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Embodied Memories, Retroactive Traces: Le Corbusier's Travel Sketches in *Le Modulor*

Panagiotis Farantatos, Department of Art History, Aesthetics & Culture and Museology, School of Communication and Culture, Aarhus University, UK, pfarantatos@cc.au.dk

This article explores the agency of the architectural travel sketch and considers its narrative and strategic value as a tool of remembering, distorting, and forgetting. Based upon original archival research, the paper focuses on annotated sketches that Swiss-French architect Le Corbusier (1887–1965) included in the 1950 book *Le Modulor*, in the chapter 'Vérifications matérielles et coda', mainly deriving from two journeys: the 1911 journey to the East and a 1948 visit to Turkey. The paper reconstitutes the background of this graphic material and explores how the resonance between the two journeys is creatively utilized in defense of the Modulor and how the reused sketches intervene in the revisited past, re-contextualizing it according to the strategic needs of the present. Exploring Le Corbusier's method of sketching, editing, and redrawing, I argue that the references presented in the 'Vérifications' chapter retroactively construct 'prefigurations' of the Modulor system and lead to a synchronization of past and present. Finally, building upon concepts from memory studies, I discuss the travel sketch as an embodied-memory device, capturing the very act of the measuring and drawing hand, and providing a link to a corporeal experience that is constantly remolded and rewritten.

Keywords: measures; architectural journey; journey to the East; Pompeii; Turkey; 1948

Introduction

In October 1948, Swiss-French architect Le Corbusier (1887–1965) began writing a new, final chapter for his forthcoming book on the Modulor, a measuring tool for design and standardization he had been developing since 1943. Titled 'Vérifications matérielles et coda', the chapter included, among other things, sketches and measures related to two journeys Le Corbusier took 37 years apart. The first, which has become known as the 'journey to the East,' was a long trip to southeastern Europe, the Balkans, the Ottoman Empire, Greece, and Italy that Le Corbusier undertook in 1911 at the age of 24, while the second was a short trip to Turkey he had taken in the same month he wrote the chapter. Already as a young architect, Le Corbusier displayed a desire to understand places, peoples, and cultures by experiencing in person their landscapes, architecture, arts, crafts, and urban spaces, and he systematically documented his intense travelling activity (Brillhart 2016).[1] During these journeys, drawing became (along with writing and photography) a means of architectural training and artistic exploration, of the 'recherche patiente', as he later called it. The relevant archival material comprises thousands of sketches, several of which found their place in his publications.

Drawn in carnets or on random sheets of paper, architects' travel sketches not only record their impressions and experiences but also capture a first in situ interpretation; the drawing hand abstracts and reconstructs, generating a primary analysis. As Mark Wigley notes in a discussion of architects' travels, 'the seemingly innocent travel sketch … radically alters the situation while pretending to simply extract key local conditions' (2011: 214). When this same sketch is later revisited, reworked, and juxtaposed to texts, paratexts, photographic, or other graphic material, it enters the domain of architectural publishing and mechanical reproduction — a site of architectural construction as theorized by Beatriz Colomina (1988) — but still retains the aura of the manual and the authentic.

Faithful to a process-driven, nonacademic creative approach (Colomina 1987: 8), Le Corbusier always reworked, reconfirmed, and manipulated older material according to his evolving agenda and aesthetic perspective. According to Jean-Louis Cohen, Le Corbusier 'calls on his preceding observations and puts them in the service of new designs' (2012: 197). In fact, Le Corbusier sometimes uses the same graphic material to demonstrate a different thesis: Jacques Lucan meticulously analyses how Le Corbusier approaches the urban space of Pisa each time with different tools and different aims (2008; 2013).[2] Initially a means of recording and representing, the travel sketch thus becomes simultaneously a means of remembering and, as I show in the following, distorting and forgetting.

Discussing the human capacity for forgetting, social anthropologist Paul Connerton places emphasis 'not so much on the loss' that forgetting implies as 'the gain that accrues to those who know how to discard memories that serve no practicable purpose' for their 'current identity and ongoing purposes', adding that 'what is allowed to be forgotten provides living space for present projects' (2008: 63). Likewise, when Le Corbusier recalls graphic traces of old experiences, the reshaping of these memories — along with the discarding of certain information — is linked to shifts in perspective. Memory studies underline the unconscious malleability of memory, but Le Corbusier's sketches demonstrate more complex interdependencies between creativity, memory, history, and intention.

Le Corbusier's creative work (graphic, pictorial, and architectural) is informed by an understanding of the architectural past rare among his peers and displays a syncretism that establishes and reconfigures connections between fragments and references, archetypes and symbolic themes, and motifs and myths (Motycka-Weston 2003; Carl 2005). This approach served his effort to ceaselessly stage himself as a visionary autodidact who crafted a unique path filled with relentless themes and experiences to draw from and reuse. At the same time, Le Corbusier maintained a dialogue with the architectural precedent in unexpected ways — no other 20th-century architect would claim that 'it is the Acropolis that made me a rebel' (1933: 40).

This article explores the value of the architectural sketch as a memory tool, a source of inspiration, and a rhetoric apparatus with retroactive potential. Drawing on original archival research, including correspondence, *carnets de voyage*, unpublished and published drawings and texts, I investigate the origin and subsequent reuse of the graphic material included in the 'Verifications' chapter, documenting Le Corbusier's 1948 trip to Turkey, his methods of (re)drawing, and how he creatively and strategically employs the resonances between the two journeys in the chapter.[3] I particularly focus on sketches that contain measurements, suggesting that they constitute the record of a corporeal experience — the very act of the measuring and drawing hand — that is constantly rewritten, as the trace of the first gesture is overdubbed by new ones. I further argue that the inclusion of those travel sketches in the book on the Modulor constructs 'prefigurations' of the Modulor system. The sketches not only intervene in the present but, more importantly, in the revisited past; it is the past that becomes recontextualized according to the strategic needs of the present. Through a close reading of archival material, the article documents the distortion of memory that results from the process of sketching and resketching, revealing how the drawing paper becomes the apparatus where this embodied memory is molded.

'Memories are extremely malleable and endlessly reconstructed according to the actual demands of power and identity construction', states Aleida Assmann, only to add that 'how we remember is also shaped by memories and preconceptions that were already in place before the event ever happened. The building up of memories … has not only an *afterlife* of repeated transformations but also a *prehistory*' (2015: 41, 43; emphasis in original). This dynamic understanding of the past and present and their resonance provides a useful background for exploring Le Corbusier's creative strategies. While I confirm the importance of Le Corbusier's journey to the East, which has been the focus of meticulous analysis as a formative event for him, I also seek to add nuance to its dominance in the scholarship.[4] I see it as a 'prehistory' that both conditions and is conditioned by later activities and show how these old traces prefigure and are also retroactively reshaped when they resonate with contemporary projects—here the exploration of the Modulor.

The Modulor, a system bridging standardization with somatic expertise that Le Corbusier developed in the heavily autobiographical books *Le Modulor* and *Modulor 2* (de Smet 2007), brings together and mediates 'concepts, influences, practices, and attitudes that Le Corbusier had cultivated' over four decades (Farantatos 2019: 480). In other words, it lends itself ideally to this discussion of memory, measures, and their embodiment.

The Modulor, 1948

By 1948, five years after commencing investigations for a 'corporeal geometric norm' to standardize his Ville radieuse projects, Le Corbusier's new norm had evolved successively into a proportional grid, a linear measuring tool, and an index of dimensions. It was now named 'Modulor' and was imbued with captivating geometrical and visual symbolism. However, Le Corbusier's efforts to commercially launch it as a measuring and design tool had proved fruitless. By 1948, the Modulor remained loosely defined mathematically, and though it had already been largely applied on paper, it had not yet been tested in built space.[5]

Since developing the Modulor tape measure in late 1945, Le Corbusier had planned to accompany its commercialization with a short brochure. After his overseas collaborators, John Dale and Stamo Papadaki, failed in their attempts to produce the tape industrially in the United States, they began to envision a longer English-language manual. This manual would feature a chapter with historical references on proportions and the recurring use of the golden section in architecture.[6] By 1948, recognizing the challenges of producing the tape, Le Corbusier shifted his own focus to the creation of a book, viewing it as the optimal solution for promoting the Modulor.

In May 1948, he signed a contract with Encyclopédie de la Renaissance Française, for a work provisionally titled 'Essai sur une mesure harmonique universelle applicable à l'architecture et à la mécanique' (FLC/F2-07-126). The agreement motivated Le Corbusier to begin writing what would become *Le Modulor* (published two years later with a different press). In August 1948, he revisited the process of the system's creation and went back to his earlier notes and documents, incorporating and expanding on texts he had previously used for the Modulor's promotion (FLC/B3-16-96) (**Figure 1**). The structure was similar to the book finally published, although it lacked the appendix, which was composed mainly in October 1948 (FLC/B3-18-142).

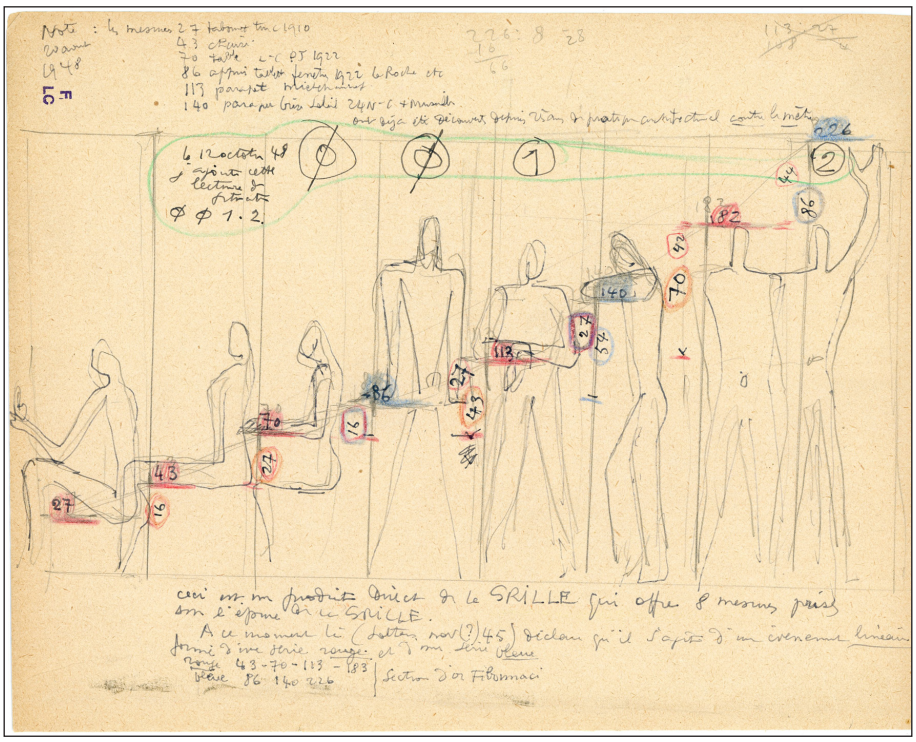
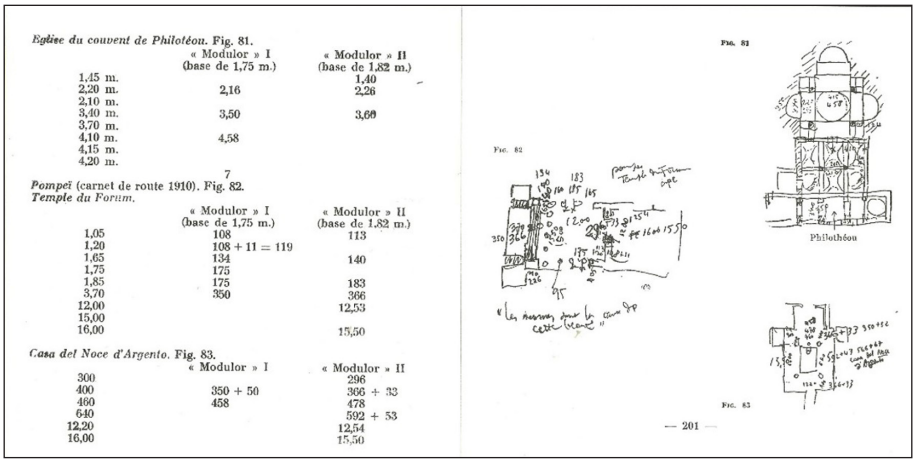


Figure 1: Le Corbusier, Modulor diagram, *Cahier de travail*, August 1948. © Fondation Le Corbusier.

In these early notes, Le Corbusier already attempted to position the Modulor within the history of proportions and anthropometric measures, but he became eager to further verify the Modulor historically, albeit in a nonsystematic manner, reflecting his anti-academic approach.[7] 'Vérifications matérielles et coda' constitutes his attempt to 'confirm' the invention, in which he uses contemporary measurements he had recently made of the Chaalis Abbey, Hagia Sophia, Chora Church, and the Grand Serail, measurements by others of Hagia Sophia and of the Parthenon, copies he produced of illustrations from books (Gustave Le Bon's *Les premières civilisations*), and, most

interestingly, his own annotated sketches from 1911 (**Figures 2** and **3**). The rest of the chapter ranges over a wide number of topics: traditional Turkish measuring units, the Swiss Pavilion's mural that had been executed in September 1948, a Turkish boat's measurements, an account of train wagons from Ernst Neufert's *Bauentwurfslehre*, José-Luis Sert's urban plan for Lima, Peru, Le Corbusier's project for a Bally shop, six of his own paintings and their regulating lines, the proportional subdivision of another of his paintings, his project for a skyscraper in the quartier de la Marine in Algiers, his response to Henry Kahnweiler's book on Juan Gris, and commentary on Paul Claudel's *L'annonce faite à Marie*. Arguably, the chapter lacks coherence; it appears to be the product of an additive and accumulative writing process based on free associations. These 'verifications' emerge randomly, probably as the architect proceeded with them (Le Corbusier 1950: 191–226).



Eglise du couvent de Philotéou. Fig. 81.

	« Modulor » I (base de 1,75 m.)	« Modulor » II (base de 1,82 m.)
1,45 m.		1,40
2,20 m.	2,16	2,26
2,10 m.		
3,40 m.	3,50	3,60
3,70 m.		
4,10 m.	4,58	
4,15 m.		
4,20 m.		
	7	

Pompei (carnet de route 1910). Fig. 82.
Temple du Forum.

	« Modulor » I (base de 1,75 m.)	« Modulor » II (base de 1,82 m.)
1,05	108	113
1,20	108 + 11 = 119	
1,65	134	140
1,75	175	
1,85	175	183
3,70	350	366
12,00		12,53
15,00		
16,00		15,50

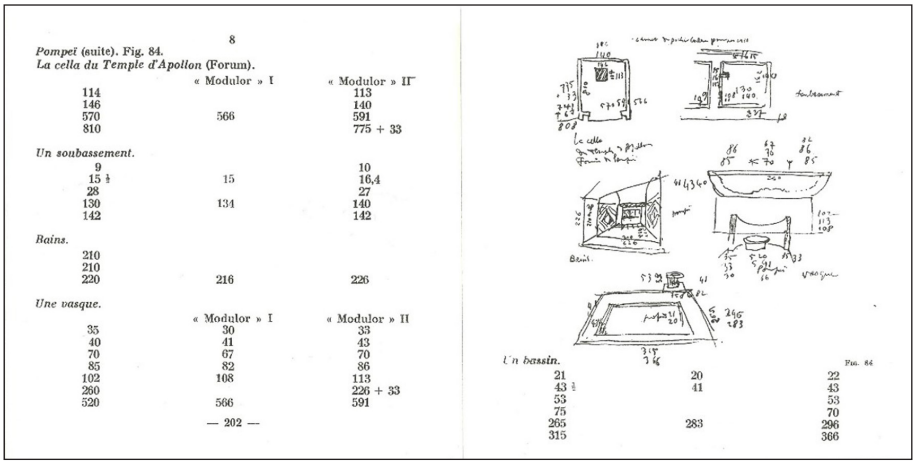
Casa del Noce d'Argento. Fig. 83.

	« Modulor » I	« Modulor » II
300		296
400	350 + 50	366 + 33
460	458	478
640		592 + 53
12,20		12,54
16,00		15,50

Philothéou

— 201 —

Figure 2: Le Corbusier, spread with 1911 sketches from the chapter 'Vérifications matérielles et coda', *Le Modulor*, 1950. © Fondation Le Corbusier.



8

Pompei (suite). Fig. 84.
La cella du Temple d'Apollon (Forum).

	« Modulor » I	« Modulor » II
114		113
146		140
570	566	591
810		775 + 33

Un soubassement.

9		10
15 ½	15	16,4
28		27
130	134	140
142		142

Bains.

210		
210		
220	216	226

Une vasque.

	« Modulor » I	« Modulor » II
35	30	33
40	41	43
70	67	70
85	82	86
102	108	113
260		226 + 33
520	566	591

— 202 —

Un bassin.

21	20	22
43 ½	41	43
53		53
75		70
265	283	296
315		366

Figure 3: Le Corbusier, spread with 1911 sketches from the chapter 'Vérifications matérielles et coda', *Le Modulor*, 1950. © Fondation Le Corbusier.

Notwithstanding its delirious development, the chapter had a clear aim: to 'verify' the invention by comparing the values of the Modulor (in its first and second versions of 175 centimeters and 183 centimeters respectively) with measurements of historical buildings as well as with those of Le Corbusier's previous architectural and pictorial work or, when this was not possible, to simply confirm φ proportions therein. The heritage of world architecture was thus claimed for the sake of the Modulor.

Turkey, 1948

In October 1948, Le Corbusier travelled to Turkey in order to resume work on his project for the city of Izmir, which had been stalled since 1939 due to the war.[8] Le Corbusier had not been back to Turkey since 1911. During that first trip, he had a long sojourn in Istanbul, a city which left a lasting impression on him.[9] As his flight had a long stopover in the city, he eagerly asked his Turkish connections for the use of a car so he could revisit 'the Istanbul of [his] youth' before departing for Izmir.[10]

In 1911, the young Charles-Édouard Jeanneret was focused on the city's life and monuments, but in 1948, he was primarily concerned with measures: in the form of measurements and dimensions, measuring units, and overarching, cosmic rhythms.[11] Ever since his first post-war trip to the United States in Christmas 1945, Le Corbusier had been carrying a handmade Modulor ruler, based on a human stature of 175 centimeters.[12] More tapes were produced by the atelier using the new stature of 183 centimeters, and one can assume that Le Corbusier had more than one of those with him when he visited Turkey. He would have used those tape measures to check the dimensions of existing spaces as well as as gadgets for the promotion of the Modulor.

Le Corbusier arrived in Istanbul on 3 October and the Turkish side indeed satisfied his wish to visit major monuments.[13] Archival material and testimonies confirm that he spent his time taking measurements, notes, and sketching.[14] On 4 October, he visited Hagia Sophia, where he encountered American Byzantinist Thomas Whittemore (1871–1950), then head of the restoration.[15] Unlike in his 1911 sketches, now the architect focused only on Hagia Sophia's interior, which he rapidly sketched and took quick measurements of. In a surviving sketch — not included in *Le Modulor* — Le Corbusier depicts the penetration of sunlight through the dome of the church, a phenomenon that reminded him of a cosmic unity. 'St. Sophia, the rays at the cosmic hour. Druidic summer solstice' (FLC/B3-20-34), he comments, revealing the esotericism that sometimes nurtured the Modulor's cosmology as well as reflecting the metaphysics of light that had always underpinned his architecture (**Figure 4**).[16]

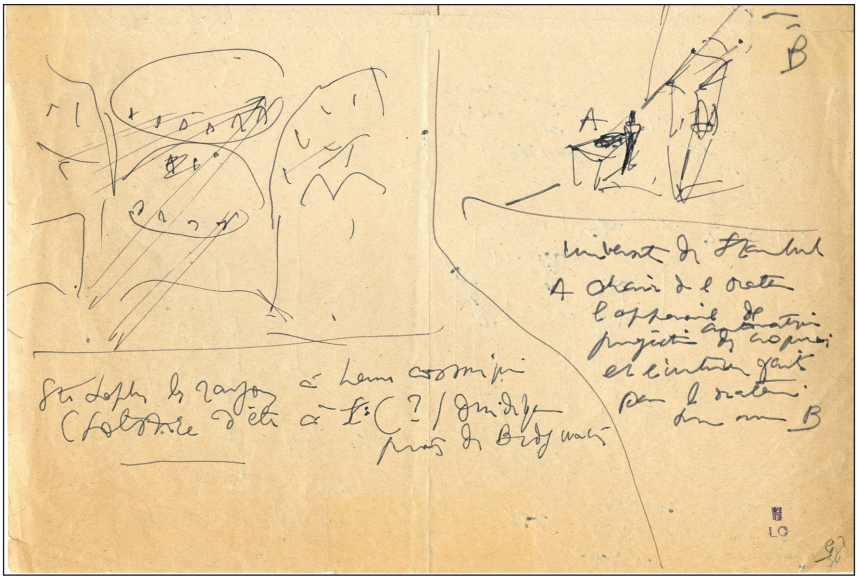


Figure 4: Le Corbusier, sketch of Hagia Sophia's dome, October 1948. © Fondation Le Corbusier.

Figure 5: Le Corbusier, sketch of the triforium, Hagia Sophia, October 1948. © Fondation Le Corbusier.

Another sketch on the same piece of paper — eventually published in *Le Modulor* (1950: 196) — depicts the arches of the triforium, the upper interior gallery opening to the nave (**Figure 5**). Here Le Corbusier focused on a marble balustrade, which he measured at 113 centimeters (an exact Modulor value). He was apparently attracted by a marble circle on the floor, which he described as the 'place of emperor Justinian' (FLC/B3-20-34). He was mistaken: the gallery was actually used as a matroneum, intended to accommodate women, and the circular spot, majestically overlooking the void of the church, has been identified with the empress. The circle on the floor (which he failed to measure) would hold his interest long after the end of the journey (**Figure 6**).

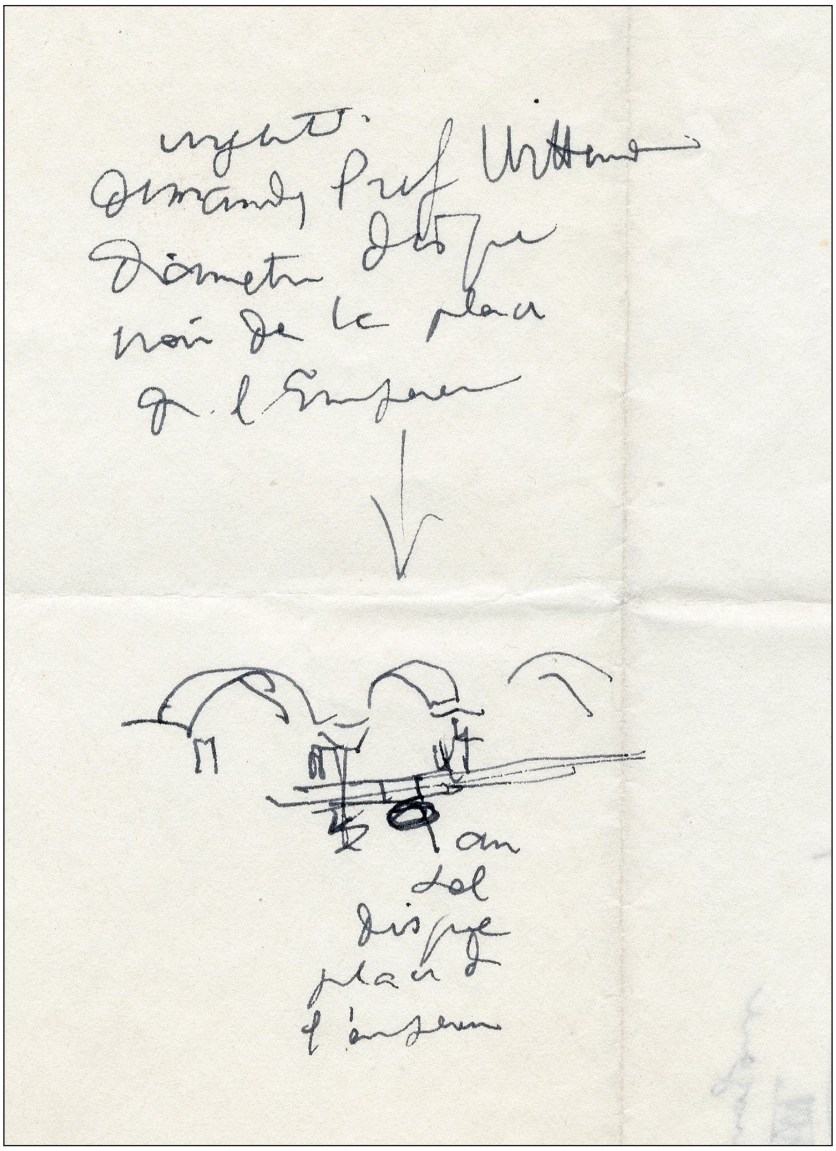


Figure 6: Le Corbusier, sketch of the marble disc in the triforium, Hagia Sophia. © Fondation Le Corbusier.

Le Corbusier was less enthusiastic about Hagia Sophia's mosaics, as unpublished notes reveal: 'With the exception of the ground floor entrance, the mosaics of the triforium of the emperor are decadent. I declare to Whittemore: those who work for the emperor are the academic pomp, the ones without blood' (FLC/B3-16-7).[17] He was more positive about those of the Chora Church, 'famous for its mosaics', which he visited later that day ([1954] 2000: 195). The church indeed contains some of the finest Byzantine mosaics and frescoes of the Palaeologan era, but Le Corbusier focused on dimensions, measuring and abstractedly sketching the exonarthex of the church and noting dimensions that corresponded to his Modulor series (**Figure 7**).

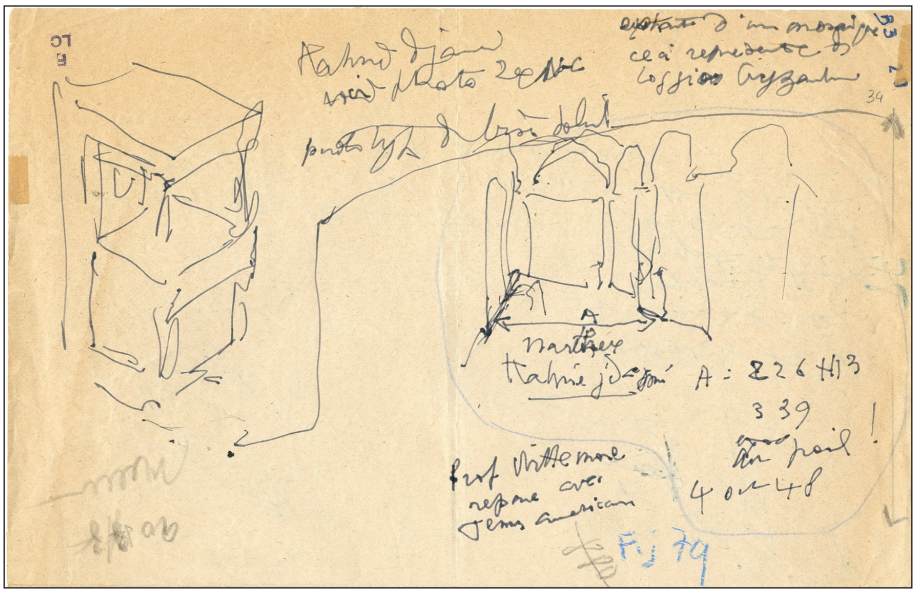


Figure 7: Le Corbusier, sketch of the exonarthex of Chora Church, October 1948. © Fondation Le Corbusier.

During his sojourn in Izmir, where he arrived the following day, Le Corbusier was busy developing an urban analysis of the city and meeting with authorities. Yet, as testimonies confirm, he 'spoke nonstop of the importance of mathematics'.[18] On Saturday 9 October, he flew back to Istanbul and resumed his measuring activities. The same day he measured and drew what he references as the 'gate of the Grand Serail' (FLC/B3-20-35) — a sketch he included in *Le Modulor* (1950: 198). What is depicted is the large Gate of Salutation (Bâb-üs Selâm), also known as the Middle Gate (Orta Kapı), the entrance to the second courtyard of Topkapı Palace (**Figure 8**). Possibly the following day, he walked around the Roman Hippodrome and attempted to enter Hagia Sophia again but apparently found it closed (FLC/F2-7-139).

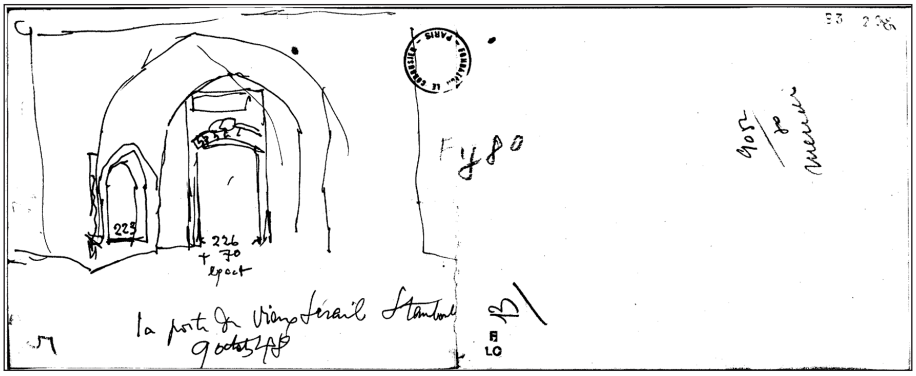


Figure 8: Le Corbusier, sketch of the Gate of Salutation, Topkapı Palace, October 1948.
© Fondation Le Corbusier.

During the journey, Le Corbusier asked for information about traditional Ottoman measuring units and took messy notes regarding them (FLC/B3-16-10), later transcribed into typed notes (FLC/B3-16-8) that were eventually published (1950: 199). Interestingly, he took the initial notes on a piece of paper containing a rough map of the Asia Minor coastline, Thrace, and the Eastern Aegean, likely based on his transportation study of Izmir (FLC/H3-15-199). Various scales from the bodily to the planetary and from the tactile to the visual are here merged on paper (**Figure 9**).

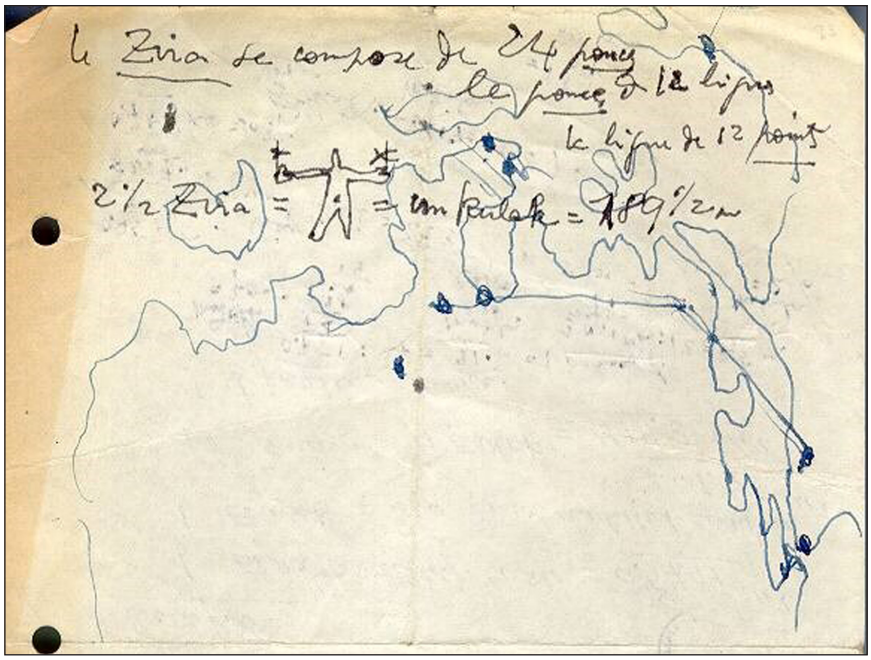


Figure 9: Le Corbusier, notes on ottoman measuring units, map of Asia Minor, October 1948.
© Fondation Le Corbusier.

On 11 October, Le Corbusier flew back to Paris via Athens (he had a short stop there, but he probably remained at the airport) and possibly via Rome. In a letter to Stamo Papadaki that he wrote on arriving in Paris, he explained that he had gone 'to Izmir in Asia Minor and returned yesterday' and that he had 'carried out certain verifications of the "Modulor" on ancient constructions that were really impressive' (FLC/F2-7-59). A few days later, he wrote to his mother: 'Returned from Smyrna 8 days ago. From eight in the morning to 8 in the evening, I saw: St. Sophia, + the Acropolis of Athens, + Vesuvius (the crater), + St. Peter's of Rome + the Concorde square!!!' (FLC/R2-4-126). The stops on this trip corresponded to major stops of his 1911 journey (Istanbul, Athens, Pompeii, and Rome), and he found himself recalling that earlier trip.

Haptic Measures and Embodied Memories

> Surface, volume, density, weight are not optical phenomena. Man first learned about them between his fingers and in the hollow of his palm.
> Henri Focillon, 'In Praise of Hands' (1948: 68)

The emotional experience of Le Corbusier's journey to the East arguably conditioned his thought and artistic expression. Although his emphatic recounting of this experience may have overshadowed other crucial influences, the journey itself indeed had a profound impact that reverberated throughout his life. During this trip, he started to systematically measure and note down the dimensions of spaces and furniture. He wrote in retrospect that 'at the beginning of that journey, I hadn't yet acquired the habit of taking down the exact dimensions of objects that attracted my attention. In fact, I became aware of dimensions all of a sudden. It is from there that derives what I call the man-with-the-raised-arm, key of all architecture' (FLC/E2-10-210:144). 'All of a sudden' it was not, since he had become interested in dimensions while working for Peter Behrens in Germany, but it is true that he had never engaged in measuring so obsessively before.[19] As he mentions in *Le Modulor*, 'In my trousers there was a special pocket for a two-metre rule; even then, I had felt the need to *appreciate* measures. My travelling sketches are crammed full with measurements' ([1954] 2000: 197; emphasis in original). His *carnets de voyage* indeed document this activity, which he ramped up on arrival to Mount Athos, abandoned in Athens, and took back up again in Pompeii.

One could easily perceive these sketches as visual phenomena and overlook the actual physical activity embedded in the act of measuring and drawing. To begin with, any traced line is the trace of a moving hand. Sketches containing measurements and accompanied by annotations are even more complex: they are the trace of a whole spatial performance that includes the acts of stretching a measuring tape or stick,

kneeling, bending, and looking. The records of these acts are simultaneously records of specific corporeal movements and of tactile explorations.

In fact, in the absence of a measuring tool, the body can serve as a scale and the hand may substitute the eyes: humans intuitively raise their hand to test the height of a space. This anthropometric and haptic perception of space is clearly documented in Le Corbusier's sketch of a rural house in Bretagne that dates to 1932: here the body and extended hand become the measure of the interior space, clearly anticipating the 'man-with-the-raised-arm' (FLC/W1-1-588) (**Figure 10**). The photographs of Le Corbusier and August Klipstein[20] standing against fallen columns in Athens (FLC/L4-19-66 and FLC/L4-19-6) as well as the architect's memories of the Acropolis thirty years later are also indicative:

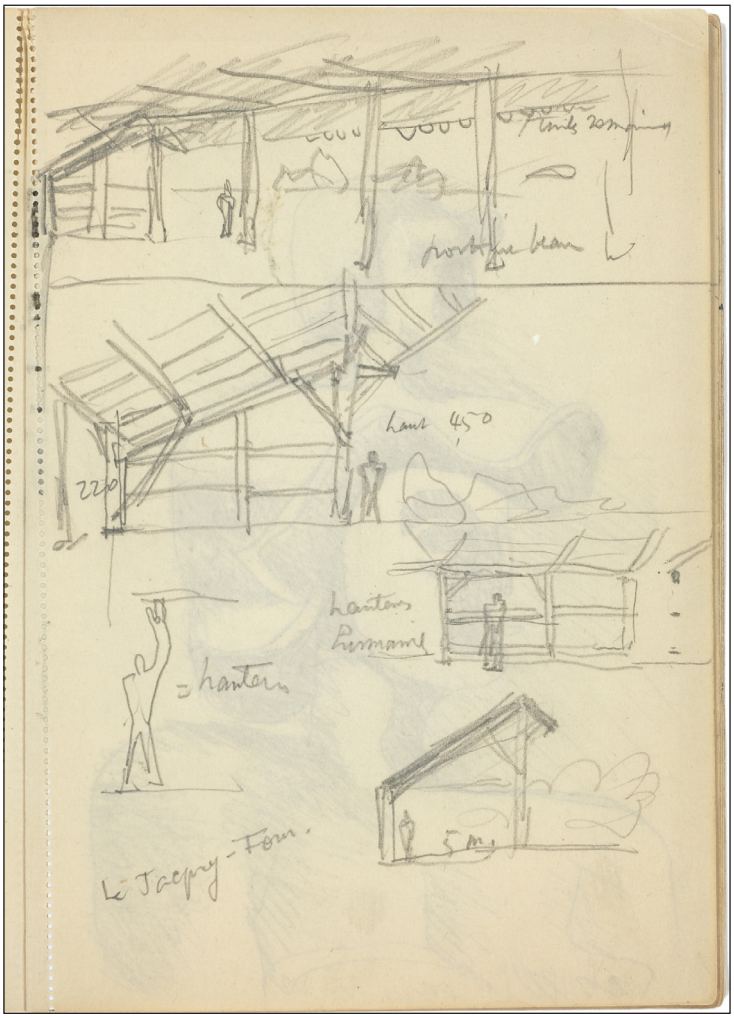


Figure 10: Le Corbusier, sketches of vernacular architecture, *Le Piquey*, 1932. © Fondation Le Corbusier.

> With respectful, restless, wondering hands, over many weeks I touched these stones; these stones, which, when placed again in their originally intended spots from which they had fallen, play the most wonderful music you can imagine. … Touch is a second kind of sight. Sculpture or architecture, when their forms are inherently successful, can be caressed; in fact, our hands are impelled towards them. ([1961] 1999: 59)

Decades later, Juhani Pallasmaa would underline Le Corbusier's 'haptic sensibility' and claim that 'the hand had a similar fetishistic role in his work as the eye' (2013: 31–32).

The Modulor as a project and as a tool exemplifies this fusion of vision and tactility: visual measures and bodily modules are here merged. In *Le Modulor*, Le Corbusier defends anthropometric measures against the arbitrariness of the metric system and the metaphysics of the number which detach measures from the body: 'Architecture,' he claims, 'must be a thing of the body [*charnelle*], a thing of substance as well as of the spirit and the brain' ([1954] 2000: 60–61); 'measures have everywhere become abstract or arbitrary; they should be *made flesh*' ([1954] 2000: 160; emphasis in the original). Tactility thus offers a way to ground the dangerous abstractions of the eye and mind:

> A true measure is an appreciation, a judgment, an acceptance arising from argument or examination, achieved by the play of reflexes or by reasoning; it is *held between the hands, between outstretched arms*, appreciated by the eye in order to that its power might be transmitted to all things within direct reach. ([1954] 2000: 222–223, emphasis added)

'The language of the body', Pierre Bourdieu notes, is 'incomparably more ambiguous and more overdetermined than the most overdetermined uses of ordinary language' (1972: 120); the body that stretches towards the ceiling in order to measure, that is to say, to compare, to find a common means, or the hands that spread in using a tape measure or in tracing on a blank piece of paper, are almost performing rituals. The muscles and nerves and bones are mobilized, put to work, holding, guiding and being guided by the tape and the pencil. Isn't the sketch, then, not just a representation of the viewed object but the very memory of this gesture?

Verifications

When Le Corbusier began researching material related to his 1911 journey for the new chapter, he was still particularly absorbed with Hagia Sophia, and a couple of days after his arrival in Paris, he wrote to Whittemore asking for further data on the building, while recounting his final passage from Istanbul:

> I passed through Istanbul again last Sunday, 10 October, and I regret not being able to meet you. I tried to enter St. Sophia but in vain. I wish I had taken a measurement (in centimeters or in inches-feet). It is the measure b of the included sketch. This measure is that of the disc of black stone which indicates in the gallery of St. Sophia the place reserved for the Emperor. It is the diameter of this disc of black stone. You remember that I had taken the height of the balustrade being equal to 113 cm.
>
> I would be quite happy, if this is possible for you, to know the dimensions in meters of certain parts of the building. This is just out of curiosity. I am sending you attached a sketch, showing some of these measures.
>
> I stood still before the Egyptian obelisk of the Hippodrome, whose intransigence, the exact lucidity of design, took my breath away. Would it be possible to have some details of the hieroglyphic themes which are in succession (I am saying some only, of course). I would like my memory to be confirmed by an exact and precise document. (FLC/F2-7-139)[21]

Whittemore answered on 4 December, providing the measures (FLC/B3-20-1), and Le Corbusier proudly included the letter as well as his own reply in *Le Modulor* — a copy of which he sent to Whittemore in April 1950 with a dedication commemorating the 'so brief and fruitful encounter in St. Sophia of Stamboul'.[22] However, with Le Corbusier's handwritten comparisons to Modulor values, and scaled down to fit the book's small square format (1950: 204), Whittemore's data sheet served more as a visual argument than the scientific testimony it was intended to be.

Le Corbusier did not receive any information from Whittemore regarding the Egyptian obelisk (of Pharaoh Thutmose III, re-erected by Emperor Theodosius in the Hippodrome of Constantinople in the end of the 4th century AD), but his encounter with this monument may have prompted his renewed interest in hieroglyphs. In fact, Egypt had fascinated Le Corbusier since his formative years, and the Purists often referenced Egyptian art's 'hieratic' clarity of forms.[23] As documented in the archive, right after his return from Turkey, Le Corbusier opened Gustave Le Bon's *Les premières civilisations* (1884) and resketched on tracing paper three Egyptian bas-reliefs. Although these are not travel sketches, they offer insights into his working method.

With the first one, an illustration of a funerary bas-relief by Charles Kreutzberger (Le Bon 1884: 413), Le Corbusier drew subdivisions of the golden section on a small piece of paper and apparently used it to test the proportions of the illustration.[24] He also drew a very abstract version of the bas-relief on tracing paper, noting in millimeters the dimensions of certain elements that apparently structure the illustration, but he did not use this drawing in *Le Modulor* (FLC/B3-16-9). With the second, an illustration of a bas-relief

by Jean-François Champollion depicting Ramses II receiving a group of prisoners (Le Bon 1884: 421), Le Corbusier drew the outline of the left part of the illustration and again noted the dimensions in millimeters. He then drew the regulating line of the image, thus adding another, final level of abstraction (FLC/B3-16-201) (**Figure 11**).

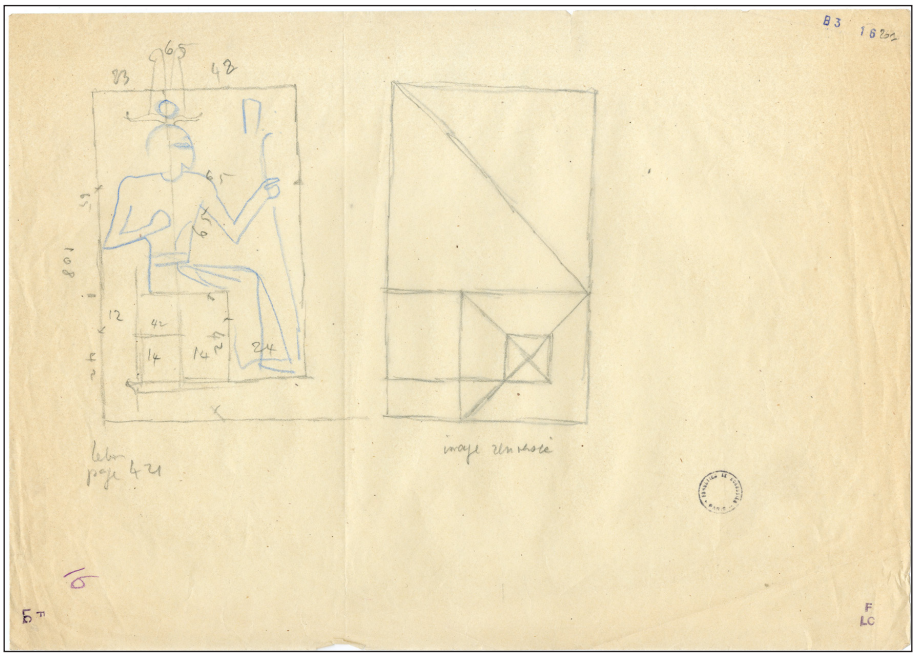


Figure 11: Le Corbusier, copy on tracing paper of illustration from Le Bon, *Les premières civilizations*, 421. © Fondation Le Corbusier.

A third carefully drawn rendition of the outline was eventually published in *Le Modulor* (FLC/B3-20-41; 1950: 211). With the third illustration, based on a photograph of a bas-relief from the temple of Seti I in Abydos (Le Bon 1884: 425), the architect first drew the outline of the image, noting and correcting dimensions in millimeters, and followed a φ division on the right side (FLC/B3-16-202) (**Figure 12**). He then created a more careful yet still very abstract rendition of the image to be included in *Le Modulor* (FLC/B3-20-33; 1950: 195).

In all these cases, Le Corbusier abstracted, edited, and effaced the details of the illustrations, emphasizing the proportional relation of the parts. What makes this even more complex is that the three illustrations from *Les premiers civilisations* are already reproductions of two-dimensional depictions of three-dimensional originals, making Le Corbusier's sketches yet another addition to a long series of transcripts. With their inherent geometrical abstraction and spatial subdivisions, the bas-reliefs lent themselves well to Le Corbusier's investigations.[25] However, not all material related to his October journey would prove as suitable.

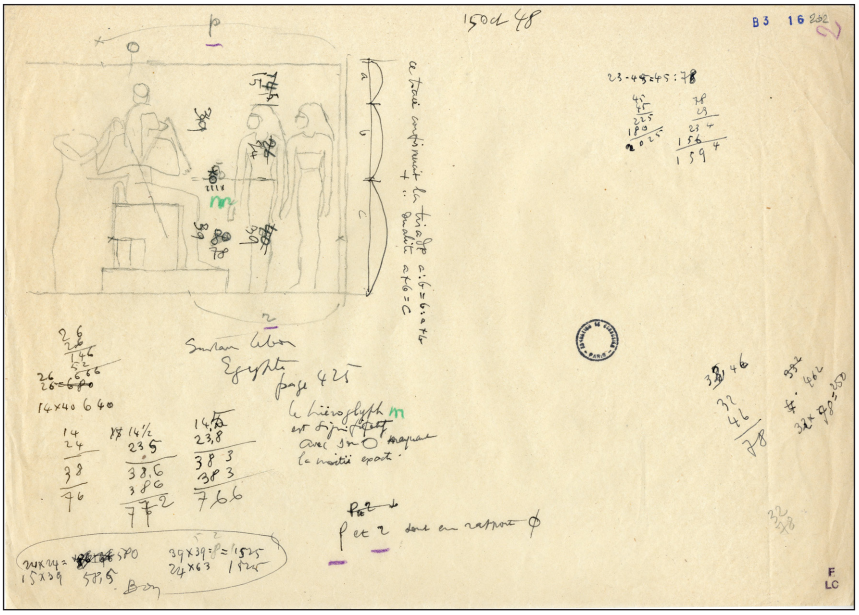


Figure 12: Le Corbusier, copy on on tracing paper of illustration from Le Bon, *Les premières civilizations*, 425, with calculations. © Fondation Le Corbusier.

The Parthenon was perhaps the single most important building Le Corbusier visited in 1911 and played multiple roles throughout his career. The architect likely saw the Acropolis when landing at and taking off from Athens airport in October, and he returned to the study of the Parthenon once again on 20 October. This time, he had scientific data to hand, 16 heliogravure prints (photogravures) by André Charbonnier of drawings by engineer Nikolaos Balanos (1860–1942) given to him by his brother Albert Jeanneret in 1948.[26] Le Corbusier compared Modulor dimensions with the dimensions documented on the photogravures (FLC/V-675) but failed to find correspondences between them. He did, however, document correspondences with the metric system and argues that the Parthenon is 'a grandiose piece of *sculpture* inscribed in the landscape of Mount Hymettus, Mount Pentelicus, the Piraeus and the isles, not a construction based chiefly and of necessity on the recurrence of numbers' ([1954] 2000: 209). He implies that the Parthenon is a terrestrial phenomenon that deserves to be measured against the size of the earth (the base of the metric system) rather than against anthropometric measures. Again, it seems, the Parthenon remained a sublime enigma to him. Two other stops of the 1911 journey provided better material for his endeavors.

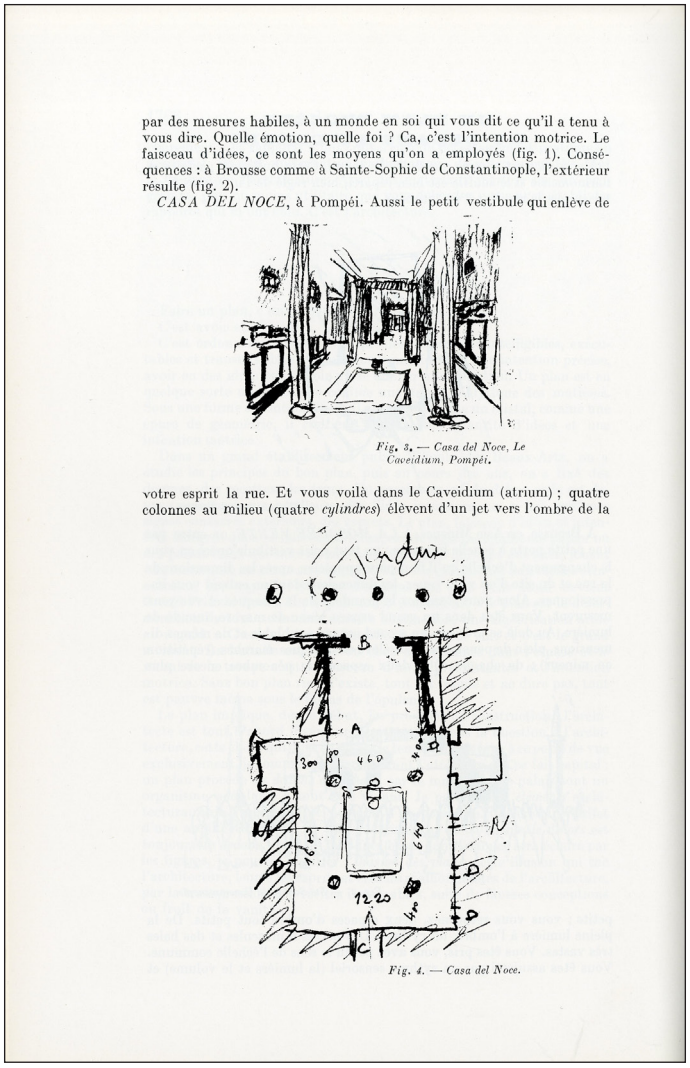
Old Sketches Revisited

'Returning from my short voyage to Turkey, I thought I would take a look at my travelling notebooks of the year 1910, when, as a student, I made my grand tour of the Orient', Le Corbusier remarks in *Le Modulor*. 'Re-reading them today, I see very clearly

that I did not then apply the same meticulousness which later experience was to teach me. My measurements taken in 1910 should therefore be regarded only as indications' ([1954] 2000: 197).[27] The 1911 material presented in *Le Modulor* (**Figures 2** and **3**) includes Le Corbusier's measurements of the katholikon of Philotheou Monastery on Mount Athos (1950: 200–201) and sketches from Pompeii of the Temple of the Forum (identified with the Temple of Jupiter), the Casa delle Nozze d'Argento (1950: 200–201), the cella of the Temple of Apollo in the Forum, a foundation, baths, the basin of a fountain (*vasque*), and a recessed pool (*bassin*) (1950: 202–203).

Despite the seeming randomness, Le Corbusier's decision to include material related to Athos and Pompeii was not accidental. His carnets, as I've noted, provide a record of his rich measuring and sketching on the monastic peninsula—the first time he engaged in such detailed work during the 1911 journey. Furthermore, the well-documented katholikon could serve as fitting example in the tradition of Eastern Roman and Ottoman architecture that he had only hastily measured in Istanbul. Pompeii, on the other hand, had arguably played a crucial role in Le Corbusier's formation.[28] In 1911, the archeological site accommodated young Charles-Édouard Jeanneret, who eagerly walked, measured, and sketched its ruins. He noted dimensions and admired the complex use of axes in the forum and the sense of order that the city fabric still conveyed. It is those explorations his carnets bear witness to.

Graphic material and memories from the 1911 journey — sketches, in particular — resurfaced often in future writings, used by Le Corbusier to demonstrate or illustrate various arguments. His sketches from Pompeii appeared early in his publications, starting with the *L'esprit nouveau* article 'L'illusion des plans' (1922: 1767–1780), later included in *Vers une architecture* ([1923] 1995: 148, 152–153). A perspectival drawing of the Casa delle Nozze d'Argento and a floor plan annotated with dimensions are presented here, both of which were reproduced from Carnet 4 (Le Corbusier 2002: Carnet 4, 126–127) (**Figure 13**). Le Corbusier comments on the Casa delle Nozze d'Argento, noting that its design proceeds from the interior to the exterior while highlighting the manipulation of light and volume, as well as the order that magnifies the space of this 'very small house'. Elsewhere in the article, Le Corbusier praises the way the Temple of Jupiter in the forum has been positioned in line with a solar orientation along with the landscape, attributing the feeling of intimacy the space evoked to the effect of 'measures'.[29] However, as Christian Gilot underlines, 'It is not a matter of dimensions here, but of alignments, correspondences, proportions' (2012: 457), that is to say, of visual, urban, and topographical coordination. The first volume of the *Oeuvre complète* also reproduces these sketches, although they have a narrative and almost decorative function in this context, as they provide the background of a charismatic youth educated by travelling rather than academies (Boesiger and Storonov [1929] 2015: 19) (**Figure 14**). In other



par des mesures habiles, à un monde en soi qui vous dit ce qu'il a tenu à vous dire. Quelle émotion, quelle foi ? Ca, c'est l'intention motrice. Le faisceau d'idées, ce sont les moyens qu'on a employés (fig. 1). Conséquences : à Brousse comme à Sainte-Sophie de Constantinople, l'extérieur résulte (fig. 2).

CASA DEL NOCE, à Pompéi. Aussi le petit vestibule qui enlève de

Fig. 3. — Casa del Noce, Le Caveidium, Pompéi.

votre esprit la rue. Et vous voilà dans le Caveidium (atrium) ; quatre colonnes au milieu (quatre *cylindres*) élèvent d'un jet vers l'ombre de la

Fig. 4. — Casa del Noce.

Figure 13: Le Corbusier-Saugnier, sketch of the Casa delle Nozze d'Argento perspective and floor plan, 'Architecture: L'Illusion des plans', *L'Esprit Nouveau*, no. 15, 1922. © Fondation Le Corbusier.

words, measurements as dimensions are hardly the focus of earlier appearances of these Pompeiian sketches (or of any other sketches for the 1911 journey). It is with the *Le Modulor* that they are given this emphasis for the first time. However, none of the sketches included in the 'Vérifications' chapter are the originals. They have all been redrawn.

Manipulations

The illustration of the Temple of Jupiter in *Le Modulor* (FLC/B3-20-37) looks like a mash-up of two sketches, omitting the dimensions of sides that were never measured (Le Corbusier 2002: Carnet 4, 104–105). The handwritten note 'Les mesures sont la cause de cette beauté' ('The measures are the cause of this beauty') attached to the

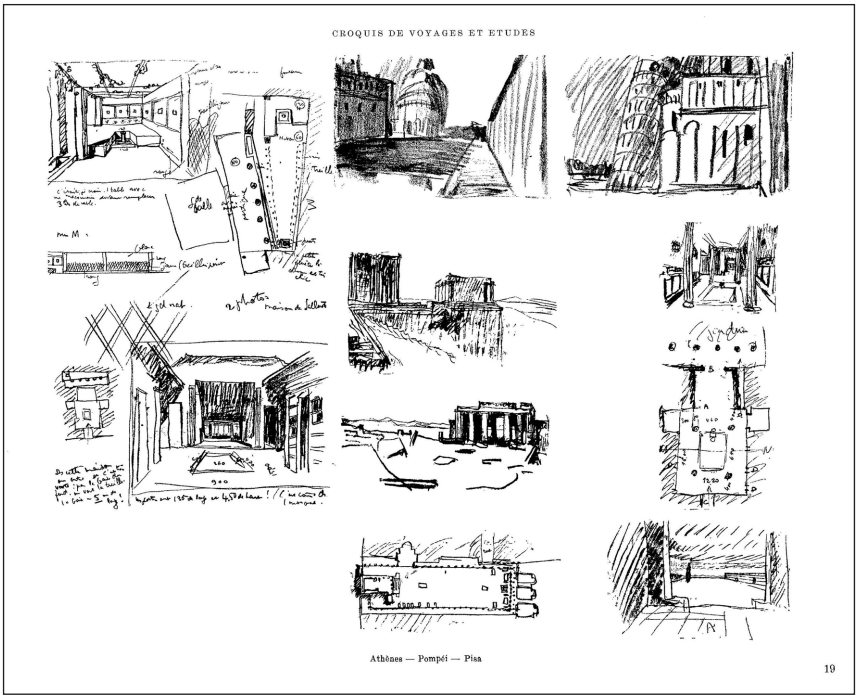


Figure 14: Le Corbusier, sketch of the Casa delle Nozze d'Argento (right), *Le Corbusier et Pierre Jeanneret, Oeuvre complète*, volume 1: *1910–1929*, 1929. © Fondation Le Corbusier.

published sketch, derives from his comments on the temple from an earlier page of the carnet (2002: Carnet 4, 102) (**Figures 15** and **16**). He also substantially altered the sketch of the Casa delle Nozze d'Argento, omitting details and the side of the garden (2002: Carnet 4, 127) (**Figures 17** and **18**).

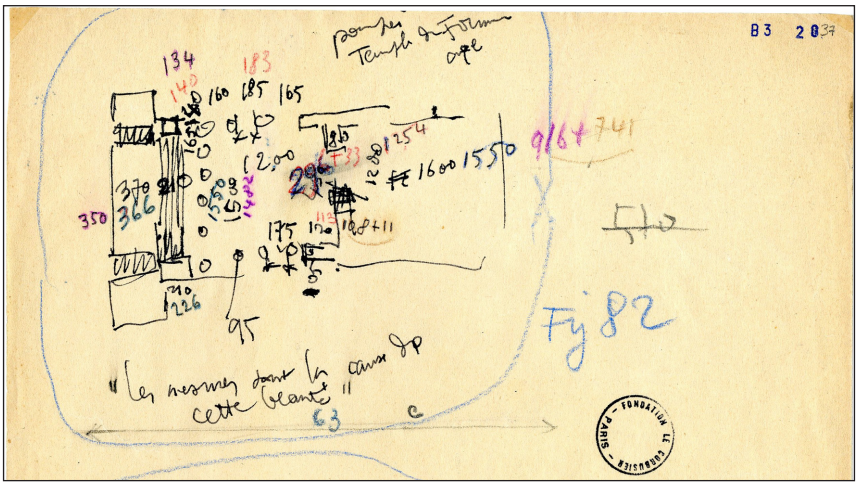


Figure 15: Le Corbusier, redrawn, annotated sketch of the Forum Temple, October 1948. © Fondation Le Corbusier.

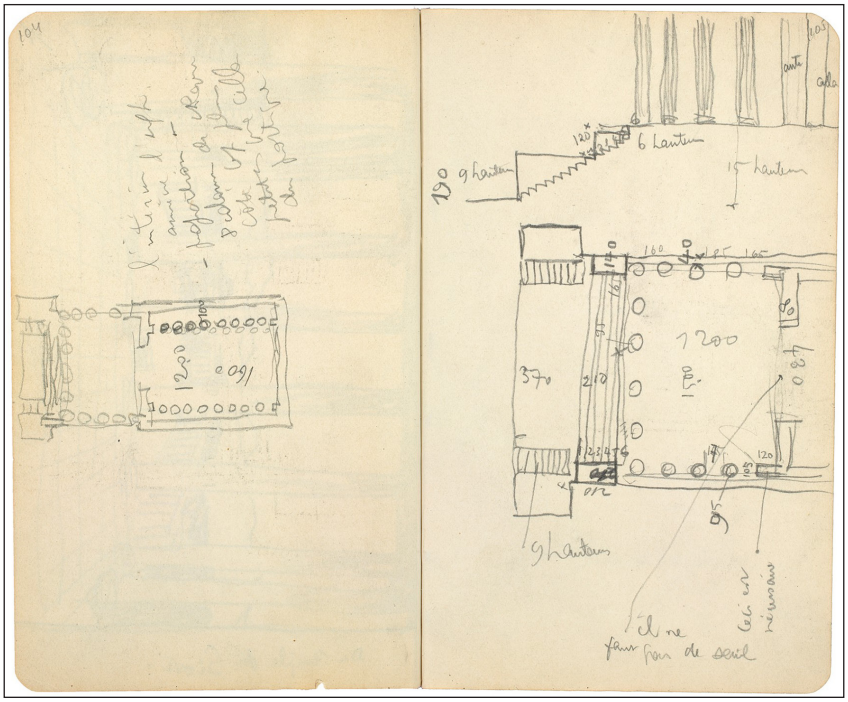


Figure 16: Le Corbusier, sketches of the Forum Temple, Pompeii, carnet 4, 1911. © Fondation Le Corbusier.

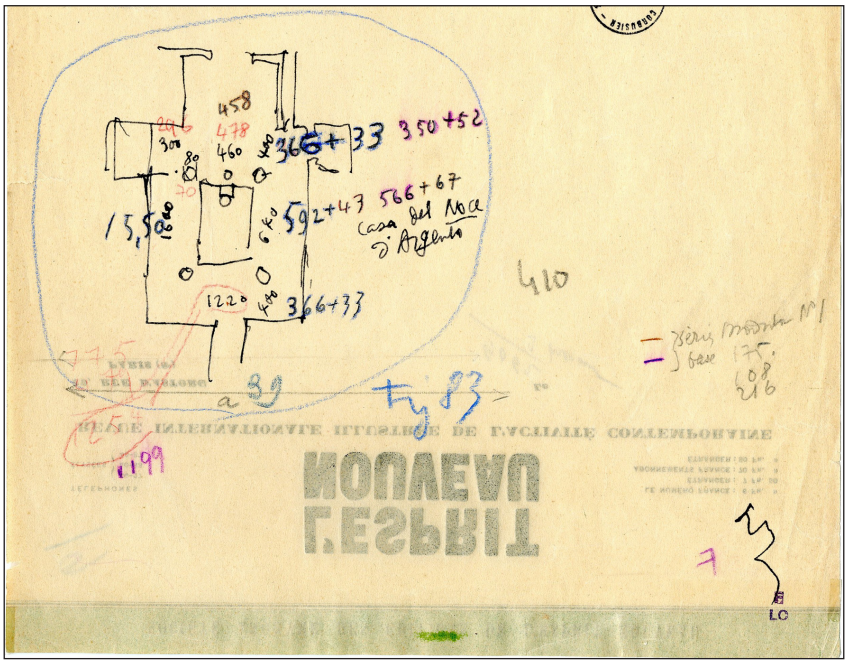


Figure 17: Le Corbusier, redrawn, annotated sketch of the Casa delle Nozze d'Argento, October 1948. © Fondation Le Corbusier.

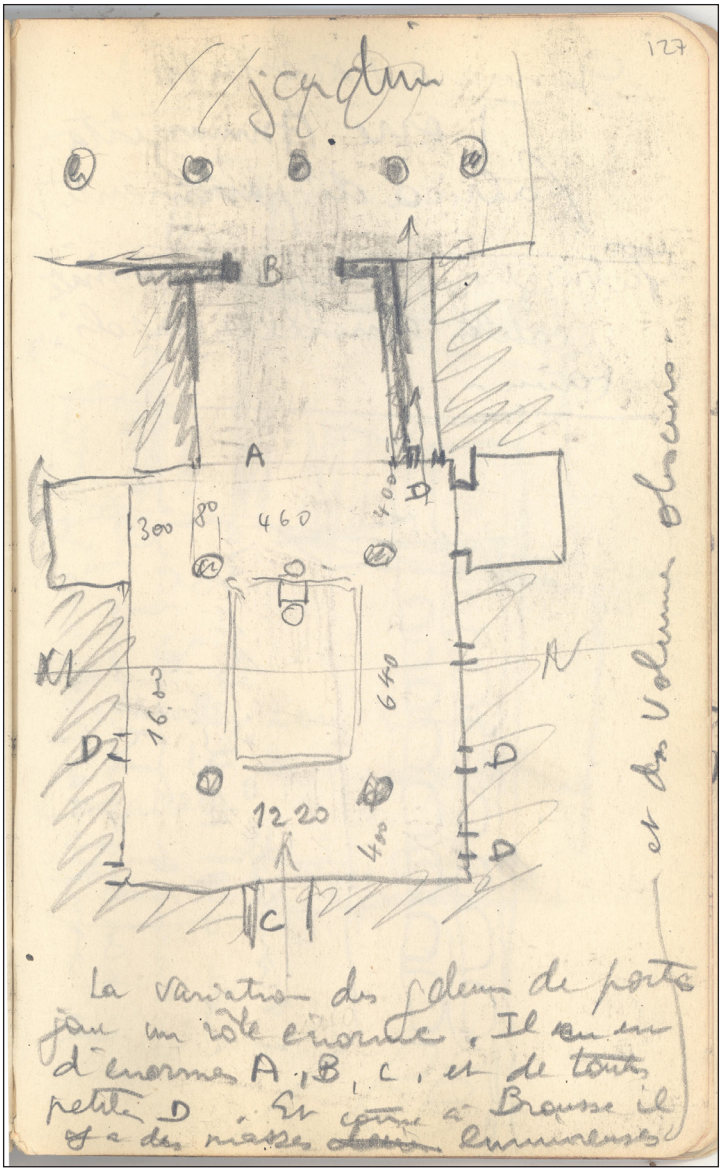


Figure 18: Le Corbusier, sketch of the Casa delle Nozze d'Argento, Pompeii, carnet 4, 1911. © Fondation Le Corbusier.

In his reworked floor plan of the cella of the Temple of Apollo (FLC/B3-20-38), Le Corbusier omits the mosaic paving that he had not measured, although the impression it made on him when he first saw it was strong, as the original betrays (2002: Carnet 4, 27) (**Figures 19** and **20**).[30] The 'foundation' also derives from the cella: it is the lower marble revetment of the cella's interior (2002: Carnet 4, 28) (**Figures 21** and **22**). The reworked image of the baths corresponds to the vestibule of the calidarium of the Forum Thermes (2002: Carnet 4, 45) (**Figures 23** and **24**).[31] The image of the fountain also originates from the Thermes; Le Corbusier drastically reworked the

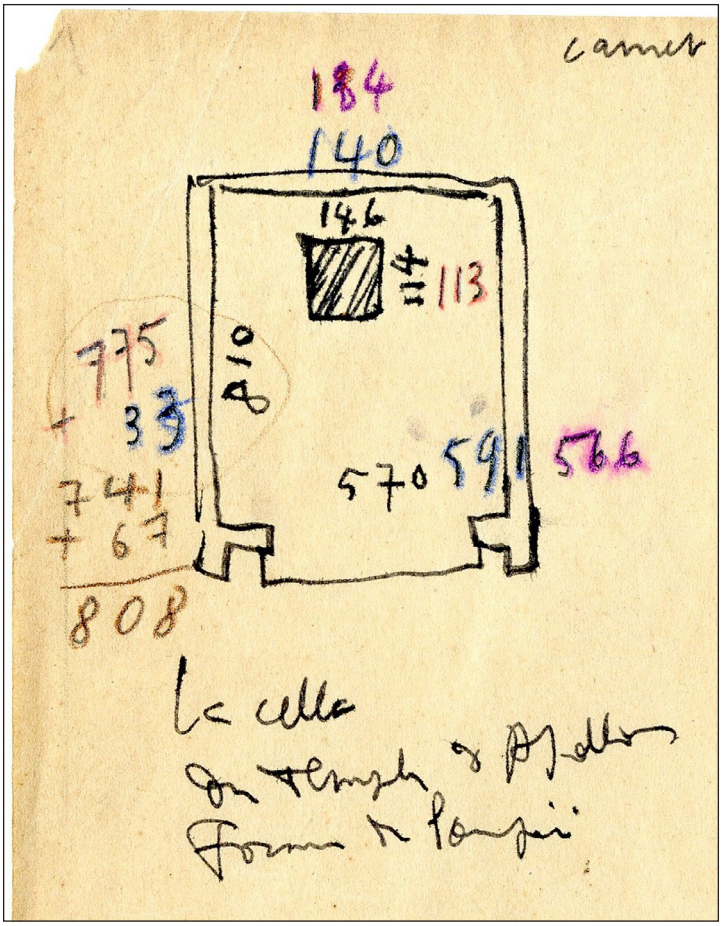


Figure 19: Le Corbusier, redrawn, annotated sketch of the cella of the Temple of Apollo, October 1948. © Fondation Le Corbusier.

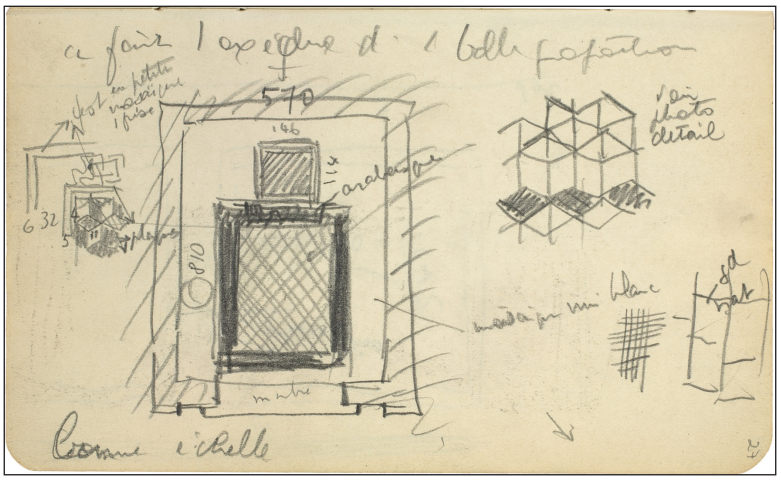


Figure 20: Le Corbusier, sketch of the cella of the Temple of Apollo, Pompeii, carnet 4, 1911. © Fondation Le Corbusier.

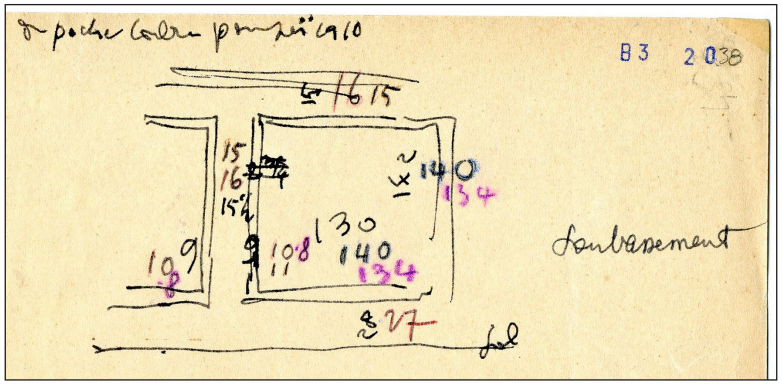


Figure 21: Le Corbusier, foundation, redrawn, annotated sketch of the revetment of the cella of the Temple of Apollo, October 1948. © Fondation Le Corbusier.

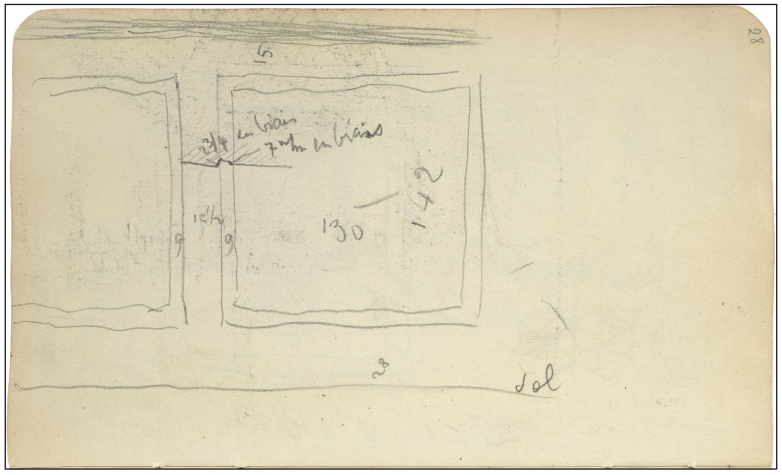


Figure 22: Le Corbusier, sketch of the revetment of the cella of the Temple of Apollo, Pompeii, carnet 4, 1911. © Fondation Le Corbusier.

original drawing (2002: Carnet 4, 77), moving the perspective sketch to the centre of the image, perhaps to enhance its clarity (**Figures 25** and **26**). The recessed pool corresponds to the impluvium of the House of the Tragic Poet, which Le Corbusier was familiar with from Edward George Bulwer-Lytton's *The Last Days of Pompeii*. It also appears less detailed than in the original sketch (2002: Carnet 4, 93).[32] (**Figures 27** and **28**). The redrawn katholikon of Philotheou (FLC/B3-20-36) more closely follows the 1911 sketch and, unlike the others, is drawn to the original scale. However, it is again less detailed, omitting visual information as well as the corresponding section of the vaulted interior that Le Corbusier had carefully drawn in 1911 (2002: Carnet 3, 65) (**Figures 29** and **30**).

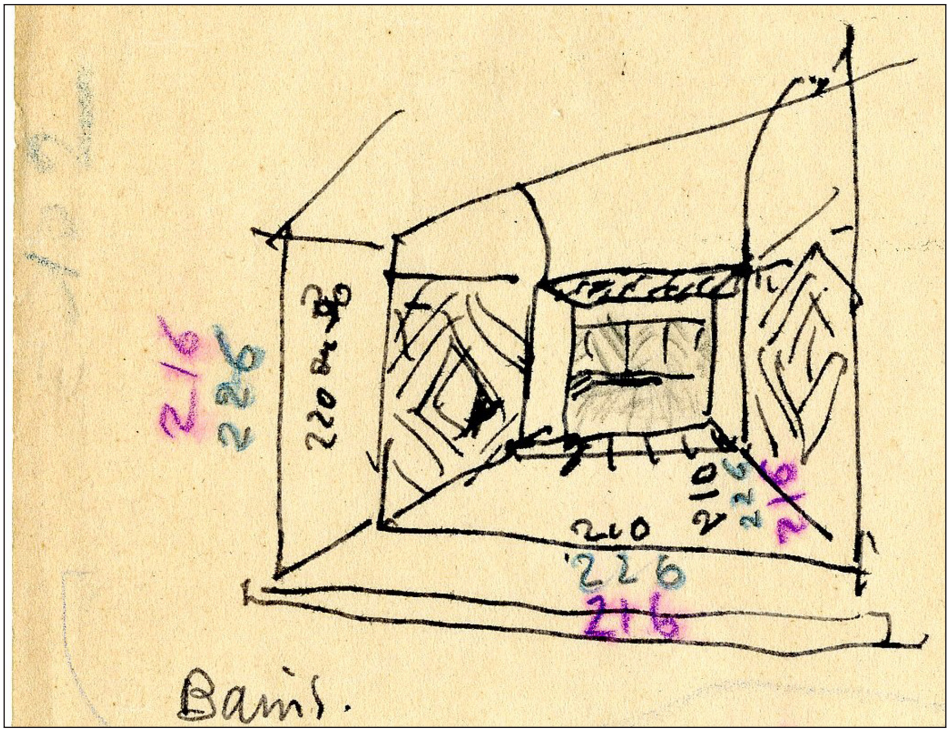


Figure 23: Le Corbusier, redrawn, annotated sketch of the vestibule of the calidarium of the Forum Thermes (baths), October 1948. © Fondation Le Corbusier.

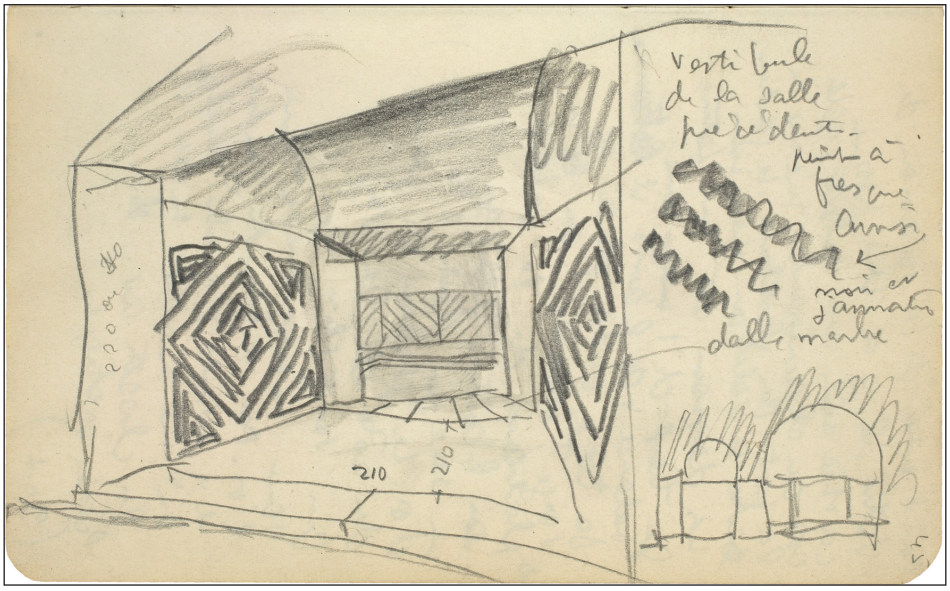


Figure 24: Le Corbusier, sketch of the vestibule of the calidarium of the Forum Thermes, Pompeii, carnet 4, 1911. © Fondation Le Corbusier.

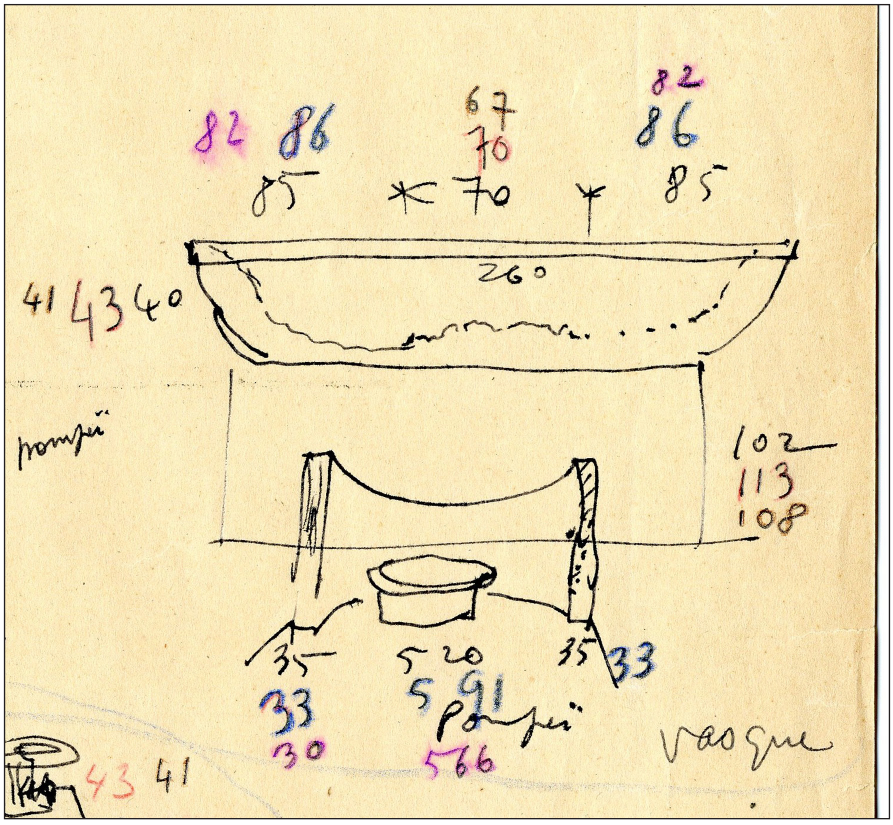


Figure 25: Le Corbusier, redrawn, annotated sketch of a fountain, Forum Thermes, October 1948. © Fondation Le Corbusier.

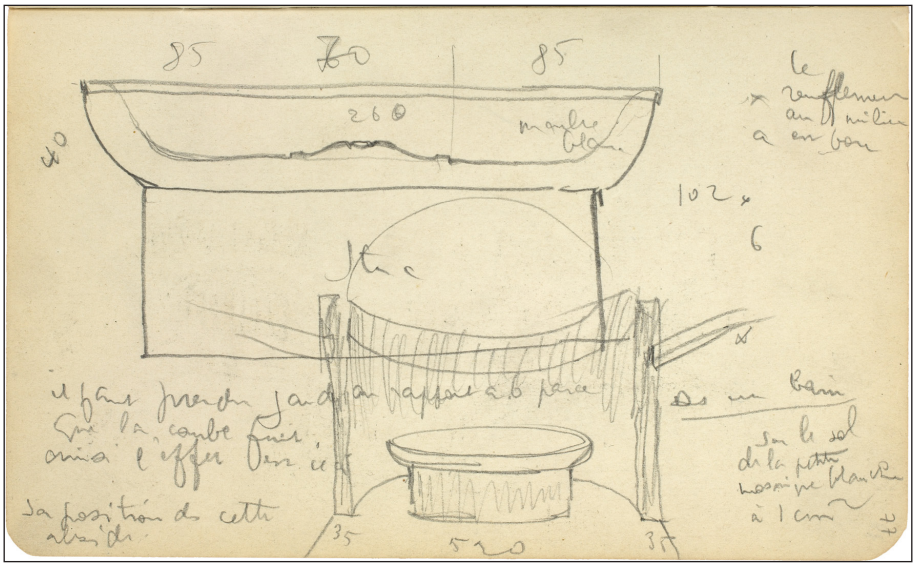


Figure 26: Le Corbusier, sketch of a fountain, Forum Thermes, Pompeii, carnet 4, 1911. © Fondation Le Corbusier.

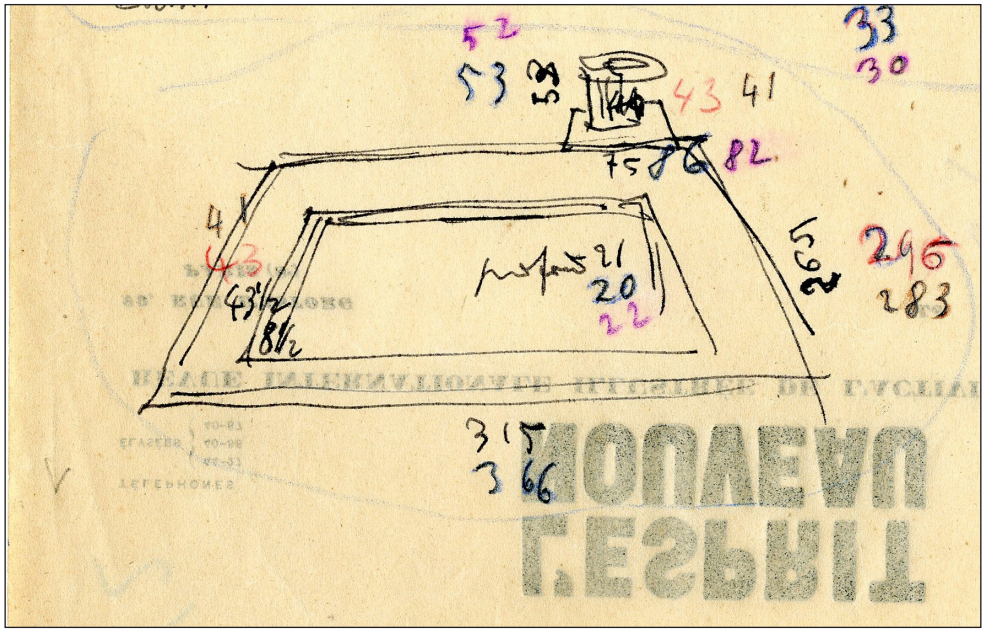


Figure 27: Le Corbusier, redrawn, annotated sketch of the impluvium (bassin) of the atrium of the House of the Tragic Poet, October 1948. © Fondation Le Corbusier.

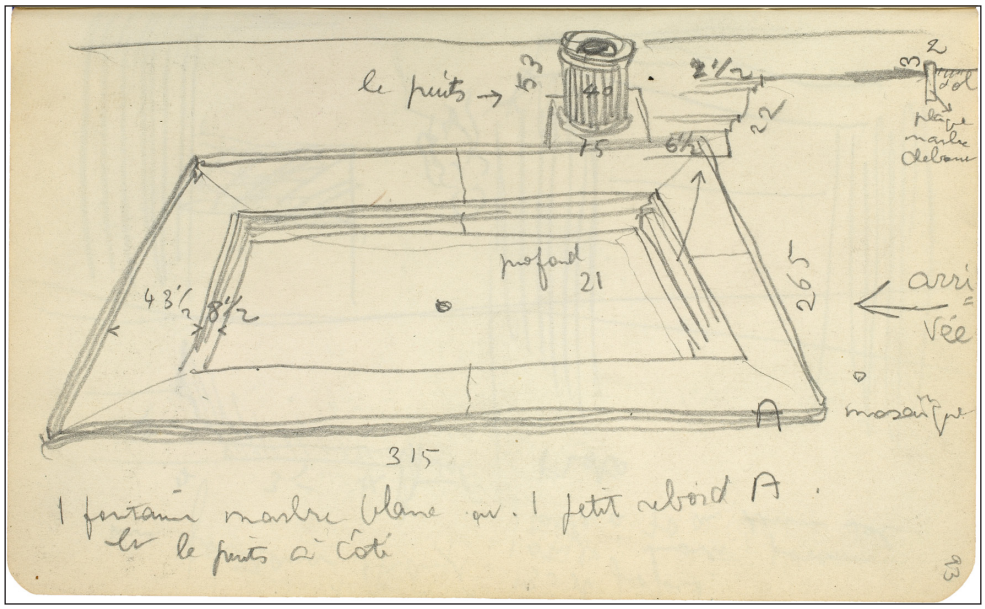


Figure 28: Le Corbusier, sketch of the impluvium of the atrium of the House of the Tragic Poet, Pompeii, carnet 4, 1911. © Fondation Le Corbusier.

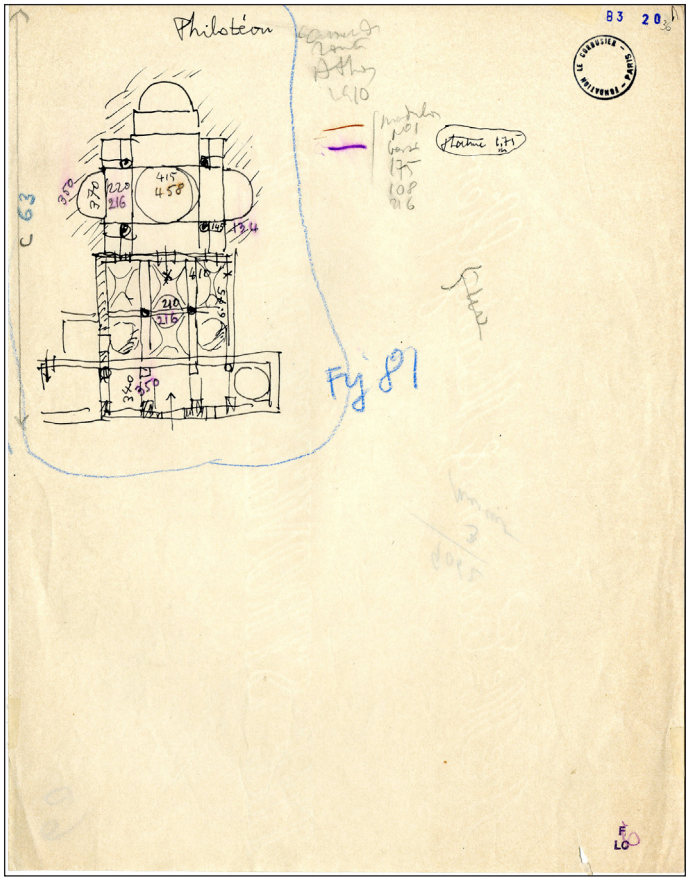


Figure 29: Le Corbusier, redrawn, annotated sketch of the katholikon of Philotheou, October 1948. © Fondation Le Corbusier.

Le Corbusier thus randomly but carefully selected material from the carnets to test the Modulor. To be fair, as the Modulor values are close to anthropometric measures used in premodern architecture, it is not particularly hard to find correspondences. Moreover, by adding Modulor values — as Le Corbusier often does — one can reach almost any dimension; thus, this game could be played eternally.[33] Yet, instead of using reproductions of original sketches (as in previous publications of the Pompeii material) or redrawing on tracing paper over the originals (as with the hieroglyphs), Le Corbusier here draws *new* sketches, incorporating the old measurements and juxtaposing Modulor dimensions; he does exactly the same for the katholikon of Philotheou. In the new sketches, he juxtaposes the Modulor measurements (based on the 175- and the 183-centimeter height) to the 1911 annotations using a colour code (brown, blue, and purple). But the way the new sketches are displayed in the black and white book conceals this editing process; the reader might as well perceive them as the originals (**Figures 2** and **3**). Moreover, Le Corbusier has changed the meaning

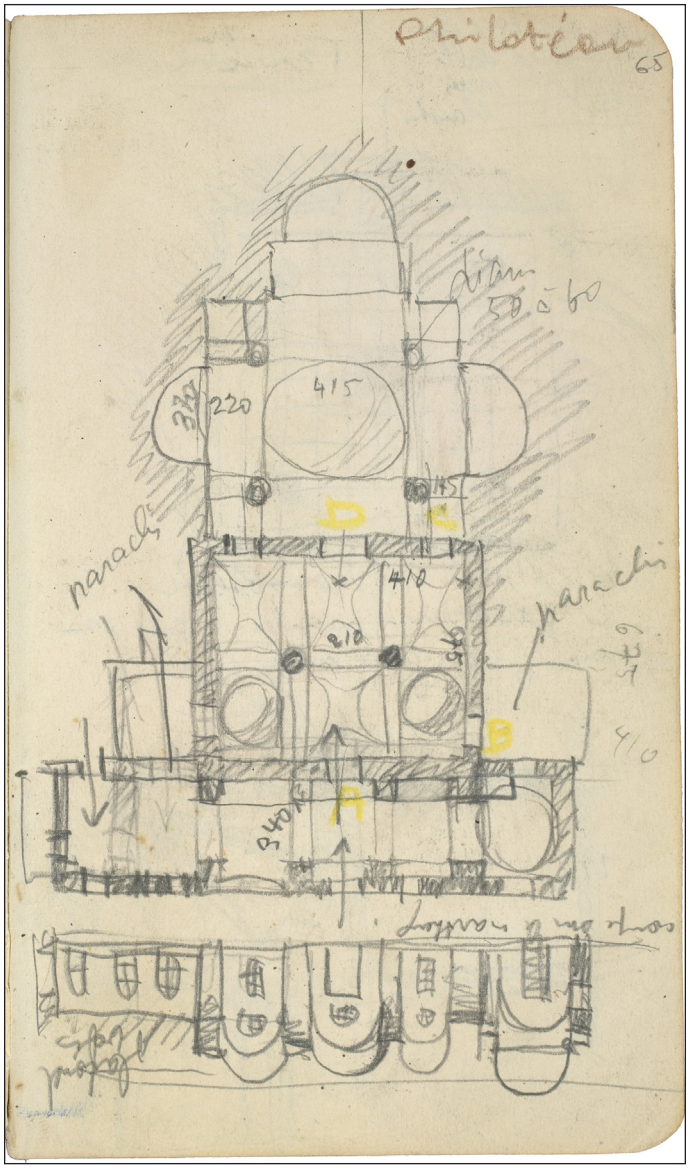


Figure 30: Le Corbusier, sketch of the katholikon of Philotheou, Athos, carnet 3, 1911.
© Fondation Le Corbusier.

of the measurements themselves. In 1911, they were merely dimensions of spaces whose proportions Jeanneret admired. In 1948, he attributed them to an overarching proportional rhythm which, he assumed, traverses time and space, from the human body to the pulsating universe.

The process renders the travel material malleable, allowing Le Corbusier to manipulate it according to his wishes, almost forging his own originals. In the drawings published in the 'Verifications' chapter, multiple layers coexist: first, the actual

architectural remains (often as restored by archeologists); second, Le Corbusier's experience of those remains during his 1911 visit, as documented with sketches and measurements; and third, the Modulor values that he imposes on the retraced material. Additionally, we can consider a 'prehistory' of this engagement: for instance, the interest in Pompeii cultivated during his formative years, or his curiosity about Mount Athos, sparked by his friend August Klipstein. This superimposition of perspectives makes it hard to determine what is real or original, as the final published illustrations are the fusion of multiple interpretations. This embedded distortion also undermines serious scientific critique, as Le Corbusier merges the presumed precision of measurements with a more poetic and rushed redrawing process. Personal and historical memory lends itself to an open-ended bricolage.

Of course, one should not overemphasize the merits of originality: after all, copying was an important method of learning in the 19th century and was definitely part of Le Corbusier's education. He had not only been trained to copy museum pieces but also to copy copies (e.g., plaster models and book illustrations), as dozens of his drawings show (Saddy 1988b: 15–17).[34] 'The original is something imaginary', claims philosopher Byung-Chul Han in a critique of the Western obsession with authenticity (2017: 65). He elsewhere argues that

> memory images are not immutable representations of what has been experienced. Rather, they are products of complex construction by the psychic apparatus, and thus are subject to continual change. New constellations and connections are always arising to alter their appearance. In this the psychic apparatus follows a complex temporal movement, in which later events also reshape earlier ones. Past, present, and future interfuse within the psychic apparatus. (2017: 10)

For Han, these memory traces 'intersect and overlap' and are subject to 'continual rearrangement and transcription' (2017: 10–11). Considering that Le Corbusier retraced sketches from Pompeii and Mount Athos for the purposes of testing the Modulor—a tool promising reproducibility and modulation—this 'forgery' could not have been more appropriate (Han 2017: 68). Yet the malleability and mutability of traces does not explain what is at stake here: what is the true function of these manipulations?

Retroactive Traces

The term 'prefigurations' originates in the Christian hermeneutics of the Church Fathers and is used, according to Assmann, to describe a 'system of references according to which an item that appeared in the Old Testament was read as a prefiguration or adumbration of something that reoccurred in the New Testament, thereby answering

it, confirming it and making it "real"' (2015: 61).[35] For Assmann, memory patterns are likewise a 'generative matrix of forms and types' that can be 'endlessly reshaped and recast' (2015: 61, 63). Yet more important for my investigation is the fact that this process is obviously retroactive — in other words, it projects *posterior* qualities onto an anterior phenomenon. Accordingly, with these retraced sketches (and the rest of his 'verifications') Le Corbusier constructs 'prefigurations' of his proportional tool. Although first executed in different contexts, the sketches acquire here the role of a sign prefiguring the final coming of the Modulor — the latter being simultaneously the result of a lifetime search and yet inevitable. In other words, these sketches appear to acquire their true scope only after the creation of the Modulor, as if they had been waiting for its inevitable emergence.

The new tool is not the result of a study based on collected data and systematic measurements. Instead, Le Corbusier retrospectively calls upon his own rough measurements to confirm a system he had already developed. The outcome lacks any scientific rigor but secures the legitimacy of the Modulor within the architecture of the past. The past is thereby *modernized*, this time from the perspective of the Modulor, while Le Corbusier's use of abstract sketches neutralizes historical epochs — even the two great monarchs and builders, Justinian and Ramesses II, are called as testimony. The inclusion in the same chapter of Le Corbusier's contemporary and older work introduces *him* into the same mythistorical universe. Le Corbusier creates an evolutionary timeline from Egypt to the modern times and simultaneously undermines time itself in favor of the idea that the material coexists synchronically and achronically. All in all, the examples in the 'Verifications' chapter are exchangeable points of reference on the surface of the print book: past and present are synchronized, and time becomes space.[36]

Despite Le Corbusier's insistence on order and efficiency in *Le Modulor*, the tool is constructed by words and illustrations as much as by mathematics or as built space — the form of print media provides the platform on which these negotiations of past and present take place. Precision is thereby subordinate to the creative and narrative process, which in itself is not restricted and unfolds in a rather poetically eclectic universe.

That said, these manipulations have significant methodological implications for the historian: appearances deceive, and the evidence that is invoked is distorted. What then remains as evidence lies in the traces of distortion.

In the end, the retraced sketches of the 1911 journey, along with the rest of the graphic material compiled in autumn 1948, served Le Corbusier's strategic and mythopoetic aims: they helped the Modulor to enter 'history' and enriched its ability

to compete in the competitive field of postwar standardisation. Le Corbusier later incorporated Indian architecture, which offered a new set of references, into this universe of 'prefigurations' and elective affinities (Le Corbusier 1955: 196–197), and his atelier undertook systematic comparisons between the Modulor and the Egyptian cubit (Le Corbusier 1955: 52–53). The plan for Izmir was never realized, but the Modulor was used in its design.[37] The plan thus carried the code of the system which a journey to the city had helped legitimize. In the second machine age, the manual labor of drawing and redrawing proved a valuable tool.

Mingling past and present, memory and forgetting, the sketch incorporating measurements encompasses the mental image, the calculation, and the tangible experience of the viewing, measuring, and drawing body. Every transcription brings out something of the distorted memory of the primary gesture, echoing and building on that experience. In this sense, the gesture recorded in a travel sketch — and the gesture of resketching — is the very act of remolding. The drawing paper is more than a tool; it is the topos where this encounter of body, time, and space is documented.

Notes

[1] The influence of travels on the young Le Corbusier has been well documented, and the relevant literature is vast. See, for example, Brooks 1997.

[2] A sketch of Pisa (FLC/B3-20-31) is also included in *Le Modulor* (1950: 168).

[3] This article is based on research I conducted at the Fondation Le Corbusier's archives in Paris. All translations unless otherwise indicated are mine. I presented a short, early version of the article at EAHN's thematic conference titled 'The Tools of the Architect' held from 22 to 24 November 2017. I would like to thank the two anonymous reviewers of *Architectural Histories* for their generosity and constructive feedback.

[4] Le Corbusier's 1911 journey was the theme of a 2011 conference (Amirante et al. 2013). See also Bonillo and Monnier 1991, Gresleri 1984, Gravagnuolo 1996, Saddy 1988a, and Collective 1996. For Le Corbusier's interactive relationship with the places he travelled to and their landscapes, see Cohen 2013. Regarding Italy see Collective 2008 and Talamona 2012.

[5] The Modulor had been tested, however, in Le Corbusier's private office in Rue des Sèvres. In 1948, he also installed an adjusted Modulor-based *pan-de-verre* in his apartment. The Unité d'habitation in Marseille, and the Claude & Duval factory in Saint-Dié-des-Vosges, where the Modulor was systematically applied, were then still under construction.

[6] For the development of the Modulor, see Farantatos 2019. See also Cohen 2014, Linton 1996, and Matteoni 1980.

[7] These early references to proportions and anthropometric measures can be found, for example, in the preamble of *Le Modulor* (1950: 15–21).

[8] In 1939, Le Corbusier was invited by then mayor Behçet Uz to develop the plan for Izmir. The initial agreement between them stipulated a three-day visit and fieldwork. The city had remained vastly unbuilt after the destructive fire unleashed during the 1922 Greek-Turkish War and the following population exchange which altered its demographic composition and led to a decline in its cultural impact. After WWII, Le Corbusier sought to reactivate negotiations with Resat Leblebicioğlu, the new mayor. He ramped up his efforts in early 1948. For the plan of Izmir, see Bach 2009.

[9] As with most stops of the journey to the East, the relevant bibliography is immense. See, for example, Amirante et al. 2013.

[10] 'If … I could have a car that accompanies me through the Istanbul of my youth, I would be delighted to devote the few hours of stopover in this city to it', Le Corbusier wrote to José Benroubi, correspondent of the *Quotidien Akcham d'Istanbul* in France (FLC/H3-15-119) Benroubi put him in contact with Albanian Turkish painter Sabri Berkel, who along with an architect friend of his, provided the car (FLC/H3-15-120/3). See also FLC/G3-12-63 and FLC/G3-12-24.

[11] The French word 'mesure' that Le Corbusier normally uses has an etymological richness and ambivalence inherited from the Latin 'mensura' (from 'mētior', a cognate of the Greek μέτρον). It can mean, among other things, the measuring unit, the act and result of measuring, the measurement, and the metrical rhythm in poetry and music. Le Corbusier uses the word in both abstract ('the point of all measures') and concrete ways (the measurements of a house). All these meanings converge in Le Corbusier's conception of the Modulor. The translation of 'mesure' as either 'measure' or 'measurement' unfortunately neutralizes the connotations of the French original.

[12] This ruler was a prototype made out of cardboard, designed and varnished by Jerzy Sołtan (1950: 48), which Le Corbusier first tested aboard a Liberty Ship while travelling to the US. Its fate is described in *Modulor 2* (1955: 31–33).

[13] His handwritten note on the back of a photograph of a dinner engagement in Izmi suggest he may have arrived via Athens: 'Avion: Paris Athènes Stamboul/Stamboul Smyrne' (FLC/L4-4-153). According to other notes, he left Paris late on 2 October, arriving in Istanbul on 3 October and departing for Izmir on 4 October. On 9 October he returned to Istanbul and early on the 11 October he flew back to Paris via Athens and Rome (FLC/H3-15-94).

[14] 'According to testimonies of the time, Le Corbusier, admiring, took notes while visiting the city of Istanbul and above all the mosques; he was trying to verify his Modulor theory, which he proposed during this time, by applying it to buildings, whose quick sketches he drew' (Beyru 2009: 126). These testimonies may be exaggerated, however, as only two pages of notes and small sketches have been located.

[15] In 1931, Thomas Whittemore, founder of the Byzantine Institute of America, persuaded Kemal Atatürk to allow the restoration of the Hagia Sophia's mosaics, which had been covered beneath plaster since the 15th century. In 1948, he and Paul A. Underwood of the Dumbarton Oaks Center for Byzantine Studies launched a program to restore the 14th-century Chora Church (Church of the Holy Saviour in Chora, now Kahrie or Kariye Mosque).

[16] Buriel Bielza (2013, 283–284) discusses this sketch, linking it to Le Corbusier's later project for St. Peter's at Firminy, but he makes a mistake in suggesting Le Corbusier sketched it from memory in 1936. He drew it first in situ in 1948 and reused it in 1964.

[17] In these notes, Le Corbusier contrasts the mosaics to murals he encountered in the Bacchus coffee shop in Izmir. His reaction to the mosaics of the Chora Church in 1911 was negative. He was drawn instead to the earlier but modern-looking mosaics of St. Demetrius in Thessaloniki (Le Corbusier 2002: Carnet 3: 71).

[18] 'The architect Dogan Tekeli, active in Izmir in the early 1950s, also tells us that Le Corbusier talked non-stop to his Smyrniot interlocutors about the importance of mathematics' (Laroche 2009: 39n20).

[19] The carnets from his travels in Germany (Le Corbusier 1995) include carefully noted dimensions. Le Corbusier resumed the practice of measuring during the journey to the East and on arrival at Mount Athos in summer 1911, he began measuring objects daily (Le Corbusier 2002).

[20] August Klipstein (1885–1951) was a Swiss art historian and art dealer. In 1911, he accompanied Charles-Édouard Jeanneret on his grand tour of the East, during which he carried out research for his doctoral thesis. See Žaknic 2019.

[21] The sketch does not survive, either at the Fonds Whittemore or as a copy at FLC, but the spot in question, also depicted in FLC/B3-20-34 and FLC/B3-16-7, is easily identifiable.

[22] 92 CDF 40-et 41/D1 à D233/D.138 dans Le Corbusier, *Le Modulor*, Boulogne, 1950, CTLES V2 VIII 17, Fonds Whittemore, Thomas-Institut byzantine. See also FLC/F2-9-105.

[23] See Ozenfant and Jeanneret 1923 for a discussion of the use of hieroglyphs and of 'hieratisme'.

[24] This document is not officially classified and numbered and can be found between pages 412 and 413 of Le Bon 1884.

[25] For a discussion of the rhythmic articulation of matter as an architectural embodiment of time in ancient bas-reliefs as well as in the Modulor, see Carl 1991.

[26] According to his own notes, 'work undertaken by André Charbonnier, intellectual, intimate friend of Balanos, the Greek professor chief of restorations of the Parthenon. These plans were given by Charbonnier to Albert Jeanneret' (FLC/V-675). See also Le Corbusier [1954] 2000: 209: 'October 1948. By sheer chance, a set of documents of exceptional interest fell into my hands. They were copies of the original plans drawn up in 1923–31 by M. Balanos, giving the exact measurements of each of the marble blocks used in the building of the Parthenon: ledges, columns, entablature'.

[27] As he often did, Le Corbusier misremembers the year he took the journey.

[28] See Carreri 2013, Gilot 2013, Gravagnuolo 2008, and Quetglas 2012.

[29] The other Pompeiian sketches Le Corbusier used can be found in Le Corbusier 2002: Carnet 4, 47, 87.

[30] In his 1911 sketch, Le Corbusier interestingly comments 'bonne echelle' ('good scale') next to plan for the cella. Le Corbusier was interested enough in the cella to also take a photograph of it (FLC/L4-19-116).

[31] He had sketched the Thermes in previous pages (2002: Carnet 4, 41, 43) and also photographed them (FLC/L4-19-119).

[32] He also documented it photographically (FLC/L4-19-230). Emanuele Carreri proposes an interesting relationship between the impluvium and Le Corbusier's Modulor-designed tomb (2013: 487).

[33] For example, the measurements that Le Corbusier notes on the sketch of the Iviron monastery (2002: Carnet 3, 57) work just as well: 450 centimeters (226 + 226 = 452), 110 centimeters (113), 480 centimeters (478), and 140 centimeters (139.7).

[34] According to Pierre Saddy, 'The students copied a wide variety of models'. Among two-dimensional ones were 'documents, portfolios of engravings, albums where the best examples taken from publications are selected, photographs (from the famous Alinari collection, for example), postcards, and so forth'. Three-dimensional models included 'the traditional casts of ancient statuary along with the famous Platonic solids, the cube, the cylinder, the cone and the sphere represented in wood' (1988b: 15).

[35] For example, the Church Fathers claimed that Jonah's three days and nights in the belly of the fish prefigures Christ's burial and resurrection.

[36] This remolding of the past on the basis of modern precepts finds parallels in contemporary works of Sigfried Giedion (1941) and Rudolph Wittkower (1949) that established a porous relationship between postwar modernism and architecture's history.

[37] As discussed, for example, in FLC/D2-17-257: 'Izmir being under the menace of earthquakes, a proposal of antiseismic construction is made, on the base of the modulor. It is standard posts and beams of 2m26 each'.

Competing Interests

The author has no competing interests to declare.

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