Le Corbusier and the human body

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Le Corbusier (1887-1965), the famous Swiss-French artist, architect and town planner – celebrated as he is – is also widely criticised for allegedly dehumanising cities, ignoring the dignity of the individual and for introducing an alienating architecture and urbanism. Although the "Modulor" system he developed in the late 1940s in order to relate the human body to dimensions in the built environment is well known, in numerous manifestos and writings spanning fifty years, he also consistently confirmed his compassion for the human well-being and quality of life at all levels. Since his ideology is so diametrically opposed to that of which he is accused, this article explores the actual role of the human body in his work.

Key words: Le Corbusier, human body, Modulor

Le Corbusier en die menslike liggaam

Le Corbusier (1887-1965), die beroemde Switser-Franse kunstenaar, argitek en stadsbeplanner – vereerd soos hy is – word ook wyd gekritiseer omdat hy na bewering stede ontmenslik het, die waardigheid van individue geïgnoreer het en omdat hy 'n argitektuur en stedelikheid van vervreemding ingelei het. Alhoewel die "Modulor"-stelsel wat hy in die laat veertigerjare van die vorige eeu ontwikkel het om die menslike liggaam in verband te bring met afmetings in die bouomgewing goed bekend is, het hy ook in talle verklarings en geskrifte, wat vyftig jaar gedek het, bestendig sy deernis vir menslike welstand en kwaliteit van lewe op alle vlakke bevestig. Aangesien sy ideologie geheel en al teenoorgesteld is waarvan hy beskuldig word, ondersoek hierdie artikel die werklike rol van die menslike liggaam in sy werk.

Sleutelwoorde: Le Corbusier, menslike liggaam, Modulor

ew architectural statements have been so persistently misunderstood and misquoted as Le Corbusier's statement that "a house is a machine for living in". First published in French in 1923 (Vers une Architecture), his critics have ever since been relentlessly accusing him of dehumanising architecture and town planning, of alienating the public, and of neglecting basic human needs. Now, nearly a century later, we still read (Gratz and Mintz 2000: 72): "Le Corbusier changed the view of cities. Buildings became machines. Cities were dehumanized."

Sometimes the language is melodramatic. Bangs (2006: 3-4) writes that Le Corbusier considered the Pavillon de l'Esprit Nouveau (1925) a "minimum living unit" which he – "appropriately", according to Bangs – called the "cell". The author continues: "The arrogance and ignorance expressed in this statement are appalling, and the implications for the dignity of human life are fearful." Bangs apparently did not realise that the "cell" referred to is the biological analogy for Le Corbusier's basic urban building block. Rob Krier (1988: 11) is considerably more acknowledging:

Despite severe economic restraints, Le Corbusier created a living-cell for a family with several children that enjoyed the luxury of a double-height living room in his Unité d'Habitation. It was an achievement that upgraded social housing enormously.

Also, Hugh Pouliot (2011: 2) states disparagingly: "The social environments formed out of [Le Corbusier's] style were mechanistic, alienating, and structured more toward industrial efficiency than human habitation". This judgment is particularly puzzling, since the author, Pouliot (2011: 10), also notes that:

One of Le Corbusier's close colleagues, André Wogenscky, with whom he collaborated on the Unité at Marseilles, remarked that "deep down it was not architecture that interested [Le Corbusier], but people. Architecture was simply his means of affecting them.

Since he worked in Le Corbusier's Paris studio for twenty years (1936–56), André Wogenscky is unquestionably a reliable source. A formidable architect in his own right, he was perhaps echoing Le Corbusier when he described architecture as a "physical milieu [into] which the body is plunged" (quoted in Postiglione 2008: 466).

Balkrishna Doshi (in Takhar 2002: 57-8), the celebrated Indian architect who worked with Le Corbusier as Senior Designer for four years (1951-54) in Paris and four more years in India to supervise his projects in Ahmedabad, is obviously equally trustworthy. He relates how Le Corbusier drew a beautiful, but obviously poor Indian woman, "full of grace and dignity holding on her waist a child" and then commented poignantly: "In our cities, somehow we must see that opportunities which offer such dignity are provided".

Wogenscky and Doshi both allude to an intense and enduring relationship between Le Corbusier's architecture and the people for whom it is intended. They simply affirm what Le Corbusier (1954: 111) declared previously: "Only the architect can strike the balance between man and his environment (man = psycho-physiology; his environment = the universe: nature and cosmos)." It is significant that he recognises that "man" consists of psychological (emotional) as well as physiological (physical) dimensions. Ferreira, De Mello and Duarte (2011: 138) comment that Le Corbusier tried to express this in his work, and added that his position was "a rather holistic view that also recalls humanist thinking."

These various insights motivated me to pursue the present research. The main purpose of this article is nonetheless not to refute negative commentary, but rather, to use some of the critique to frame my message: The human body influenced Le Corbusier's work significantly. I present my reasons in the form of an overview under the following headings: (1) The human body and the Modulor, (2) Anthropometric analogies and city form, (3) The human body and the public realm, (4) Claiming and inhabiting space, and (5) The human body and mythical space.

The human body and the Modulor

Le Corbusier's earliest travel sketches are already evidence of a life-long interest in the dimensions of spaces and in proportions (figure 1). He (1954: 32) claims that "the desire, the urge, the need to build to the human scale" emerged between 1925-33, when his interest in measurements and requirements for the human body ("resting, sitting, walking") began.

Leonardo da Vinci's depiction of the "Vitruvian Man" (ca 1500) was perhaps an early inspiration, but gradually Le Corbusier's principles for ergonomics and spatial requirements for functionality culminated in a proportioning system that he called "the Modulor".

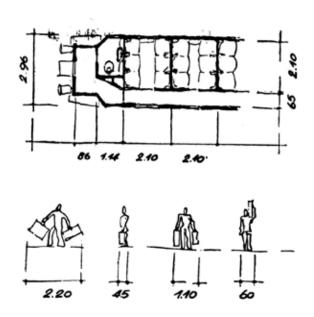


Figure 1
Le Corbusier, dimensional requirements in a train carriage (Le Corbusier 1954: 208).

Although Le Corbusier commenced work on the Modulor in 1942, it was only after World War II that the system was published and extensively applied (figure 2). The Modulor was a measuring tool, based on the human body and mathematics, specifically the rules of the Golden Section and the Fibonacci Series (Le Corbusier 1954: 55). In 1948, he published *Modulor* in French, a theory of dimensions and proportions for which he claims research evolved from primitive huts and nomadic tents (1960: 160-161).

Le Corbusier was obviously immensely proud of this system, writing extensively about it in two books (English editions were published in 1954 and 1958 respectively). Of the Unité d'Habitation, where the Modulor was first applied in a major building, Jo and Choi (2003: 139) succinctly write:

In the residential unit of Marseille, all scales in the entire building are derived from the figure, which not only gives the proportions of the human body but a number of smaller measurements based on the golden section. The boundary between the body and architecture is blurred in many of his works where either the scale figures take on mechanical, architectonic characteristics or the built forms have figural, human qualities. These attempts at blurring the distinction between architecture and the body seem to aim at overcoming the existential abyss which lies between an individual and the objects which compose her world. Le Corbusier is intent on making a clear formal connection between these realms, and his method of relating them has some potential implications with regard to the effects and significance of architectural form for the human inhabitant. These include the breakdown of a strict division between the living human presence and the inert passive object.

Referring to the Modulor, Le Corbusier also propagates "the full-scale application of mathematics in building: three-dimensional urbanism (on the ground and in space)", adding that "measures enter into everything: pilotis, highways and roads, swimming pools, buildings, from top to bottom and in every object of the interior, car parks ..." (1954: 168); that is exactly what he did in Chandigarh (figure 3).

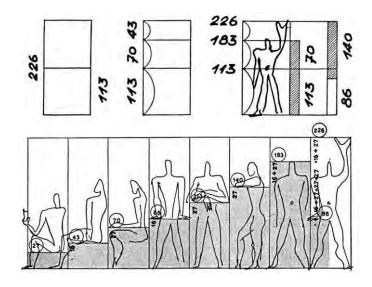


Figure 2 Modulor (Le Corbusier 1954: 66, 67).

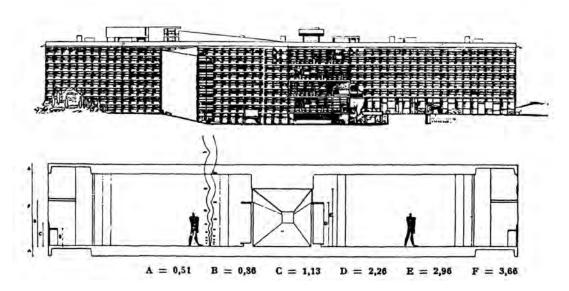


Figure 3
Palace of Ministries in Chandigarh, also known as The Secretariat (Le Corbusier 1958: 220).

Anthropomorphic analogies and city form

In The City of Tomorrow he already refers to cities as "organs" and to open spaces as "lungs" (figure 4). He describes the Contemporary City as a compact and lively "organ" with a "well-organized centre" (1929: 166). In this regard, he became increasingly assertive and would later state flatly that "towns are biological phenomena" (1947: 48) and "the biology of towns must conform specifically to their functions" (1947: 52). From this he never wavered: "Biology! The great new word in architecture and planning" (1960: 155). He now suggests that a plan "arranges organs in order, thus creating an organism or organisms". Accordingly, Industrial Centres, Linear Cities, Unités d'Habitation – these are all organisms.

Accordingly, he intermittently also conceptualised cities as the representation of the human body. Whereas Contemporary City (1922) was distinctly neo-classical, the Radiant City of 1930 was clearly based on an anthropomorphic metaphor (figure 5). And as taxi drivers, waiters, in fact all locals are keen to tell visitors, Le Corbusier also conceived the master plan of Chandigarh as analogous to the human body, with the Capitol Complex as a clearly defined head (Figure 6). Statements by Le Corbusier in this regard are absent in his writings, but the official website of the Chandigarh Administration (2011) is unambiguous:

Le Corbusier conceived the master plan of Chandigarh as analogous to human body, with a clearly defined head (the Capitol Complex, Sector 1), heart (the City Centre Sector-17), lungs (the leisure valley, innumerable open spaces and sector greens), the intellect (the cultural and educational institutions), the circulatory system (the network of roads, the 7Vs) and the viscera (the Industrial Area).

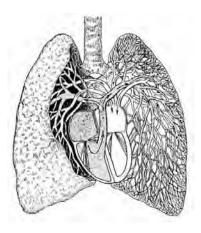


Figure 4
A drawing of lungs in *My Work*(Le Corbusier 1960: 154).

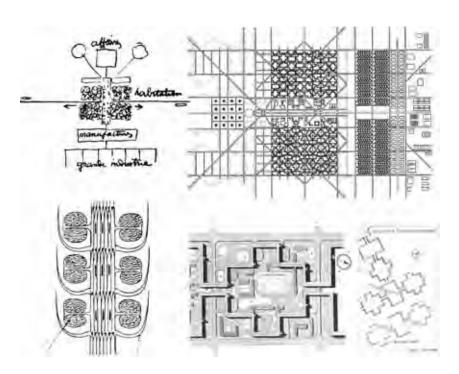


Figure 5
Radiant City diagram by Le Corbusier and the city plan showing anthropomorphic inspiration, 1930 (redrawn by the author after Le Corbusier 1964: 141).

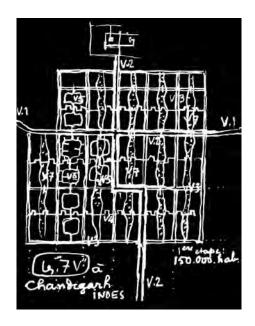


Figure 6 Plan of Chandigarh Phase 1 (Le Corbusier 1958: 211).

The reasons for Le Corbusier's anthropomorphic affinities are difficult to gauge; did he envisage a more familiar environment, one with which people could readily associate, or merely a framework for spatial organisation? Did he actually believe the analogy of the human body could improve the appearance and function of architecture (as somebody once suggested)?

He pursued the biological theme in other ways too. Jencks (2000: 188) notes a change in Le Corbusier's subjects in 1928 when he started to paint shells, rocks and people, and other "natural subject matter and biological forms". While the correlation between the curves of the thighs of fat women (Figure 7) and his series of proposals for South American cities (figure 8), as proposed by Jencks (2000: 189), is totally unsubstantiated, it is an amusing idea, with a serious following; for example, Jo and Choi (2003: 142): "The biological analogy extends so deeply into the forms of the city planning that when Le Corbusier sees the topography as a female body in the Rio de Janeiro, he introduces curvilinear forms into his city planning."



Figure 7 Le Corbusier, drawing of two women on a beach in 1928, crayon, 21 x 31 cm (In Jencks 2000: 190).

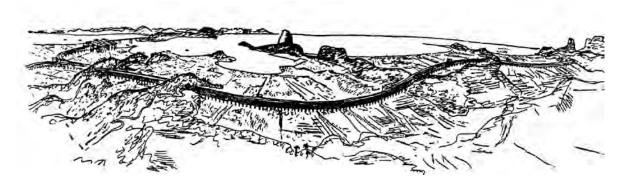


Figure 8 Le Corbusier, sketch of a proposal for Rio de Janeiro, 1929 (Le Corbusier 1964: 225).

Public realm - pedestrians and parks

Since Le Corbusier is often blamed for our car-orientated anti-cities and the destruction of the pedestrian realm, two aspects seem relevant to this discussion: pedestrians and parks. Spiro Kostof (1992: 237) claims that the Modernist vision of a streetless urbanity failed because CIAM (Congrès Internationaux de l'Architecture Moderne, co-founded by Le Corbusier in 1928) could not achieve a separate system of pedestrian movement that would supplement high-speed traffic networks. "What was called for in Modernist theory was a continuous network of paths and streets that, rather than duplicating each other at different levels, diverged entirely to create two distinct realms: one for people, one for cars".

This, however, was precisely what Le Corbusier envisaged (Boesiger and Girsberger 1967: 332). The Radiant City was largely a layered city on pilotis, and allowed uninterrupted and independent pedestrian movement at ground level. Chandigarh again has a completely different circulation system. With major traffic restricted to the roads defining the sectors, the sectors themselves are interconnected by a comprehensive network of commercial streets and pedestrian promenades and strips of parkland, forming an alternate grid shifted a half module. Intermittently, he also used totally different geometries for the vehicular and superimposed pedestrian networks (figure 9).

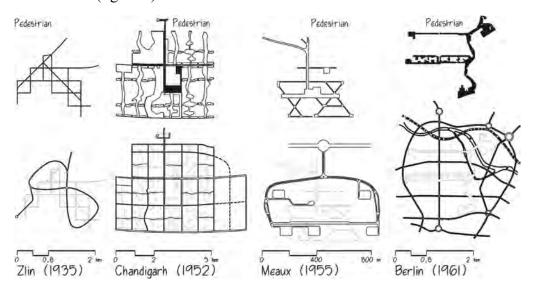


Figure 9
Some distinctive city plans showing the separation of vehicular and pedestrian networks (redrawn by the author after plans in the *Oeuvre complète*).

The other area of criticism is parks and gardens. Here comments by Steven Pinker, are applicable (quoted by Salingaros 2003: 2):

Ornamentation, human scale, green space, gardens, and comfortable social meeting places were written out of the cities because the planners [of which Le Corbusier was the clearest example] had a theory of human nature that omitted human aesthetic and social needs.

Spiro Kostof was an authoritative commentator. Since he did not mention Le Corbusier by name, this oversight could be due to a generalisation. It seems as if Pinker, a world authority on cognitive neuroscience, erroneously discredits Le Corbusier, who always pursued, in theory and practice, exactly the opposite of that which Pinker is accusing him, proclaiming throughout his life that "We must increase the area of green and open spaces". Originally published in French in 1925, this was one of Le Corbusier's four urban principles (1929: 99-100). He justified this principle as follows: "This is the only way to ensure the necessary degree of health and peace to enable men to meet the anxieties of work occasioned by the new speed at which business is carried on". I find his depictions of green spaces convincing and not Utopian at all (figure 10). He wanted a vibrant public realm, writing:

We are fond of the crowd and the crush because we are human beings and like to live in groups. In such a town as I have outlined, with a denser population than that of any existing cities, there would be ample provision and opportunity for close human contact; there would be trees, flowers and spreading lawns (Le Corbusier 1929: 240).



Figure 10 Le Corbusier, sketch of Buenos Aires, 1929 (Le Corbusier 1960: 294).

As a comparison, the main public recreational space envisaged for the Contemporary City, what Le Corbusier called the English garden, measures nearly 300 hectare serving a population of around 600,000. By way of contrast, the combined Hyde Park and Kensington Gardens, the largest of the great parks of Central London, home to about 2.3 million people, measures about 200 hectare, a third less than Le Corbusier's park. At the residential blocks, he provided open space at a very generous ratio of 28 square metres per person (calculations by the author).

Staying with green space, the above statistics and drawing stem from hypothetical projects. How did Le Corbusier plan green space in Chandigarh, his only built city? Sector 22 was the first residential area. There, most of the dwellings surround public squares, either as clusters or row houses. Apart from a comprehensive mix of educational, commercial, health care and public service facilities there are 48 parks and greens spread throughout the sector (figure 11). They occupy 19 hectare or 20 per cent of the sector's area. The smallest is just 570 square metres, the largest being nearly four hectares, while the average is 4,000 square metres (measured by the author). The resemblance between the drawing above and the photograph below is intriguing.



Figure 11
Plan of green spaces (hatched) in Sector 22, Chandigarh, and a photograph of a park (source: the author).

Claiming and inhabiting space

Le Corbusier never shared Derrida's need to debate the "contract between architecture and habitation", as reiterated by Ross King (1996: 241). Le Corbusier (1958: 25) was absolutely adamant: "Taking possession of space is the first gesture of living creatures, humans and animals, plants and clouds, a fundamental manifestation of equilibrium and duration. The first proof of existence is occupying space".

The strategies Le Corbusier employed to enable the claiming and inhabiting of space and territory emerged partly as the Modulor, whereby the proportional system allows the human psyche to associate aesthetically and psychologically with space, whereas the order of measurement is physically aligned with the dimensional requirements of the human body and its activities. These relationships are intended to be intense and intrinsic to the extent that Michelle Negus (1998: 118) reminds us that Le Corbusier claimed architecture "as a part of the mechanical system that surrounds us and functions as an extension of our limbs…its elements, in fact, artificial limbs".

He has been criticised for adopting six feet tall English policemen as the norm for Modulor Man, to which Le Corbusier (1954: 63) replied: "It is better that a measure should be too large than too small". Catherine Millet (1981) summarises this issue succinctly: "Like the ancient Greeks, Le Corbusier laid out the architectural space so that the body can find its bearings in it."

Le Corbusier's drawings clearly demonstrate the concept of relating the body to space. Figure 12 contains no human bodies, but unmistakably suggests that people have claimed the space. The chairs, tables, wine and food all allude to convivial social interaction in a tranquil, quiet, unpolluted urban environment.

The scenes of domesticity in figure 13, on the other hand, embody the quest for security associated with inhabiting private space (just as figure 10 illustrate people inhabiting public space), with inhabited space alluding to the concept of sanctuary.

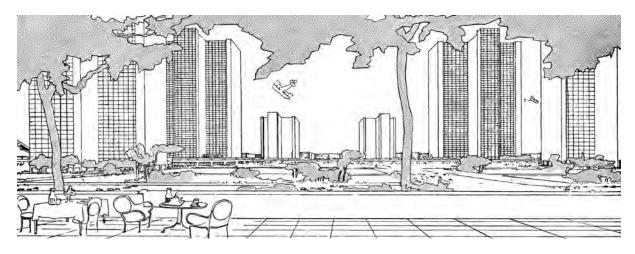


Figure 12 Le Corbusier, Contemporary City, 1922 (Le Corbusier 1960: 64).

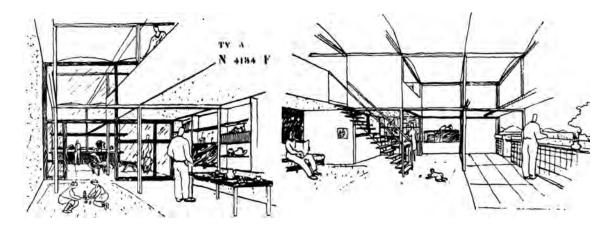


Figure 13
Le Corbusier, interior views of Roq et Rob, 1949
(Oeuvre complete, volume 5: 57).

The human body and mythical space

The overview is concluded by briefly returning to the unfortunate legacy of that early statement. Alexander Gorlin (2008) suggests that Le Corbusier's "machine for living" left "no room for the spiritual, the mythic, or the irrational". However, he acknowledges that Le Corbusier "subsequently incorporated multiple mystical themes". Most adverse commentators fail to bridge that gap. Pinker (quoted in Salingaros 2003: 3) is typical:

Le Corbusier was the clearest example [of planners designing optimal cities according to so-called scientific principles]. He and other planners had a minimalist conception of human nature. A human being needs so many cubic feet of air per day, a temperature within a certain range, so many gallons of water, and so many square feet in which to sleep and work.

There are many commentators that would agree. Herbert Bangs (2006: 3) resents what he calls "a narrow, mechanistic vision of human life", adding that "the most influential 'scientific' architect of the 20th century and the apostle of alienation was undoubtedly Le Corbusier".

Jo and Choi (2003: 140), both senior academics whose article entitled "Human figure in Le Corbusier's ideas for cities" eloquently argue the view of the opposing camp:

Central his work was his fervent desire that his cities and his buildings provide the appropriate framework to satisfy human needs and interests, and to advance human ideals. He held and advocated enthusiastically throughout his life the strong belief that architects and city planners should be more than technicians, that they should take the lead in order for the new machine civilization to bring to people not only material things but social and spiritual progress and the real joy of living in this extraordinary century.

What were Le Corbusier's views on all this? Wogenscky (2006: 46) quotes Le Corbusier: "For me, the term architecture has something more magical about it than rationalism or functionalism"; and further on (2006: 81): "[Ineffable space] does not depend on dimensions but on the quality of its perfection. It belongs to the domain of the ineffable, of that which cannot be said". This concept (also referred to as inexpressible or indescribable space), which Le Corbusier termed *L'espace indicible* in French, has been widely discussed in literature. King (1996: 100) asserts that "It is a redefinition of the role of architecture and urban meaning, as being to establish the place of the mythic in human experience". What exactly is that "meaning"? Le Corbusier (1924: 110) himself frames the question with slightly more clarity: "Architecture has another meaning

and other ends to pursue than showing construction and responding to needs (and by 'needs' I mean utility, comfort and practical arrangement". Eventually he (1929: 58) also provides the answer: "More important than the mechanism of the city, [is] what we may call the soul of the city ... it is, quite simply, its poetry".

There can be no doubt that for Le Corbusier that inhabiting space is clearly not just an existential necessity. For him a relaxing ambience or a pleasant view are also spiritual experiences (Figure 14). What is then interesting is that Le Corbusier uses technical and rational (rather than intuitive) means (sight lines) to ensure good views (Figure 15) – and to achieve "poetry". Nevertheless, he ventured further than that; he explored "the nature and the quality of the relationship between eye and spirit" (1954: 78-80), again using his "harmonious scale" in order to understand perspective (Figure 16).

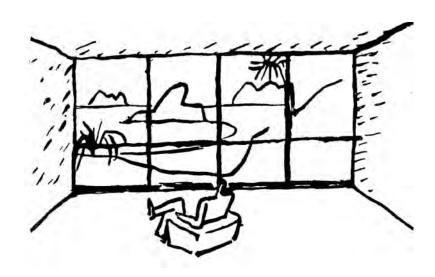


Figure 14
Le Corbusier's sketch of a man admiring the view in Rio de Janeiro. The caption: "The whole sea-land-scape enters your room" (Le Corbusier and De Pierrefeu 1948: 87).

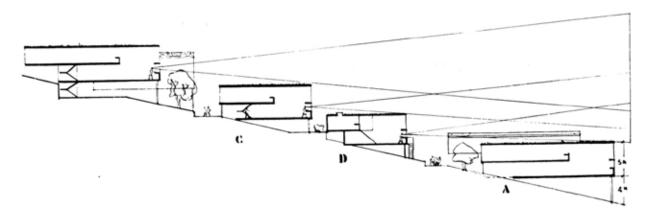


Figure 15
Roq et Rob at Cap Martin. Site section
(Oeuvre complete, volume 5: 56).

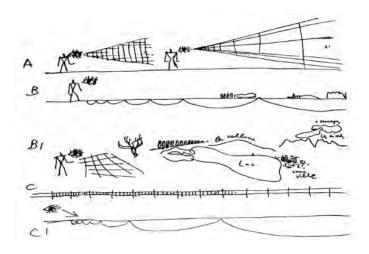


Figure 16
Le Corbusier's analysis of visual perception
(Le Corbusier 1954: 79).

Conclusion

Le Corbusier is still hugely influential, but he is also regularly criticised and challenged. For the conclusion, I will rely on the judgement of Catherine Millet (1981): "It is primarily the inclusion of man, which guides the architectural choices of Le Corbusier". She is a courageous author and fiercely independent critic, as evidenced by the fact that she also wrote what a reviewer for Amazon.com describes as "the most explicit book about sex ever written by a woman".

Of his humane intentions there can be no doubt. The success of their application in his theories and practice is more debatable; after all, different people have different expectations from buildings and cities. The weakness in Le Corbusier's approach was certainly his paternalistic attitude and his firm conviction that he knows best how the human body should fit into his architecture.

Finally, although this overview is rather brief, and although the headings are not definitive, it can be stated unequivocally that the human body conceptually pervades every conceivable aspect of Le Corbusier's work at all scales and in all its manifestations, from the purely physical, to perception, and to the spiritual.

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