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Corbusian space and urban corpus: the Unité d'habitation in Marseille and the Bastide town of Monpazier

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Abstract

Le Corbusier's multi-layered understanding of corporeality evolved through successive appropriations and dismissals of contrasting theories, experiences, and paradigms. In his unpublished manuscript *La Construction des villes* (1910), he enthusiastically endorsed Camillo Sitte's conception of space as an emanation of the human body, predicated solely on its physiological effect; and he dismissed urban structures that are legible in plan but not sensorially comprehensible as irrelevant. However, in *Urbanisme* (1925) he polemically inverted his earlier position, deriding Sitte's physiology and exhorting the virtues of rational planning and pure geometry dissociated from the human body.

Intriguingly, Le Corbusier's reference to the Bastide town of Monpazier (1284) in *Urbanisme* and the photographs that he archived suggest a third reading of *corporalité*, with a nuance and ambiguity that transcends either of his earlier polemical positions. The medieval founders of Monpazier conceived of the city as a substitute for the political body of their king. Monpazier is experienced both as a singular, cohesive urban corpus, and as an agglomeration of separate houses. Le Corbusier's Unité d'habitation (1947–1952) extends this genealogy of twofold readings. While the Unité confronts its visitors as a standing, singular corpus of a vertical city, its façade exposes a diagrammatic representation of its urban assemblage of maisonnettes.

Introduction

The visual elements necessary to the beauty of a square derive, all of them, from a basic condition: corporeality. [...] A plastic work of art must be concrete and visually comprehensible. [...] If a square is not a room with vast panelled walls, with carefully positioned furniture, with windows offering beautiful views, it can in no way claim beauty for itself; equally a long and straight street that is not closed at its end is a non-existing volume to the eye and therefore without expression.¹

Charles-Édouard Jeanneret-Gris, *La Construction des villes*, 1910

Today, our enthusiasm is for exactitude. An exactitude carried to its furthest limits and raised to an ideal: the search for perfection.²

[...]

One could say that the further the works of mankind are removed from our direct grasp, the more they tend towards pure geometry: a violin or a chair that both touch our body are of a less pure geometry, but the city is of pure geometry. Free, man strives for pure geometry. He pursues what is called order.³

[...]

Great cities are the spiritual workshops in which the work of the world is done. [...]

Everywhere there are remains, or units still intact, which provide us with a model: Egyptian temples, the rectilinear cities of North Africa (e.g. Kairouan), the sacred cities of India, the Roman cities of the Empire, or those built in the great tradition: Pompeii, Aigues-Mortes, Monpazier.⁴

Le Corbusier, *Urbanisme*, 1925

In the unpublished book manuscript *La Construction des villes* the young Charles-Édouard Jeanneret-Gris professed ideals for urban public space that are diametrically opposed to the well-known ideological position of the Le Corbusier of the 1920s. Both statements revolve around conceptions of ‘corporeality’. While the young Jeanneret associated urban space with the enclosed space of a room, thereby drawing it close to the human body, and understanding it as a spatial emanation of the human being, the Le Corbusier of *Urbanisme* disassociated urban space from corporeal habituation and provocatively assigned it to abstract geometry. However, his references to ‘great cities’ included the Bastide town of Monpazier, indicating his interest in yet another conception of urban space, one that fuses geometry with corporeality.

Beatriz Colomina has noted that ‘the research into Le Corbusier is organized by archival excesses’, owing to the scope of available materials that range from correspondence, telephone bills, postcards, legal documents, clippings from newspapers, drafts for lectures, scribbles, notebooks, sketchbooks, diaries to paintings, sculptures, drawings, and project

documentation. The immensity of archival material available to scholars may suggest ‘that it would be possible to retrace [...] the itineraries of his architectural and urban reflections’.⁵ Paradoxically, this is not possible, as the exhaustive but also purposefully edited archive enables Le Corbusier to hide in plain sight.⁶

Nevertheless, the material included in the archives, as well that which was pointedly excluded, offers clues to items and ideas that had informed Le Corbusier’s thought process but are absent from the condensed and polemicised articulation of these thoughts in his writings. Contemporaneous material in his personal archive – more specifically, the French translation of a journal article on the medieval Bastide towns in Southern France and an evocative photograph of the cornières surrounding Monpazier’s market square – complements the reference to Monpazier in *Urbanisme*.⁷ Monpazier’s muscular cornières provide a tangible expression to the abstract geometrical schema that organises its urban space, endowing it with corporeality. Le Corbusier’s interest in the Bastide towns, and specifically in Monpazier and its cornières, suggests that the polemical divorce of urbanism from corporeal habituation might not have been as unequivocal as he proclaimed in *Urbanisme*.

In this context, Le Corbusier crucially excluded from his archives his 1910 manuscript on *La Construction des villes*. This omission went unnoticed until Harold Allen Brooks rediscovered it in private possession in 1977. Brooks published his studies on the manuscript as ‘Jeanneret and Sitte: Le Corbusier’s Earliest Ideas on Urban Design’.⁸ Drawing on Le Corbusier’s correspondence and on successive versions of the book manuscript, he retraced the influence that the ideas of the Austrian architect, painter, and city planning theorist Camillo Sitte exerted on the young Jeanneret. Brooks demonstrated that Le Corbusier’s 1925 book *Urbanisme* re-organised the contents of *La Construction des villes*, while polemically refuting his earlier, axiomatic convictions.⁹ In his critical edition of *La Construction des villes*, Christoph Schnoor documented the inception history of the book, its

intellectual roots in ‘Einfühlung’ [empathy] theory, and Jeanneret’s appropriation of the principles of urban design that Camillo Sitte advocated and were further elaborated by his followers Karl Henrici, Paul Schultze-Naumburg, Albert Erich Brinckmann, and Joseph August Lux.¹⁰

I am interested in how three competing personas – the young Charles-Édouard Jeanneret-Gris, the polemical writer and urbanist Le Corbusier, and the architect of spatial complexity Le Corbusier – are intertwined in the Unité d’habitation and its unique proposition for public space. The Unité exemplifies the ‘Corbusian’ notion of building as the creation of a freestanding object in space. The building is approached diagonally, recalling Le Corbusier’s account of the analogous approach to the Acropolis¹¹ that he illustrated with a drawing by Auguste Choisy.¹² As precedents for his new model of communal space, Le Corbusier mentioned the Carthusian monastery at Ema and Charles Fourier’s Phalanstère. But, in contrast to these well-rehearsed narratives, Le Corbusier’s negation of *La Construction des villes* obscures the origin of, as well as the gradual shifts between, successive interpretations of corporeality and urban structure that led up to the conception of the Unité as a vertical town. This trajectory calls for further scrutiny.

Three distinct conceptions of corporeality and urban space are at stake here: first, the empathy theory that underpins *La Construction des villes*; second, its subsequent inversion in *Urbanisme* in favour of geometrical diagrams of ordering a city at a scale that is detached from the human body; and lastly, a singular corpus-volume as ‘cite-jardin verticale’, the Unité d’habitation. This last conception is bound up with the analogy between urban structure and human body in *Précisions* (1930) and *La Maison des Hommes* (1942). It is rooted in the Cartesian skyscraper prototypes that Le Corbusier developed between 1919 and 1937, and in the 1920s projects for a cite-jardin verticale and immeubles-villas. These conceptions mirror

Monpazier, a medieval town that can be read simultaneously as a collection of multiple houses, and as a singular urban corpus consolidated by a geometrical diagram.

Urban space as emanation of the human body: *La Construction des villes*, Camillo Sitte, and empathy theory

Camillo Sitte grounded his book *City Planning According to Artistic Principles* (1889)¹³ in his studies in archaeology and art history at the Technical University of Vienna, and in anatomy and the physiology of vision with Ernst Wilhelm von Brücke, a leading physiologist at the time. Sitte conceived of urban space based solely on the effect that it has on the observer. His medical-artistic schooling led him to contend that ‘only what can be seen is of artistic importance: for instance, the single street, or the individual plaza’.¹⁴ Sitte’s emphasis on the link between corporeality, perception, and space bears implications for both the design and experience of cities. He blamed ‘the use of T-square and compass on the drafting board’,¹⁵ and the abstract conception of urban projects ‘without any organic relation to their surroundings’¹⁶ for the contemporary lack of unique, corporeally resonant spaces. In Sitte’s words:

the irregularity of old planning is almost always of a kind that one notices only on paper, overlooking it in reality; and the reason for this is that old planning was not conceived on the drafting board, but instead developed gradually in natura, allowing for all that the eye noticed in natura and treating with indifference that which would be apparent only on paper.¹⁷

His radical emphasis on corporeality and the physiology of vision drove Sitte to dismiss as irrelevant urban elements such as street networks that ‘can never be comprehended sensorially, can never be grasped as a whole except in a plan of it’.¹⁸ For this reason, *City Planning According to Artistic Principles*, unlike its influential French translation by Camille Martin of 1902, does not include a chapter on streets.

The early reception history of *City Planning According to Artistic Principles* coincides with the emergence of Einfühlungstheorie [empathy theory] within the German-speaking world. This discourse was developed in 1893 over three publications, by Adolf Hildebrand, August Schmarsow, and Theodor Lipps. In his *Prolegomena zu einer Psychologie der Architektur* of 1886, Heinrich Wölfflin had already outlined the basic premises of this discourse in a way that calls to mind the cornières of Monpazier and the pilotis of the Unité:

We have carried heavy loads and have known pressure and counter pressure. We have collapsed on the ground when we no longer had the energy to oppose the downward pull of our own body's weight. That is why we are able to appreciate the proud happiness of a column and to understand the tendency of all matter to spread shapelessly on the ground. [...] Powerful columns produce energetic innervations in us, and the wideness or narrowness of spatial proportions controls respiration. We innervate our muscles as though we were those load-bearing columns, and we breathe as deeply and fully as though our chest had the width of those halls.¹⁹

While the discourse on empathy theory coincides with, rather than follows, Sitte's book, several authors took it upon themselves to elaborate on Sitte's ideas and describe in detail how these might be applied to the practice of urban design. In his book *Platz und Monument*, Albert Erich Brinckmann extended Sitte's critique of abstract and two-dimensional planning, differentiating between urban plan and urban body, and stating that:

the regular layout with streets crossing each other at right angles and rectangular squares [...] is the primitive plan that reappears wherever it is not the architectural formation of the urban body that is sought, but rather the rapid determination of the urban plan.²⁰

Karl Henrici, in 'Die künstlerischen Aufgaben im Städtebau' (1891)²¹ and in 'Langweilige und kurzweilige Strassen' (1893),²² applied Sitte's ideas to the design of urban streets, advancing urban design principles based on integration of the experience of the eye, in seeing, with that of the body, in walking through a city.²³ Schultze-Naumburg²⁴ and

Henrici²⁵ believed that streets should respond to the existing topography rather than follow idealised and standardised requirements for incline and plan geometry (Fig. 1). Jeanneret encapsulated their arguments in the memorable metaphor of the ‘pack donkey’. He explained that the donkey seeks out an irregular path across sloping terrain, alternating phases of ascent with those of respite.²⁶ Jeanneret thus conflated the energy-conserving instincts of the donkey with humans’ perceptual need for varied sequences of alternating spatial experiences.

In his manuscript *La Construction des villes*, Jeanneret absorbs the ideas of Sitte and his followers beyond theoretical reflection, as he merges them with his personal experience. This becomes palpable in his account of the ‘promenade architecturale’ which is saturated with his emotional responses to spatial experiences as he approached and moved through the Acropolis on his *Journey to the East* in 1911.²⁷ Through his acquaintance with August Klipstein, a German art student who travelled with him on the Voyage d’Orient, Jeanneret became familiar with the writings of Wilhelm Wundt on empathy theory. However, his knowledge was based chiefly on reading Sitte, along with the applied theories of Brinckmann and Henrici. Indicating a possible awareness of the roots of empathy theory in Friedrich Nietzsche’s writings on space, Jean-Louis Cohen has pointed out that Le Corbusier, in a copy of *The Gay Science* that he had received from Amandée Ozenfant in 1923, underlined a part of the aphorism *Architektur für die Erkennende*: ‘We want to have ourselves translated into stone and plants, we want to take walks in ourselves when we stroll through these hallways and gardens’.²⁸

The influence of empathy theory is evident in Jeanneret’s ‘concoction of neologisms based on German’, including the term ‘corporalité’ which he prefers to use over the French term ‘espace’ whenever he wants to express palpable, perceptible spatiality.²⁹ This is the first in a series of contrasting definitions of corporeality that Le Corbusier was to adopt, develop, and discard in the years that followed. Such definitions include: the standardised human body

as a machine that does not resonate spatially; forms of the nude body translated into architectural shapes; the human body used as a model and analogy to conceptualise an urban corpus; and the human body translated into a system of mathematical proportions in the *Modulor*. In what follows, I discuss the last two definitions in detail, because they are especially significant for the main subject of this article, in order to show that Le Corbusier's dismissal of earlier definitions of corporeality was not absolute; in fact, the architect amalgamated these competing definitions in his built work. To a lesser extent, earlier definitions resurfaced in his written work, such as in *New World of Space* of 1948, which re-emphasised that 'the release of aesthetic emotion is a special function of space'.³⁰ In this book, Le Corbusier linked 'aesthetic emotion' to 'a phenomenon of concordance' arising from a 'reaction of the setting', invoking ideas profoundly resonant with empathy theory.³¹

Geometrical order versus corporeal experience: *Urbanisme* and Monpazier

In *Urbanisme* (1925), translated into English as *The City of To-morrow and its Planning* (1935), Le Corbusier reversed his earlier endorsement of Camillo Sitte. He polemically dismissed Sitte's book as 'a most wilful piece of work' and 'a glorification of the curved line' that 'confounded the picturesque with the conditions vital to the existence of a city'.³² He dedicated the first chapter of *Urbanisme* to a brusque dismissal of the 'pack donkey's way',³³ undeterred by the fact that this metaphor had not been used by Sitte or other authors associated with empathy theory. On the contrary, Henrici had distinguished between pedestrian traffic seeking the shortest path, and vehicular traffic preferring paths of alternating level of incline.³⁴ Hence, *Urbanisme* is Le Corbusier's rebuttal of his own *La Construction des villes*, although this has become apparent only after the re-discovery of the disavowed manuscript. Le Corbusier did not speak about *La Construction des villes*; only towards the end of his life did he mention his 'livre un peu idiot' [somewhat idiotic book].³⁵

Despite Le Corbusier's polemical reversal, a hint of continuity in his developing ideas about the city is also evident; by 1915, he had indeed resumed work on *La Construction des villes*, conducting his research at the Bibliothèque Nationale in Paris and revising his main thesis on the basis of the Classical principles of town planning with which he was fascinated then.³⁶ Revisiting the same work between 1922 and 1925, he retained the thematic content and organisation of the 1910 version, but he completely rewrote the text to invert the thesis. But concurrently to these breaks, inversions, and polemics, Le Corbusier continued to develop the earlier ideas, as evidenced by the transformation of the notion of an 'exterior room' into the surreal 'chambre à ciel ouvert' of the Apartment Bestegui (1929–1931) or the promenade architecturale of the Villa La Roche-Jeanneret (1923–1924), which translated the urban lessons learned from Sitte into a sequence of interior spaces.

Further indications that the break might not have been as absolute as it may appear are, as I already mentioned, the reference to the Bastide town of Monpazier in *Urbanisme* and the inclusion of photographs of Monpazier's market square in Le Corbusier's personal archive of 1925. In *Urbanisme*, Monpazier is introduced as a 'demonstration of a noteworthy plan', that is, a rationally organised plan, defined by its geometrical clarity, imposed on the site. Monpazier was founded in 1284 as one of the Bastide towns that the English and French kings established in the thirteenth and fourteenth centuries in an area of Southern France which was then known as Aquitania. The founders attracted settlers to the Bastides by granting them land, as well as fiscal, economic, and juridical incentives. Settlers had in turn to conform to a rational and exacting town layout which broke with traditions of medieval urbanism and planning. According to Jan Pieper, this was the first time after antiquity that the city was re-conceived as a unity, a definite and final entity persists in a planned ideal condition, instead of growing contingently.³⁷

At first sight, Monpazier thus provides an example that supports Le Corbusier's argument for disposing of the medieval, picturesque urbanism of 'the pack donkey's way' in favour of exactitude, order, and pure geometry. However, the ambiguous role of Monpazier within *Urbanisme* is revealed when one considers the notion of corporeality that this town embodies. Adrian Randolph has explained that:

the grid, or rather the predictability of the Bastide, signals a coherency, a hidden power controlling the environment. The Bastide is an image of divine rule. As such, it is a substitute for the body (or one of the bodies) of the absent king.³⁸

Monpazier's grid is articulated and elaborated in a way that amalgamates this definition of corporeality as a unified urban body, which can be related to notions of empathy theory that describes how a human subject feels themselves into space by identifying their body with spatial enclosure. This amalgamation of competing notions is clearly expressed, and can be tangibly experienced, in the four streets that lead to the market square. As they pass the square, these streets turn into covered arcades (Figs 2–4). This geometrical manoeuvre serves to provide a spatial terminus - and thereby volume and corporeality - to the streets, as well as an uninterrupted enclosure via continuous arcades – and thereby also volume and corporeality - to the square. This same geometrical manoeuvre also affirms a reading of Monpazier as a singular urban corpus, with the arcades around the market square uniting its built mass into a cohesive composition. Monpazier demonstrates an intriguing reconciliation of the antagonism that Le Corbusier evoked in *Urbanisme*: that between the coherence of the urban body, which is achieved through pure geometry, and the emphatic identification of a human subject's body with built enclosures.

Urban corpus, topography, and built anatomy

Urbanisme is the first book that Le Corbusier published on urban design. It marks his

departure from an early fascination with an urbanism of corporeal experience to the polemical embracement of geometry, order, and exactitude that characterises his mid-career writings. His built and unbuilt projects of the 1920s and 1930s adopt less polemical, and more exploratory, approaches towards the same issues. The projects that seek answers to the problems of low cost, high density, and mass-produced housing are of particular interest here, as their development points towards the Unité d'habitation in Marseille (1946–1952), which synthesises and realises ideas and conclusions from these earlier pursuits.

Throughout the 1920s, Le Corbusier's conception of a dense 'cité-jardin verticale' appears in different guises. The underlying idea first appeared in the 1922 project for Immeubles-villas.³⁹ As the architect recounted, the spatial concept emerged from an after-dinner remembrance of an Italian Charterhouse, the Carthusian monastery at Ema, which he also cited as a reference for the Unité.⁴⁰ As in the monastery, each dwelling unit in Le Corbusier's Immeubles-villas encloses a private courtyard. Repeated units then form a vertical checkerboard grid; the façade alternates between solid and void fields. The ensuing building slabs enclose a rectangular, communal courtyard. Expressed in the terms that Jeanneret-Gris had established in *La Construction des villes*, the communal and private courtyards are exterior rooms with panelled walls and windows offering beautiful views. Two additional unrealised projects of 1925 (Cité jardin, and Immeubles-villas, Boulogne-sur-Seine) reiterate this configuration of porous checkerboard slabs enclosing exterior spaces.⁴¹

In 1920, Le Corbusier had designed a small group of houses for workers at Lège, a village on the Atlantic coast near Bordeaux, for the industrialist Henri Frugès, whose father owned a factory nearby. Another commission by Frugès, for a model residential community in Pessac, in 1924 finally gave Le Corbusier the opportunity to test the ideas he had been iteratively developing about construction methods and spatial configurations for low-cost, mass-produced housing. The Quartiers Modernes Frugès, as it is now known, comprises fifty-

one houses, out of the originally projected 200. In the 1920s, Pessac was a rural site that had not yet been absorbed into the conurbation of Bordeaux. The low densities of the site and the projected housing prevented Le Corbusier from implementing his earlier prototypes for a dense, vertical Cité-jardin or Immeubles-villas. Instead, he adapted these models to a series of patterns, each constituted by the repetition of a distinct type of single-family house, based on square grids of 5×5 m and 2.50×2.50 m. A series of two-storey houses form the first pattern, while the arched roofs that span the gap between volumes create a series of double-height loggias at the ground level. The continuous street elevation resonates with the alternating pattern of solids and voids of the Immeubles-villas. Two-storey row houses with a rooftop terrace taking up half of each top floor plan constitute a second pattern, with the orientation of adjacent houses rotating to form a checkerboard pattern of solids and voids in the roof elevation. Freestanding three-storey volumes that line up perpendicular to the street establish a third pattern. A colour scheme developed collaboratively by Le Corbusier and Henri Frugès serves to integrate the houses into a singular, coherent configuration. Rather than employing colour to create a unique character for each house, the two men decided to paint each face of the volumes in a distinct colour. As such, colours establish rhythms across the pattern of solids and voids, creating a unified composition that is reminiscent of a Corbusian Purist painting.

It is during the design of Pessac that Le Corbusier became interested in Monpazier; his personal archive includes a set of elevation drawings of Pessac juxtaposed with a photograph of the cornières at Monpazier. In Pessac, as in Monpazier, a series of individual houses are bound together to form an urban corpus. Geometrical grids and repeated patterns underpin both Pessac and Monpazier, inducing a coherency and regularity that can be sensed throughout. However, regularity is achieved by different means in each case. Monpazier's grid provides coherency to a series of tightly spaced houses; the craftsmen constructing each

house introduced variations, thereby avoiding monotony. By contrast, Pessac is governed by a modular system of 5×5 m and 2.5×2.5 m grids that facilitates the standardisation of building elements. Conscious of the monotony that can ensue from repetition and standardisation, Le Corbusier varied the proportions of the volumes, their spacing, the colours of their faces, and the rhythms of the grid. As such, Monpazier and Pessac stand in sharp contrast to *La Construction des villes* and to Camillo Sitte's endorsement of 'the irregularity of old planning [...] developed gradually in natura'.

However, Le Corbusier's break from *La Construction des villes* is not as absolute as it may initially seem. Contemporaneous with Pessac, the Villa La Roche-Jeanneret is organised around an interior promenade architecturale deriving from a particular street configuration that the young Jeanneret had studied in 1911. He had discovered this configuration in an article by Karl Henrici, who diagrammed and described the experience of a pedestrian in a street that curves in one direction, thereby progressively revealing an object of focus in the other direction.⁴²

Le Corbusier's visionary urban projects of the late 1920s and 1930s developed another constituent idea of *La Construction des villes*, that of the relationship between urban morphology and topography, closely intertwined with viewpoint and experience. In 1911, the architect had embraced 'the path of the pack donkey' as a principle of urban design that responds to topography and creates varied sequences of alternating spatial experiences. In 1925, *Urbanisme* reversed this position to espouse 'pure geometry'. But in contrast to those radically polarised positions, Le Corbusier's subsequent urban projects test a series of hybrid approaches. His 1929 visionary project for Rio de Janeiro explored such an alternative paradigm, with its long curvilinear buildings embracing and following the contour lines of the topography, while the building mass simultaneously remains autonomous by means of the pilotis that raise it above the ground.⁴³ Le Corbusier's 1929 proposal for São Paulo adopted

yet another alternative approach: it imposed a Cartesian cross, constituted by a singular built volume, on undulant topography.⁴⁴ Analogous to the Roman aqueduct of Segovia that Le Corbusier visited in 1928, keeping a postcard of it in his files, the eaves line of this building is perfectly horizontal. While the proposals for Rio and São Paulo differ in their contrasting responses to topography, in both cases it is a singular, large building volume that dominates the project.

Le Corbusier developed both ideas through sketches depicting aerial views, which he claimed to have produced during airplane flights.⁴⁵ This is significant for the way in which he conceived and conceptualised those projects, drawing on his extensive experience of flying over South America at the invitation of the French Compagnie Générale Aéropostale. In an illuminating publication entitled *Aircraft*, he wrote:

the airplane had revealed everything to us, and what it had revealed provided a great lesson. [...] For one day soon the implication of the bird's-eye view, that nobility, grandeur and style should be brought into the plan of our cities, will be a fact.⁴⁶

In 1930, Le Corbusier again took part in a number of aerial expeditions, this time over Algeria with his aviator friend Durafour.⁴⁷ The long, curvilinear building geometries responding to the topography in his Plan Obus for Algiers elaborate and further develop the theme first explored in the proposal for Rio. The Plan Obus includes yet another familiar trope, a further iteration of the Cartesian skyscraper prototype that Le Corbusier had been developing since 1919. This new prototype breaks with the repetitive stacking of floor plates of the earlier versions; instead, it proposes a vertical cité that expresses and elaborates its internalised urban structure in the composition of its façade. This elaboration of urban structure progresses one, crucial, step beyond the Immeubles-villas, which simply exposed a checkerboard pattern of solids and voids, apartments and loggias, in its façade. The façade of

the Algiers skyscraper articulates its interior, including a restaurant, hotel, offices, and archives, as an assemblage of patterns.

Le Corbusier's fascination with the aerial view and his exploration of a 'vertical city' that reveals its structure in the façade of its singular, upright volume is bound up with a third, complementary trope: the human body as a metaphor for architectural and urban structure. Contradicting the *Urbanisme* conception of the city as pure geometry, this idea surfaces in *Précisions* (1930) in the form of three diagrams: first, a human skeleton (annotated with the term 'pour porter / to support'); second, a muscular schema ('agir / to act'), and lastly, internal organs ('fonctionner / to operate'). These diagrams illustrate a lecture on the plan of the Modern house. *La Maison des Hommes* (1942) presents similar diagrams, annotated with the caption 'architecture, town planning, determination of functions, classification of functions, hierarchy'. They explain the human body through four functional systems: musculoskeletal system, epidermis (skin), digestive apparatus, and circulatory system.

In *Aircraft*, Le Corbusier had explored a dual operative gaze: looking at the airplane as a modern aesthetic object, but also looking from it to arrive at hitherto unknown truths. The Algiers skyscraper implies an analogous dual gaze: looking at the skyscraper as a modern object that expresses its inner workings, similar to the workings of the city and human body diagrammed as functional systems; at the same time, the anatomy of the city is viewed from rooms that have become cockpits. Le Corbusier made this quasi-aerial view explicit in his didactic section through a prototypical Unité d'habitation that formed part of *La Ville Radieuse* in 1935. This drawing summarises two complementary innovations: first, the interiorised street, and second, the apartment as cockpit, as 'the eye that sees'. Le Corbusier's embracement of the aerial view debases Sitte's physiology of vision, which conceived of urban space solely based on the effect that it has on a locally situated observer.

City as corpus: Unité d'habitation and Monpazier

Built between 1947 and 1952, the Unité continues the lineage of earlier housing and urban projects to propose a summative iteration of the cité-jardin verticale, condensed into a singular corpus of increased density. In the Unité, Le Corbusier escalated and radicalised his position on public urban space. To demonstrate this spatial compression, he diagrammatically juxtaposed the Unité with a notional cité-jardin horizontale comprising 350 single houses, which would occupy a surface area of 320,000 m², or eighty times the footprint of the Unité (Fig. 5). The polemical intent of this schematic comparison is evident. But when one considers the specific conception of urban space and corporeality proposed by the Unité d'habitation, another more interesting and more informative comparison might be drawn with the Bastide town of Monpazier. The Unité and Monpazier are both planned cities, founded by an act of will; they are both governed by geometry and exactitude, and embody unique notions of urban corporeality. Besides the conceptual analogies, the numerical and proportional correspondences are striking. The ideal plan for Monpazier delineates 369 plots within the city walls, on an area of 200 × 400 m; as built in 1284, the city walls enclosed 303 plots, suggesting a capacity similar to the Unité's 337 apartments, which can accommodate up to 1600 people (Fig. 6). Originally reaching a similar number, by 2007 Monpazier's population had declined to 520 registered inhabitants. At Monpazier, all plots are of roughly equal dimensions, between 7.30 and 7.80 m wide and approximately 23 m deep; the Unité organises its apartments on a footprint of comparable depth (24.50 m), but only half of the width (3.66 m). Monpazier also encloses spaces of extreme proportions, such as the secondary streets with a width of only 1.80 m, or the extremely narrow 'andrones' between the houses, which receive the rainwater that runs off the sloped roofs, and prevent fires from spreading to the rest of the city. The separation articulated by the andrones strengthens a perceptual reading of Monpazier as an assemblage of freestanding houses against the

competing reading of it as a singular urban corpus; both interpretations remain simultaneously, or rather alternately, legible. The cornières are instrumental in eliciting a perceptual reading of Monpazier as a singular urban corpus, despite its constitution as a series of houses designed and built by separate families of settlers. In a reverse operation, the interpretation of the Unité's apartments as 'maisonnettes' [in English: little houses], as well as the occasionally far-reaching modifications by inhabitants that differentiate maisonnettes from each other, allow the Unité to be read as a city, despite its origin in the singular vision of an architect, and despite its striking and singular corporeality.

Beyond scalar comparability, Monpazier serves to expedite a comparative discussion of two key aspects: first, metaphors of the human body and the striking analogies between the cornières at Monpazier and the pilotis at the *Unité*; and second, the bodily movement and the dual role of tracés régulateurs. The surveyors of the Bastide towns physically incised tracés régulateurs into horizontal ground, tracing their own bodily movement while diagramming the future travel of inhabitants. By contrast, Le Corbusier superimposed tracés régulateurs onto the Unité's vertical façade, akin to the way that Matila Ghyka had traced over photographs of the human body and face.

Corporeal metaphors: the cornières at Monpazier and the pilotis at the Unité d'habitation

Three contrasting linkages between corporeality and the city are at stake here. The first linkage refers to understanding the city as a collection of fragments emanating from the human body. Because Camillo Sitte founded his conception of urban space on physiology (perception) and physical experience (corporeality), he dismissed that which a spectator cannot hold in view, such as the structure of the city and the street network that 'can never be grasped as a whole except in a plan of it', as irrelevant to urban design.⁴⁸ Hence, Sitte could not conceive of the city as a corporeal unity, as an 'urban corpus'.

The second linkage refers to comprehending the city as an urban corpus ordered by a hidden power. Monpazier, as a geometrically ordered city of the late medieval age, embraces the notion of the city as a corporeal unity. Although it cannot be held in view, its urban structure becomes the matter of experience, through the awareness of a hidden power that controls and orders the urban environment. Becoming palpable in the city's regular and predictable layout, this invisible force can also be conceptualised as a substitute for the body (or one of the bodies) of the absent king.

The third linkage refers to perceiving and experiencing corporeality and the city in separation. Because it is the vertical section rather than the horizontal plan that defines the primary order of the Unité d'habitation, the façade of the Unité diagrams its sectional organisation, thereby exposing it to view at a single glance (Figs 7 and 8). The *Unité* confronts the spectator as a vertical city, as a standing body that condenses the horizontal city into a single volume. This transposition from the horizontal plane of corporeal movement to the vertical plane of pictorial representation comes at a price, as the visual perception of urban structure becomes segregated from the physical experience of urban space. This translation on the façade exposes the urban structure and renders it legible; but it also separates the experience of urban space and the corporeality of enclosures from it.

Empathy theory, which maintains that it is possible to 'feel oneself into' a space or an object, is instructive for understanding how both Monpazier, through the cornières enclosing its market square, and the Unité, through the pilotis supporting its upright mass, engage corporeality (Figs 9 and 10). This resonates with Wölfflin's recognition that 'powerful columns produce energetic innervations in us' and that 'we innervate our muscles as if we were these columns'.⁴⁹ Correspondingly, the pilotis of the Unité engage corporeal experience; reviewers of the Unité have long recognised this physiological mechanism. Vincent Scully has described how the Unité 'stands upon its muscular legs as an image of

human uprightness’, defining the building mass supported by the pilotis as a ‘standing body analogous to our own’.⁵⁰ In the same vein, Charles Jencks has discovered ‘the graceful power of this heavyweight boxer in the taut “legs” of the building’, discerning its ‘tough anthropomorphism’.⁵¹ The Unité engages its visitors physiologically, through the pilotis supporting its upright mass, and perceptually, through the urban layout diagrammed on its façade.

While the pilotis negotiate the intersection between the ground plane and the upright body, the cornières resolve another conceptual intersection between the ‘exactitude’ of Monpazier’s ideal plan and the corporeal-spatial enclosure of its market square. The French term ‘cornière’ means ‘pertaining to a corner’ or ‘forming a corner’; in urbanism, it is used to describe the corner of a square framed by arcades.⁵² As described earlier, to avoid disrupting the spatial enclosure of the market square, the streets are turned into covered arcades, as the envelopes of the buildings surrounding the square are pushed inwards (see Fig. 4). While this manoeuvre ensures uninterrupted enclosure, it also makes it impossible for a rider on horseback to enter the square. In resolving this conflict between the exact geometry and the needs of the human body, the arcade pillars at the corners are separated and dislocated, creating a tall gap between houses which enables riders to access the square. This local deviation from the ideal geometry is of interest in several respects: first, it maintains a degree of ambiguity between the city as an agglomeration of houses separated by the andrones (gaps) between them, and the city as a singular, cohesive urban corpus. If the houses at the corners of the square were united in a singular pillar, then the balance would decisively tilt towards the latter, violating the ambiguity of readings. Second, the sense that the ideal and exact geometrical plan has been contaminated with a local disruption is heightened by the geometrical differences between the two pillars and houses forming the cornière, as their consoles cantilever at differing heights (see Fig. 9), contrary to our post-medieval sense of

precise detailing. While we perceive the cornière as a unity formed by two houses, the medieval artisans and builders worked on each building as if it stood by itself.⁵³ Third, the cornières are the most visible indication that the physiological impact of Monpazier does not draw on the linear extrusion of its two-dimensional schema, but rather on its translation into a three-dimensional volumetric composition. By resolving the neuralgic point of Monpazier's geometry, the cornières exemplify this act of translation. Analogous to the pilotis, they act as standing bodies confronting the pedestrian and equestrian viewers; the palpable mass of pilotis and cornières engages corporeal experience and invites emphatic identification.

From tracés régulateurs to the Modulor

The term 'tracés régulateur' predates its use by Le Corbusier. Medieval arpenteurs (surveyors) inscribed the Bastide town's plan on the ground through tracés régulateurs, using surveying post and knotted cord in a physical activity that entailed the movement of the human body on the horizontal ground plane. Spiro Kostof has explained the surveying of Bastide town plans, diagramming how diagonals of adjacent blocks generated the block dimensions of Grenade-sur-Garonne (Fig. 11).⁵⁴ Le Corbusier appropriated the term 'tracés régulateurs' to describe a system of lines used to generate harmonic proportions on the façades of his villas of the 1920s and the Cartesian skyscraper of his *Ville Radieuse*. Hence, tracés régulateurs were transformed from groves, incised at full scale into the ground by the arpenteurs, in a physical exercise that involved their entire bodies, to lines traced by hand with pencil and ruler on a scaled representation of a façade. In this process, the relationship of tracés régulateurs with the human body fundamentally changed. Le Corbusier referred to architectural theorists such as August Thiersch and geometers such as Matila Ghyka who used photographs of the human body to support the proposition that the Fibonacci Series and the Golden Section permeate nature and culture as universal rules (Fig. 12).⁵⁵

The period from the Unité's first appearance as an idea, forming part of the *Ville Radieuse*, in 1935 to its construction from 1946 to 1952 coincided with a shift of emphasis in Le Corbusier's thinking about proportion and the human body, or from the *tracés régulateurs* to the Modulator. Derived from a frontal representation of the body, the Modulator stands in contrast to the Bastide's dimensional systems, which derive from activities of the body. In the Bastide system of settler allocation, 'journaux' [a day's work] denoted the arable lands for field or vine (2500 m²) that could be worked by a family; 'cazal' meant the same for vegetable garden and henhouses (600–700 m²); and 'ayral' defined the plot needed for dwelling (100–300 m²). Dimensional systems that are dependent on bodily activities have also been examined by Beatrix Zug-Rosenblatt who has pointed out how the empathy theorist August Schmarsow's conception of self-awareness as the foundation of spatial sensation links to the fact that 'common measurements of space and length are [...] oriented to the potentialities of the body, such as the German "Schritt" (step), "Wegstunde" (the distance travelled in an hour) or "Tagwerk" (the amount of work achieved in a day)'.⁵⁶

The Unité's plans derive from a catalogue of (minimal) spaces required for the human body to rest, prepare food, or bathe. Le Corbusier's research into dimensional requirements enabled him to organise space efficiently within the narrow confines of apartments. However, arguably, neither dimensional requirements nor circulation patterns drive the Unité's spatial composition, which rather is informed by optical concepts. Upon emerging from the dim corridor into a brightly lit apartment, we encounter a sequence of frames, which act as camera lenses, or optical organs. All internal apertures, windows, doors, and stairs are orientated towards a single view, which is a screen established by the brises-soleil and the subdivision of the balustrade. Operating akin to gridded screens employed by Renaissance artists for their perspective drawings, the membrane of the external façade serves as a plane that structures the relationship between the viewer and the view. As previously noted, Le Corbusier had

annotated the first drawings of the Unité as part of the 1935 proposal for the *Ville Radieuse* with the caption ‘the eye that sees’. While he famously regarded the plan as the generator, at the Unité the orchestration of views dominates over the choreography of movement, as reiterated by the analogy of the apartments to optical organs. The Modulor serves to complete the translation from the horizontal surface of inscription to the frontal plane of perception, and the segregation of ‘the eye that sees’ from ‘the body that travels’. Striations extracted from a frontal representation of the arrested human body generate a proportional system that controls the geometry of the Unité, as opposed to the geometry of the land and the measure of its striation derived from corporeal labour on horizontal ground.

Conclusion

This examination of the Unité has interpreted spatial ideas and tropes as culminations of long trajectories weaving through different domains of the work of Le Corbusier and Pierre Jeanneret. Those long lineages illuminate a nuanced understanding of space underpinning the Unité that extends far beyond binary oppositions that juxtapose the ‘Corbusian superblock’ with the ‘Sittesque plaza’.⁵⁷ Recent scholarship has exposed the extent to which Le Corbusier manipulated his legacy by suppressing crucial records, such as the manuscript for *La Construction des villes*, but also by accumulating an immense volume of documentation.⁵⁸ That the Unité has become an emblem of a binary understanding of ‘Corbusian space’ is in no small part owing to the immensity of his archives which ‘hide in plain sight’ clues to the ambiguities and contradictions of ‘Corbusian space’ in its changing incarnations over the course of his career.

I have used ‘corporeality’ as an analytical device that serves to retrace the evolution of Le Corbusier’s conceptions of space – from empathy theory and ‘corporalité’ to a geometrical order removed from the human body, and from the human body as an analogue of the city to the city as corpus – as key notions among numerous, shifting interpretations in

Le Corbusier's work. The Bastide town of Monpazier is a reference that weaves through Le Corbusier's writings and archives at their margins. It is associated with the geometrical order of *Urbanisme*, on the one hand, and with corporeality on the other, through powerfully evocative photographs and drawings in the archive. Among the manifold layers aggregating a palimpsest of intentions, intuitions, implications, marginalia, erasures, and contradictions in Le Corbusier's work and archives, Monpazier provides another analytical and comparative device, constituted by enclosed spaces inviting emphatic corporeal experience. But it is also a rare medieval example of rational planning that establishes a cohesive urban corpus, at once very distant to, and yet resonant with, the upright corpus of the Unité.

Le Corbusier's archive and work resonate with a process of thinking and designing that proceeded through a series of transpositions, transformations, and inversions, in which each new conception of space retained traces of its predecessor. As he noted:

intentions are always existent and are rooted in intuition, that miraculous catalyst of acquired, assimilated, even forgotten wisdom. In a complete and successful work there are hidden masses of implications, a veritable world which reveals itself to those it may concern..⁵⁹

Figure captions

Figure 1. Paul Schulze-Naumburg, *Kulturarbeiten*, vol. 4 (Städtebau, 1906), diagrams redrawn by Christoph Lueder

Figure 2. Ideal plan of Monpazier (founded 1284), drawn by Christoph Lueder, 2018

Figure 3. Monpazier (founded 1284) in 2012: 369 plots in ideal plan, 303 plots built since 1284; plot dimensions 7.30–7.80 × 23 m, drawn by Christoph Lueder, 2018

Figure 4. Cornières at Monpazier, plan drawing by Christoph Lueder, 2018

Figure 5. (from left to right) Le Corbusier's juxtaposition of a cité-jardin verticale with a cité-jardin horizontale; juxtaposition of Monpazier with the Unité, drawings by Christoph Lueder, 2018

Figure 6. Le Corbusier, Unité d'habitation, Marseille, 1946–1952: 337 apartments, plan dimensions 3.66 × 24.50 m, drawing by Christoph Lueder, 2018

Figure 7. Le Corbusier, Unité d'habitation, Marseille, 1946–1952, west façade, photographed by Christoph Lueder, 2015

Figure 8. Le Corbusier, Unité d'habitation, Marseille, 1946–1952, east façade, photographed by Christoph Lueder, 2015

Figure 9. Cornières at Monpazier, view towards square, photographed by Christoph Lueder, 2016

Figure 10. Le Corbusier, Unité d'habitation, Marseille, 1946–1952, pilotis, photographed by Christoph Lueder, 2015

Figure 11. Spiro Kostof, diagram of Grenade-sur-Garonne, redrawn by Christoph Lueder, 2018

Figure 12. Matila Ghyka, Proportional Analysis of Helen Wills' Face, First Stage, 1931

Notes and references

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