle Tuerlinckx.





8 Joëlle Tuerlinckx, *Lecture on 'MUSÉE DE LA MÉMOIRE' – PROPRIÉTÉ UNIVERSELLE®*, in *LA TRIANGULAIRE DE CRANSAC*, 2011. Digital Images. © Joëlle Tuerlinckx.

influential 1974 book *The Production of Space*, then it is through the production of objects intended for particular spaces that the question of hierarchy might be best described. Different articulations of scale indeed generate a sense of public and private, as Linda Safran concludes in her discussion of the display conditions of colossi in Roman forums.⁴⁶ Similarly, Marvin Trachtenberg argues how aggressively rationalized urban planning enabled the late medieval Florentine government to dominate its subjects, both spatially and visually.⁴⁷ As museums and other venues for display become increasingly larger, the need to consider scale (and how much scale is a result of institutional ambitions and agendas) has become more pressing.⁴⁸

In closing, consider *Segment de Marche* by Joëlle Tuerlinckx. It consists of white tape laid on the floor which cut through the installation she produced for documenta 11 in 2002 (plate 6). The tape acted as a boundary: it demarcated the threshold to the exhibition, making its space appear as different. Yet, at twenty-two long 'museum-visit steps', it was also an articulation of a module, a standard of Tuerlinckx's own invention to visualize the way that viewers spatially engage with art shows. The 'museum-visit step' standard, which Tuerlinckx herself defined as 'smaller than a "city" step', was a way to reflect on the careful way viewers tread through an exhibition (as opposed to in a city, where they evidently stride).⁴⁹ Yet at the same time, it was also an effective tool to reinstate the distinctness of exhibition venues, that is, spaces in which their own standards rule.

The practice of shaping standards in direct relation to the activity they eventually pace is well entrenched. The Greeks represented the breadth of Hercules' run in the

'stadion' and the Romans called an 'actus' the surface that two oxen could plough in a day. But the more direct reference Tuerlinckx is making may be to Le Corbusier's highly-influential *Le modulor*, a sequence of proportions derived from the (male) human body that shaped many twentieth-century projects, including museums and cultural institutions. Berlin's Freie University is built around one of Le Corbusier's modules, 65.63 metres, defined as the distance covered by a one-minute walk. The Berlin module is thus a function of both space and time, a correspondence that Tuerlinckx also evoked in her *documenta* installation, which, according to her notes should take place, 'in a room of 15' and 7", or twenty-two museal steps'.⁵⁰ By her own admission, however, the relationship between space and time is always opaque, thus exposing the closed, circular process of production and self-representation typical of measurements. In contrast to the openness of scale whose evaluation is relative because it rests on a comparison determined only by the terms involved (including the subject), size is codified by shared measuring practices which automatically relate to the authority wielding such practices.

And it is with the goal of highlighting the distinction between scale and size, as well as exposing the analogical, non-systematic process by which she shapes her artistic practice, that Tuerlinckx often photographs parts of her artworks (globes, drawings, other photographs) while pointing at them. Sometimes she erases the measuring lines from a ruler. At other times she holds it so far away that her gauging turns into an empty gesture (plate 7). Her indications draw viewers closer only to make them realize that they are not that close after all.

The photographs of Tuerlinckx gauge our seeing and our thinking. (That such gauging may remain imprecise and unfocused is to be expected by someone who is critical of measurements.) Contrary to the bare hand so prominently featured in the earlier photograph of *Southern Cross*, Tuerlinckx's hand is often covered – desensitized – by a latex glove. Used by scientists and conservators alike, the glove evokes the careful handling and disciplinary discourses (in other words, the pretended distance) of both preservation and scientific objectivity. While documenting her work for the Musée de la Mémoire of Cransac, a small town in the centre of France, Tuerlinckx often wears a pair of gloves (plate 8). The gloves refer to the practice of curating, which requires the curator to wear them and impartially assess the value of things for the benefit of all. Impartiality, however, also means taking a political stand. Much like standardization, which, from the Enlightenment to socialism, promised to make all humans free and equal, the fullest expression of impartiality was achieved by the adaptation of the metric system, the premier international tool whose pretensions to objectivity are widely assumed. Tuerlinckx seeks to raise awareness in her viewers of the stasis of the objective paradigm by underscoring how scale defies the presumptions of objectivity and impartiality ascribed to systems of measurement. Hers is a lead this special issue seeks to expand by taking the measure of scale toward new, and invigorating, directions.

Notes

We acknowledge the generous support of the Kunsthistorisches Institut-Max Planck Institut, particularly Gerhard Wolf, and the Kress Foundation. We thank Sam Bibby for his unfailing patience and erudition, Genevieve Warwick for warmly supporting this special issue, Natalie Adamson and the anonymous peer reviewers for their helpful suggestions, as well as all other participants in the 'Size Matters' conference, whose papers and comments have informed this essay and the editing of this issue.

- 1 Cildo Meireles, 'Cruzeiro do Sul, 1969–1970', in Guy Brett, ed., *Cildo Meireles*, London, 2008, 58.
- 2 See, for example, *Transcontinental: Nine Latin American Artists*, 1990, 46.
- 3 Gregoire Muller, 'The scale of man', *Arts Magazine*, May 1970, 42.
- 4 Yve-Alain Bois, *Painting as Model*, Cambridge and London, 1990, 24.
- 5 Anne Wagner, 'Scale in sculpture: The sixties and Henry Moore', *Tate Papers*, 15, Spring 2011. <http://www.tate.org.uk/research/publications/tate-papers/scale-sculpture-sixties-and-henry-moore>,
- 6 See, for example: Robert Harrist, *The Landscape of Words: Stone Inscriptions*

- from *Early and Medieval China*, 2008, 157–218; and Hanneke Grootenboer, *Treasures of the Gaze: Intimate Vision in Late Eighteenth-Century Eye Miniatures*, Chicago, IL, and London, 2012.
- 7 Michael Lobel has alluded to a parallel concern among photographers such as Laurie Simmons and James Casebere, interested in exploring the implications of photography as a medium that was historically concerned with the production of small, portable, and hand-held imagery. Michael Lobel, 'Scale models', *Artforum*, 49: 2, 2010, 259.
- 8 Romy Golan offers several useful examples for thinking about the relationship between medium and scale in *Muralnomad: The Paradox of Wall Painting, Europe 1927–1957*, New Haven and London, 2009.
- 9 Katherine T. Jones, 'Scale as epistemology', *Political Geography*, 17, 1998, 28.
- 10 Some examples include: Jo Applin, 'Strange Encounters: Claes Oldenburg's "Proposed Colossal Monuments" for New York and London', *Art History*, 34: 4, September 2011, 838–57; and Joan Kee, 'What scale affords us: Sizing the world up through scale', *ARTMargins*, 3: 2, June 2014, 3–30.
- 11 Susan Stewart, *On Longing: Narratives of the Miniature, the Gigantic, the Souvenir, the Collection*, Baltimore, MD, 1984, 69 and 95–7.
- 12 Stewart, *On Longing*, 137.
- 13 Jacques Derrida, *The Truth in Painting*, trans. Geoffrey Bennington and Ian McLeod, Chicago, IL, 1987, 119–22.
- 14 A special issue of *World Archaeology* (47: 1, February 2015) addresses this issue. See also Carl Knappett, 'Meaning in miniature: Semiotic networks in material culture', in Mads Jessen, Niels Johansen and Helle Juel Jensen, eds, *Excavating the Mind*, Aarhus, 2012, 87–109; and Douglass Bailey, *Prehistoric Figurines: Representation and Corporeality in the Neolithic*, New York and London, 2005, 26–44.
- 15 Melissa McCormick, *Tosa Mitsunobu and the Small Scroll in Medieval Japan*, Seattle, WA, and London, 2009, 44.
- 16 McCormick, *Tosa Mitsunobu*, 44.
- 17 Pina Ragionieri, *Casa Buonarroti*, Milan, 1997, 31–3.
- 18 Vanessa L. Ryan, 'The physiological sublime: Burke's critique of reason', *Journal of History of Ideas*, 62: 2, 2001, 265–79, esp. 272.
- 19 Barbara Maria Stafford, 'Mummies, herms and colossi: Easter Island and the origin of sculpture', *Art Quarterly*, 36, 1973, 31–55.
- 20 Louis Kahn, 'Monumentality', in Paul Zucker, ed., *New Architecture and City Planning*, New York, 1944, 577.
- 21 Sigfried Giedion, 'The need for a new monumentality', in Zucker, ed., *New Architecture and City Planning*, 549–68, esp. 552–53 ('Monumentality derives from the eternal need of the people to own symbols which reveal their inner life, their actions and their social conceptions.')
- 22 Louis Marin, 'The ends of interpretation, or the itineraries of a gaze in the sublimity of a storm', in *On Representation*, trans. Catherine Porter, Stanford, CA, 2001, 173–201, esp. 179–80.
- 23 Darcy Grimaldo Grigsby, *Colossal: Engineering the Suez Canal, Statue of Liberty, Eiffel Tower and Panama Canal*, Pittsburgh, PA, 2012.
- 24 Giedion, 'New monumentality', 551.
- 25 Leon Battista Alberti, 'De pictura', in *Opere volgari*, ed. Cecil Grayson, Bari, 1960–73, vol. 3, 33, 35, and 60. See also Anthony Grafton, 'Historia and istoria: Alberti's terminology in context', *I Tatti Studies in the Italian Renaissance*, 8, 1999, 37–68; and Alina Payne, 'Materiality, crafting, and scale in Renaissance architecture', *Oxford Art Journal*, 32: 3, 2009, 365–86.
- 26 Galileo Galilei, *Discorsi e dimostrazioni intorno a due nuovescienze*, Leiden, 1638, 108–149. Discussed in Salvatore di Pasquale, *L'arte del costruire: tra conoscenza e scienza*, Venice, 1996, 19–49. See also Henry Petroski, 'Engineering: History and Failure', *American Scientist* 80: 6, 1992, 523–526.
- 27 Bernard Berenson, *The Arch of Constantine, or, The Decline of Form*, London, 1954, 37–8; Ernst Kitzinger, *Byzantine Art in the Making: Main Lines of Stylistic Development in Mediterranean Art, 3rd–7th Century*, London, 1977, 8–9. On the problem of Constantinian porphyry aesthetics (but with no reference to scale), see Jas Elsner, 'Perspectives in art', in Noel Lenski, ed., *The Cambridge Companion to the Age of Constantine*, Cambridge, 2006, 255–77.
- 28 Wen Fong, *Beyond Representation: Chinese Painting and Calligraphy, 8th–14th Century*, New York, New Haven and London, 1992, 71.
- 29 Dirk van den Heuvel, 'Towards an open society: The unfinished work of Jaap Bakema', in van den Heuvel, ed., *Open: A Bakema Celebration*, vol. 41, Rotterdam, 2014, 3–7.
- 30 Rem Koolhaas, 'Bigness, or the problem of large', in Rem Koolhaas/OMA and Bruce Mau, S, M, L, XL, New York, 1995, 494–517.
- 31 Ken Alder, *The Measure of All Things: The Seven-Year Odyssey and the Hidden Error that Transformed the World*, New York, 2002; Robert Tavernor, *Smoot's Ear: The Measure of Humanity*, New Haven and London, 2007.
- 32 For example, see Debora Dameri, Achille Lodovisi and Giulia Luppi, eds, *La bona opinione: Cultura, scienza e misure negli stati estensi, 1598–1860*, Campogalliano, 1997.
- 33 'I'm working on understanding the phenomenon of the metrics of time, rather than on measuring and assessing these spaces. Needless to say, the more I work in this dimension, the less the study is convincingly understandable.' Cited in Tom Trevor, 'Joëlle Tuerlinckx – everything & nothing: The pre-history of zero', in *WOR(L)(D)(K) IN PROGRESS?*, Bristol, 2013, 85–92.
- 34 Lorraine Daston and Peter Galison, *Objectivity*, New York, 17–19.
- 35 Roberto Esposito, *Le persone e le cose*, Turin, 2014, 88–95.
- 36 Alessandro Scafi, *Mapping Paradise: A History of Heaven on Earth*, London, 2006, 191–253.
- 37 Nick Hopwood, 'Pictures of evolution and charges of fraud: Ernst Haeckel's embryological illustrations', *Isis*, 97, 2006, 260–93.
- 38 Robert J. Richards, 'The tragic sense of Ernst Haeckel: His scientific and artistic struggles', in Pamela Kort and Max Hollein, eds, *Darwin: Art and the Search for Origins*, exh. cat. (Schirn Kunsthalle Frankfurt, 2009), Cologne, 2009, 92–103, esp. 100–1.
- 39 Two examples are Santiago Calatrava and René Binet, who was directly inspired by Haeckel.
- 40 Jean Epstein, 'Magnification and other writings', trans. Stuart Liebman, *October*, 3, 1977, 10.
- 41 Epstein, 'Magnification', 10.
- 42 See also Mary Ann Doane, 'Scale and the negotiation of "real" and "unreal" space in cinema', in Lúcia Nagib and Cecília Mello, eds, *Realism and the Audiovisual Media*, New York, 2009, 63–81.
- 43 Mary Ann Doane, 'The close-up: Scale and detail in the cinema', *Differences: A Journal of Feminist Cultural Studies*, 14, 2003, 89–111.
- 44 For a discussion concerning how the digital manipulation of images affects their capacity to produce meaning via perceived size and scale, see Rachel Wells, 'Digital scale: Enlargement and intelligibility in Thomas Ruff's jpeg series', in Alexandra Moschovi, Carol McKay and Arabella Plouviez, eds, *The Versatile Image: Photography, Digital Technologies and the Internet*, Leuven, 2014, 205–21.
- 45 Michael Fried, *Why Photography Matters as Art as Never Before*, New Haven and London, 2008, esp. 143–89.
- 46 Linda Safran, 'What Constantine saw: Reflections on the Capitoline Colossus, visibility and early Christian studies', *Millennium*, 3, 2006, 43–73.
- 47 Marvin Trachtenberg, *Dominion of the Eye: Urbanism, Art, and Power in Early Modern Florence*, New York, 2008.
- 48 A symptom of the anxiety regarding display spaces and scale were the concerns critics expressed during the 1960s towards size and sculpture in the USA. See for example, Lucy R. Lippard, 'Escalation in Washington' [1968], in *Changing: Essays in Art Criticism*, New York, 1971, 237–54; Barbara Rose, 'Blow up: The problem of scale in sculpture', *Art in America*, 56, 1968, 80–91; *Scale as Content*, Washington, DC, 1967; and *Scale for Sculpture*, London, 1978.
- 49 Joëlle Tuerlinckx, *Lexicon: A Compendium of Terms for the Exhibition "Matters/Materials"*, Brussels, 2012, 18.
- 50 Julienne Lorz, 'Joëlle Tuerlinckx and the exhibition: Visual impressions, knowledge, sensations', in *Wor(l)d In Progress?* Joëlle Tuerlinckx, Cologne, 2013, 13–24.

