

Thinking and Imagining Architecture at a Distance with Models

Matthew Mindrup

University of Sydney

Abstract

For over 500 years, architects have continued to extoll the utility of scale architectural models for visualizing “the entire work in miniature right before their eyes.” Yet, when the 37-year-old Johann Wolfgang von Goethe arrived in Rome in 1786, he was immediately surprised to find that the antique ruins he came to know from cork models at home had become “familiar objects in an unfamiliar world.” The models which Goethe recalls were popular eighteenth and nineteenth century souvenirs of the European Grand Tour. Initially used as table settings to encourage erudite discussion about antiquity, these objects inevitably found their way into academic, private, and museum collections alongside full size plaster casts, actual building fragments and scale reconstructions. For the study of architecture however, using these models was not unlike trying to read a book with missing pages and one had to imaginatively fill-in the spaces between fragments. When the authority of classical antiquity was challenged by a new generation of modern German architects at the beginning of the twentieth century, the use of fragments and models of antique structures to inspire new designs did not completely disappear. Young architects were encouraged to find inspiration for new designs in the assemblage of broken objects and building blocks representing identifi-

able structures. As Hermann Finsterlin explained, the aim of these approaches is to seize the impartiality of the child to rid the architect of their cultural inhibitions. This paper explores how the ambiguity of scale, materiality and context in models creates a space for the imagination to wander.

Introduction

For over 500 years, architects have continued to extoll the utility of scale architectural models. The earliest and longest-enduring approach to an architect's use of the model as a design tool was inaugurated by the fifteenth-century Renaissance architect Leon Battista Alberti, who recommended that architects construct plain and simple scale models as tools to aid the thoughtful evaluation of architectural ideas in physical three-dimensional form. To argue this point, he notes simply, "[h]aving constructed these models, it will be possible to examine clearly and consider thoroughly the relationship between the site and the surrounding district, the shape of the area, the number and order of the parts of a building, the appearance of the walls, the strength of the covering, and in short, the design and construction of all the elements."¹ This was certainly the perception which eighteenth-century architects held regarding the use of models for visualizing "the entire work in miniature right before their eyes."² Yet, when the 37-year-old Johann Wolfgang von Goethe arrived in Rome on the first of November 1786 he was immediately surprised to find that the antique ruins he came to know from cork models at home had become "familiar objects in an unfamiliar world" (Figures 1 and 2).³

Initially acquired as souvenirs and used as table settings to encourage erudite discussion about antiquity, these objects found their way into academic, private, and museum collections as important pedagogical and design tools. To enhance their user's understanding of the scale and context of a distant structure, small scale models were included in collections of full-size plaster casts, actual building fragments and miniature scale reconstructions. In practice however, the study of architecture using these models was not unlike trying to read a book with missing pages and one must imagine the spaces between the fragments. In the absence of the model's maker to explain their intentions, the imagination of their user is forced to speculate. It is this space between model and original that was the source of Goethe's confusion, but for eighteenth- and nineteenth-century designers, an opportunity for invention. When the authority of classical antiquity was challenged by a new generation of modern German architects at the beginning of the twentieth century, the imaginative reverie of plaster fragments and scale models of antique structures did not entirely disappear. In the architectural publications that emerged during this time, the impartiality of a child at play was romanticised as an approach for finding new inspiration in found objects or building

block sets representing identifiable structures of antiquity. For these individuals, the modelling materials themselves or their assembly encouraged the imagination to shift back and forth between analytic and associative modes of thought, speculating upon their efficacy and assembly as depictions of architecture. This paper explores how the ambiguity of scale, materiality and context afforded by eighteenth century plaster casts and scale models of distant antique structures was exploited during the twentieth century as a fertile tool for encouraging imaginative thinking about new designs.

Architectural Models of the European Grand Tour

Beginning around the middle of the seventeenth century, young upper-class European gentleman and women began embarking on tours around the Mediterranean to perfect their language skills, visit ancient ruins and meet with local artists and dealers. The increasing popularity of these tours of Europe throughout the eighteenth century certainly owes a debt to the philosophy of John Locke who sought to rescue the veracity of empirical knowledge from Cartesian doubt.⁴ The term ‘Grand Tour’ to describe this educational excursion was first used in the French translation of Richard Lassels’ *Voyage or a Compleat Journey through Italy* from 1670 wherein he asserts that any serious student of architecture, antiquity and the arts must travel through France and Italy to understand the intellectual, social, political and ethical realities of the world.⁵ Guided by published accounts a typical itinerary for a participant of a grand tour might begin as far north as the Netherlands and France before traveling to Italy by sea with stops in Genoa, Livorno, Naples and above all Rome that was replete with pagan and Christian relics. On this journey, travel was typically accompanied by a chaperone and a guide known as a ‘bear-leader’ responsible for their cultural, literary and artistic training.⁶ Therein, the grand tourist would have an opportunity to acquire things unavailable at home, lending an air of accomplishment and prestige to the traveller including books, works of art, scientific instruments, cultural artefacts, measured drawings and cork models of architecture.

Before its use as a material for modelling the architectural ruins of classical antiquity, cork was employed in the creation of *presepi* (*nativity scenes*) in southern Italy. The sixteenth-century Italian Sculptor and architect, Giovanni da Nola is attributed with being the first artist to introduce “the manger and crib amongst the debris of a pagan temple.”⁷ One of the primary motivating factors for the appropriation of this classical setting was to demonstrate the triumph of Christianity over the ruins of paganism (Figure 3).⁸ Because of its ability to render with great accuracy the porous surface structure of travertine and tufus-formed remnants of actual antique constructions, it quickly became an ideal modelling material for creating depictions of the structures visited by tourists of the European Grand Tour.

At home, cork model souvenirs were displayed in libraries, cabinets, and purpose-built galleries but also as table settings for formal banquets. So inspired was the eighteenth century Hofkonditor (court confectioner) Carl Joseph May by cork as a medium for establishing a scholarly alliance between material and spiritual foods in dinner conversations about cultural topics that he took up the profession of cork modeller and replaced the popular pastry architectural *pièces montées* (table settings) with the more durable and technically accurate cork models (Figure 4).⁹ As the depiction of a ruin that could be interpreted simultaneously as under construction or demolition, these models exemplified the Romantic ideal of art that could encourage one to think about nature in a state of perpetual becoming. Regardless of their utility as a conversation piece, because of their artistic and technical quality, cork models inevitably found their way into private and academic collections as didactic tools.

Collections

Already during the seventeenth century, architects were amassing their own collections of technical models of construction methods and both actual fragments and plaster casts of architectural ornament from distant structures. The seventeenth-century German architect Joseph Furtenbach owned, among other objects, models of bridges, mills, and waterworks, and he installed his own *Kunstkammer* (curiosity cabinet) in his house.¹⁰ As the drawings of the eighteenth-century Parisian aristocrat Joseph Bonnier de la Mosson's cabinet of curiosities demonstrates, it was also common for wealthy land owners to collect objects and devices for scientific study, including architectural models of existing, fantastic, or biblical structures and technical construction models such as cranes or bridges (Figure 5).¹¹ In 1774, sixteen models from Jean-François Blondel's own collection "concerning the theory of penetration of matter in view of cutting stone, the arch of a door from Marseille, models of *trompes*, volutes, roof trusses" were given to the *Académie Royale d'Architecture* as "teaching material."¹² It was at this time that private and academic "teaching" collections came to witness the introduction of the popular cork architectural models of the European Grand Tour.

Since the eighteenth century, the Grand Tour of cultural sites in Europe was not limited to the education of European gentleman and ladies but also became an essential task for the culmination of an architect's training. The primary destination for the architect was Italy—especially the archaeological sites surrounding Naples and the remains of ancient Rome. Unlike distracted contemporary tourists, architects on a Grand Tour preoccupied themselves with the measure and documentation of antique and modern monuments to retain as tools for further study and sources of inspiration (Figure 6).¹³ One of the largest private collections of drawings and objects of antique monuments belonged to English architect

and educator Sir John Soane who amassed an assortment of plaster casts, architectural details, measured drawings, and models. Those in cork showed the structure in its extant state while a handful of plaster scale models by the Parisian architects, Jean Pierre and François Fouquet depicted fictional reconstructions.

Soane collected these models and drawings first at his country house in Ealing and later moved them to his house at Lincoln Inn Fields, London. Interspersed throughout the domestic spaces of Soane's house were an architectural office that later doubled as a studio for training apprentices, an archaeological museum, an archive of drawings, a professional and scholarly library, an art gallery of folding wall panels, and room-size displays of architectural models.¹⁴ Soane's juxtaposition of full-scale casts and scale models throughout these spaces, highlights the importance of size (Figure 7). While the casts at full scale were supposed to immerse the visitor in a simulated experience of the real thing, the scale models contextualised the monuments from which the full-scale fragments were drawn and plaster reconstructions acted as a referent for the imagination which, not unlike reading a book with missing pages, must fill-in the gaps between them. So great must have been Soane's preference for this imaginative activity that he had his own Bank of England project represented as a ruin. Indeed, the study of designs using plaster models and measured drawings of classical antiquity was the task of a student enrolled at the Royal Academy in London and the Parisian *École des Beaux-Arts*. As Soane's contemporary Antoine-Chrysostome Quatremère de Quincy explained, the use of small plaster casts is certainly preferred to the actual structure arguing, "[i]n architecture, a fragment of a cornice and an entablature is enough to re-establish the whole," while the intact object *in situ* "offers the mind a determinant image: there is nothing further to see" and here we can certainly include thinking about the extant and imagined state of architecture.¹⁵

Throughout the second half of the nineteenth and early twentieth centuries, many private collections were acquired by larger institutions and small-scale models were used to supplement full-size plaster casts. Shortly after the inauguration of the first public museum devoted to the decorative arts at South Kensington during 1857, the architectural historian James Fergusson gave a lecture that foreshadows many of the ideas developed in museum collections for the next half century. Preferring a chronological organisation to Soane's personal one for the collection of architectural casts and models, Fergusson praised the ease with which a visitor untrained in how to read plans, sections, and diagrams could easily grasp the "beauties and defects" of full size plaster casts. Similar to the plaster models of the *Fouquet's*, many institutions began to compete for scale model reconstructions based upon the most recent archaeological evidence. In the galleries, photographs often appeared in combination with scale models, to more fully realise the monuments in time, space and scale (Figure 8). Together they presented distant monuments in a way that, as Viollet-le-Duc remarked, could be studied "without fatigue, distraction, or limitations of time, under the best conditions of light and approach, and confronted one with another."¹⁶

These efforts however, did little to overcome the surprise and disappointment many experienced when they discovered that the original for which the casts were created often tended to be different than expected. For the character Marcel in Marcel Proust's *The Search for Lost Time*, the effect was one of

disappointment in which the original church is neither in the same location nor does its portal measure up to the plaster reproduction he had seen in a Paris museum.¹⁷ It was during this time which Proust was writing his book that many institutions were beginning to close their plaster cast collections and a new generation of artists and architects took up the ruin as an approach for architectural invention.

Employing architectural distance with models

The use of models representing distant structures to inspire the imagination to think about architectural designs had its most notable revival in Germany during the interwar years in the use of found objects and toy building block sets. Before the first world war, classical Greek and Roman architecture was taught in German architecture schools of which many had their own collections of models and plaster casts.¹⁸ One notable collection was that assembled at the Neuen Polytechnischen Schule in Munich in 1868 and later moved in 1912 to a new building at the centre of the renamed Technische Hochschule München's faculty of architecture (Figure 9).¹⁹ After the end of the first world war however, the value which these collections retained in the study of architecture began to wane. This most notable event foreshadowing their demise occurred when a handful of German architects led by Bruno Taut, Adolf Behne and Walter Gropius founded the short-lived *Arbeitsrat für Kunst* to work with a new socialist government to reform architectural education and especially the dominance of Greek and Roman antiquity in forging a new German architecture. Shortly thereafter, Gropius was invited to help found the Weimar *Staatliche Bauhaus*' (State Bauhaus) in 1919. In many of their early exercises, the source of inspiration relied not on models of the past but discarded objects and toy building blocks.

Gropius conceived the Bauhaus as a reconsideration of crafts-based training, calling for the unity of the creative arts under the primacy of architecture.²⁰ Beginning in 1920, all students enrolled at the Bauhaus were required to take a half-yearlong obligatory *Vorkurs* (basic course) whose aim was to liberate the pupil "from the dead weight of conventions" so that they could approach the practical application of different materials and form in thinking about new architectural designs.²¹ Compared to the study of form and composition in antique models, students enrolled in the Bauhaus' *Vorkurs* were encouraged to explore the role which the visual and haptic qualities of discarded, broken, found objects could play in the composition of new designs. The resulting constructions often looked like they had been created by a child who holds the identity or purpose of an object in suspension, albeit at a distance, to take advantage of its material and formal qualities in a new context as a work of art or model of architecture.

In terms of professional practice, Gropius' friend and former collaborator, Bruno Taut pursued a different avenue in architectural reform by publishing an architectural journal named *Frühlicht* between 1920-22. Therein Taut included projects envisioning a new post-war German architecture and also included two articles from Kurt Schwitters and Herman Finsterlin which promoted the use of found objects and building blocks as modelling material for inspiring new architectural designs at a distance.²² Schwitters, who was a frequent visitor to the Weimar Bauhaus, described his modelling materials and design propositions as ruins that are never complete but in constant states of becoming. To demonstrate his design method in practice, Schwitters included the photo of a model bearing the same name as the article, *Schloss und Kathedrale mit Hofbrunnen* and compared it to the play of a child with found objects. In the same issue of *Frühlicht* Taut also published Finsterlin's *Stilspiel* building block set (Figure 10). The blocks in Finsterlin's set modelled a number of historical structures from world architecture that its user could take apart and combine with others. As Finsterlin explained, the use of his set was ideally suited for architects whom he believed would like to seize the impartiality of the child to rid themselves of their cultural inhibitions.²³

Similar to an eighteenth century student standing in the middle of an architectural collection of cork models and plaster casts, an architect assembling found objects or building blocks into new designs must imaginatively fill-in the spaces between the individual elements. Unlike the plaster models of the Fouquets who imagine the connection between the missing pieces of classical architecture for the user, in the play with found objects or building blocks the modeller themselves will speculate on new combinations of the elements and contemplate their efficacy as architecture at full scale. Here the aim is not to propose a resolution between the existing fragment and archaeological evidence of the original but to wilfully think about new combinations of the fragments at diverse scales and materiality.

Conclusion

Most architects can easily tell when a model presents a faithful or false rendition of structure at a larger scale. That is to say, when working on a scale architectural model, the architect knows that it represents a fiction since the depicted building does not (yet) exist; but they will still select and transform their modelling materials as if these were the real building materials at the prescribed scale. In this space between the real and its representation, early modern architects knew that even fragments of historical forms can invite thinking and engage their user to speculate upon different formal and spatial arrangements as a scale depiction of architecture. As for example the philosopher Walter Benjamin once observed about the use

of collage by Dada artists, this reorientation of fragments is compared to the allegorist who drains objects of life so that they may be re-presented with new meaning. Above all, what these examples demonstrate is how thinking about architecture at a distance with models creates a space for the imagination to wander about scale, materiality, purpose and site.

Images



Figure 1. Giovanni Altieri, Model of the Roman circular Temple of Vesta at Tivoli, 1776. (©Sir John Soane's Museum, London)



Figure 2. Johann Heinrich Wilhelm Tischbein, *Goethe in the Roman Campagna*, 1787. (Städel Museum)



Figure 3. Lorenzo Taglioni, Presepe di sughero. Closed (left) and open in its ruined state (right), c. 1600. (Naples, Museo Nazionale di San Martino)

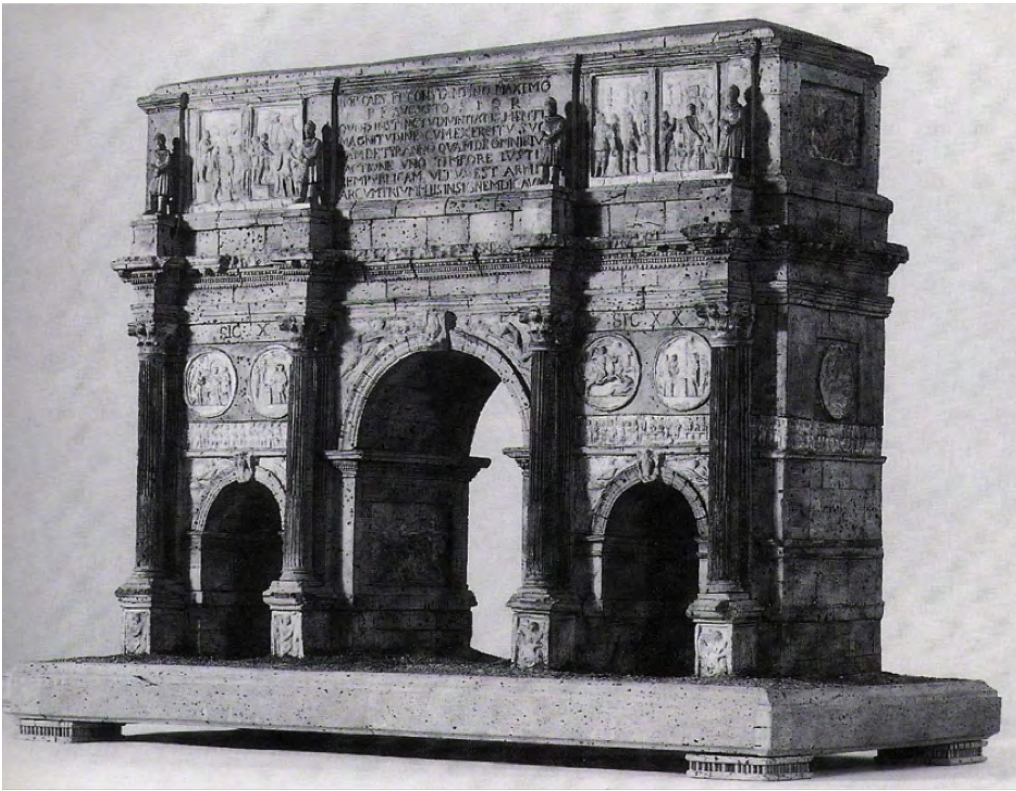


Figure 4. Carl Joseph May, cork model of the Arch of Constantine, ca. 1792–1814. (Bayerische Verwaltung der staatlichen Schlösser, Gärten und Seen)

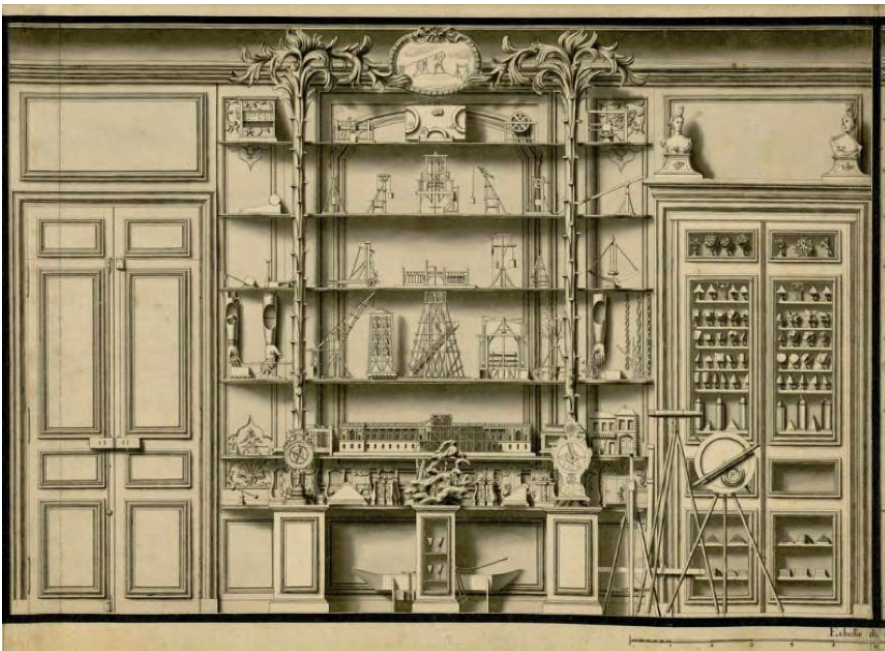


Figure 5. Collection of Bonnier de la Mosson, physical and mechanical objects, detail, drawing by Jean-Baptiste Courtonne, in *Recueil des dessins des cabinets de curiosités de Bonnier de la Mosson*, 1739/1740.



Figure 6. Henry Parke, Student surveying the Castor and Pollux temple in Rome, 1819. (Sir John Soane’s Museum, London)

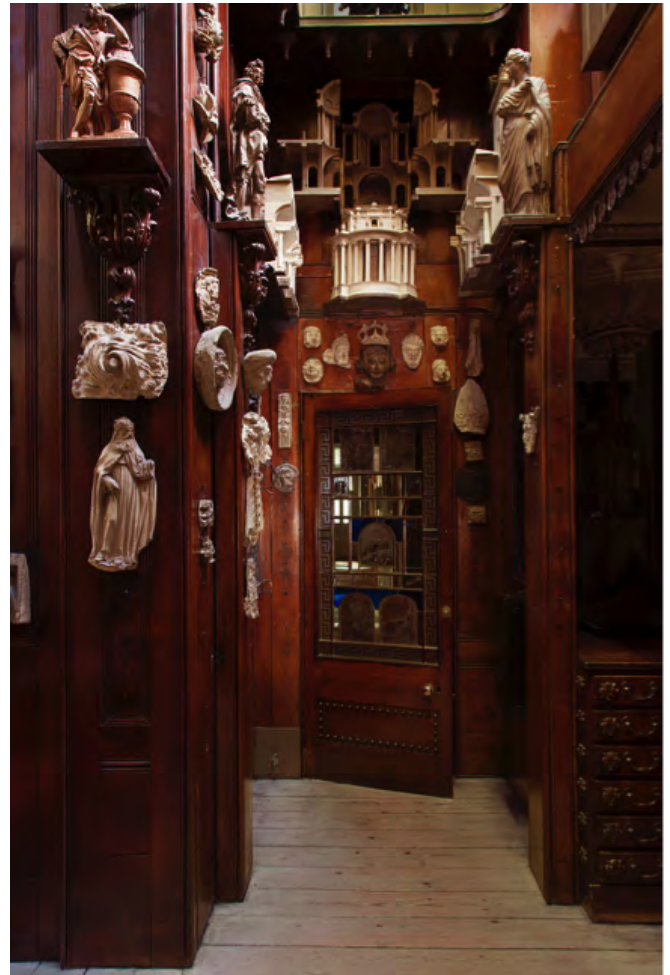


Figure 7. Sir John Soane Museum, Monk’s Parlour. (Sir John Soane’s Museum, London)



Figure 8. “La Cour vitrée dans le Palais des Etudes”. École des Beaux Arts, Paris (1929). From P. F. J. Marcou, ‘Album du Musée de Sculpture Comparée’, vol. 2 (Paris, 1897).



Figure 9. Teaching collection of the Technische Hochschule in Munich, 1917.



Figure 10. Hermann Finsterlin: Das Stilspiel, 1921/22. Staatsgalerie Stuttgart. (© Copyright Agency, 2019)

Notes

- 1 Leon Battista Alberti, *On the Art of Building in Ten Books* 2.1, trans. Joseph Rykwert, Neil Leach, and Robert Tavenor (Cambridge, MA: MIT Press, 1996), 33–35.
- 2 The quote is from Joseph Furttentbach, *Architectura Civilis* (1628), vorrede.
- 3 Johann Wolfgang von Goethe, *Italian journey, 1786-1788*, trans. W H Auden (New York: Pantheon Books, 196), 129.
- 4 John Locke, *Essay Concerning Human Understanding* (London: Thames Basset 1690). See also James Buzard, “The Grand Tour and after (1660-1840) in Pete Hulme & Tim Youngs, *The Cambridge Companion to Travel Writing* (Cambridge: Cambridge University Press, 2002), 37-41.
- 5 *Richard Lassels, The Voyage of Italy, or A Compleat Journey through Italy in Two Parts* (Paris: Vincent du Moutier, 1670).
- 6 *Grand tour: the lure of Italy in the eighteenth century*, ed. Andrew Wilton and Ilaria Bignamini (London: Tate Gallery Pub., 1996), 102-03. See also the humorous satire *The Bear-Leaders: or, Modern Travelling Stated in a Proper Light. In a Letter to the Right Honourable. The Earl of **** (For S. Hooper and A. Morley, 1758).
- 7 Francesco Proto, *Atti dell’Accademia Pontaniana* (1889), cited in Franco Mancini, *Il presepe napoletano: scritti e testimonianze dal secolo XVIII al 1955* (Napoli: Società editrice napoletana, 1983), 62-70: “I presepi casalinghi moltiplicaronsi dopo quello che adorna l’altare di S. Giuseppe dei Falegnami, opera bellissima del nostro gran Marliano, Il quale, schifando dar nascere il Redentore in una cripta, in una stalla, mise la mangiatoia e la cuna fra le anticaglie di un tempio romano.” Mancini (1983), 66; After Jessica Hughes, “A Brief History of Ruins in the Presepe Napoletano,” in *Remembering Parthenope: The Reception of Classical Naples from Antiquity to the Present*, ed. Jessica Hughes & Claudio Buongiovanni (Oxford: Oxford University Press, 2015), 289.
- 8 Jessica Hughes, “No Retreat Even When Broken,” in *Remembering Parthenope: the reception of classical Naples from antiquity to the present*, ed. Jessica Hughes and Claudio Buongiovanni (Oxford: Oxford University Press, 2015), 296-299.
- 9 At age of seventy, Carl May was honored as “Baurat” (building adviser) while working for Ludwig I of Bavaria. Françoise Lecocq, “Les premières maquettes de Rome: L’exemple des modèles réduits en liège de Carl et Georg May dans les collections européennes aux XVIIIe–XIXe siècles,” in *Roma illustrata: Représentations de la ville*, comp. Philippe Fleury and Olivier Desbordes (Caen: Presses Universitaires de Caen, 2008), 237.
- 10 Joseph Furttentbach, *Architectura privata* (Augsburg: Johann Schultes, 1641), 37, 40.
- 11 Monique Mosser, “Französische Architekturmodelle im Zeitalter der Aufklärung,” *Daidalos* 2 (1981): 83-97, 93.
- 12 *Ibid.* 92.
- 13 Helen Dorey, “Sir John Soane’s Model Room,” *Perspecta* 41, Grand Tour (2008): 46.

- 14 *A New Description of Sir John Soane's Museum*, 10th ed. (Marlborough: Libanus Press, 2001), 17–19.
- 15 Quatremère, *Considérations morales...*, 'Deuxième lettre' (to Canova), This translation by Mari Lending, in Mari Lending, *Plaster Monuments: Architecture and the Power of Reproduction* (Princeton: Princeton University Press, 2017), 68, n. 130.
- 16 Eugène Viollet-le-Duc, *Musée de Sculpture comparée appartenant aux divers Centres d'Art et aux diverses époques*, Bastien et Brondeau, 1879.
- 17 Marcel Proust, *In the Shadow of Young Girls in Flower*, Vol. II of *In Search of Lost Time*, trans James Grieve (London: Penguin, 2005), 224-229 after Mari Lending, *Plaster Monuments: Architecture and the Power of Reproduction* (Princeton: Princeton University Press, 2018), 70-74.
- 18 Herbert Baer, "The Course in Architecture at a German Technische Hochschule," *American Architect and Building News*, 71 (March 1901): 83-85.
- 19 Werner Helmberger and Valetin Kockel, "Herkunft und Geschichte der Aschaffenburger Korkmodellsammlung," in *Rom über der Alpen Tragen*, ed. W. Helmberger and Valetin Kockel (Landshut, 1993), 119-26.
- 20 Frank Whitford, *The Bauhaus: Masters & Students by Themselves* (London: Conran Octopus Ltd., 1992), 38-41.
- 21 Walter Gropius, *The New Architecture and the Bauhaus*, trans. P. Morton Shand (London: Faber and Faber Limited, 1935), 47.
- 22 Kurt Schwitters, "Schloss und Kathedrale mit Hofbrunnen," *Frühlicht* 1, no. 3 (Magdenburg, 1922): 87. Hermann Finsterlin, "Die Genesis der Weltarchitektur oder die Deszendenz der Dome als Stilspiel: Ein Lehr-, Spiel- und Versuchsbakasten," *Frühlicht* 1, no. 3 (Spring 1922).
- 23 Finsterlin's intention that his building block set could be used as a study tool for architects is suggested by the term "Versuchsbakasten" (study building blocks) in the subtitle to his article "Die Genesis der Weltarchitektur oder die Deszendenz der Dome als Stilspiel: Ein Lehr-, Spiel- und Versuchsbakasten." In the concluding paragraph of his article, Finsterlin described how the innocence of the child who sees the world without already formed cultural ideas of architecture is an ideal model for the people searching for the development of new architectural forms: "Von jeher war die Verwandtschaft klar zwischen dem unverbildeten Kinde und Naturmenschen, dem Kulturhemmungen überwinden Narren und dem Genius." (Since ever was the relationship clear between the unspoiled child and the primitive human being, between the fool that overcame the cultural inhibition and to the genius). In: Finsterlin, 158.

About the Author

An architect by training, Matthew Mindrup is a Senior Lecturer at the University of Sydney. He completed a Ph.D. in Architecture and Design at Virginia Tech University on the physical and metaphysical coalition of two architectural models assembled by Kurt Schwitters in the early 1920s. Dr. Mindrup's ongoing research in the history and theory of architectural design locates and projects the implications that materials have in the design process. Dr. Mindrup has presented some of this research at conferences and published others in *The Journal of Architectural Education (JAE)*, *Interstices*, *Wolkenkuckucksheim* and his edited volume *The Material Imagination: Reveries on Architecture and Matter* (Routledge, 2015). In August of 2019, Matthew will welcome the publication of his new book: *The Architectural Model: Histories of the Miniature and the Prototype, the Exemplar and the Muse* (MIT Press, 2019).