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Vincenzo Valentino

We Have Never Been Copernican. The Years of Solar Investigations in Le Corbusier's Architecture

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Abstract

We Have Never Been Copernican. The Years of Solar Investigations in Le Corbusier's Architecture

Le Corbusier, strong and confident in the new tools produced by modern society, repeatedly attempted to challenge the 'sun dictatorship'. The heliothermal axis theory, the concept of neutralising wall, and the innovation of brise-soleil represent three key stages in a story that, despite declarations of conversion to a heliocentric perspective, reveals how Ptolemaic geocentrism is deeply rooted in architectural culture. Indeed, the brise-soleil loggia of the Unité d'Habitation in Marseilles and the Tower of Shadows in Chandigarh exemplify an architecture conceived as a system of control and fixed measure of the cyclical changes of all moving things. At the same time, this story also shows us that perhaps we have never been Copernican because we have never really questioned the profound nature of this incandescent astral matter, this palpable and vibrant substance called light, with which the sun animates the surface and depths of the Earth.

We Have Never Been Copernican. The Years of Solar Investigations in Le Corbusier's Architecture

Le Corbusier, forte e fiducioso nei nuovi strumenti prodotti dalla società moderna, tentò più volte di sfidare la "dittatura del sole". La teoria dell'asse eliotermico, il concetto di muro neutralizzante e l'innovazione del brise-soleil rappresentano tre tappe fondamentali di una storia che, nonostante le dichiarazioni di conversione alla prospettiva eliocentrica, rivela come il geocentrismo tolemaico sia profondamente radicato nella cultura architettonica. Infatti, la loggia brise-soleil dell'Unité d'Habitation di Marsiglia e la Torre delle Ombre di Chandigarh esemplificano un'architettura concepita come sistema di controllo e misura fissa dei cambiamenti ciclici di tutte le cose in movimento. Allo stesso tempo, questa vicenda ci mostra anche che forse non siamo mai stati copernicani perché non ci siamo mai interrogati sulla natura profonda di questa materia astrale incandescente, questa sostanza palpabile e vibrante chiamata luce, con cui il sole anima la superficie e le profondità della Terra.

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Luigi Ghirri, *Bastia*, 1976. © Eredi di | Heirs of Luigi Ghirri.

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Vesper è una rivista scientifica semestrale, multidisciplinare e bilingue, si occupa delle relazioni tra forme e processi del progetto e del pensiero. Ponendo lo sguardo al crepuscolo, quando la luce si confonde con il buio e l'oggetto illuminante non è più visibile, *Vesper* intende leggere l'atto progettuale seguendo e rendendo evidente il moto della trasformazione. Pitagora identificò nel pianeta Venere sia la stella della sera (*Hesperos*) che quella del mattino (*Phosphoros*), i due nomi si riferiscono allo stesso astro ma posto in condizioni temporali differenti. *Vesper* dichiara quindi una posizione più che un oggetto e privilegia il situarsi che ne profila lo statuto. Non è qui accesa la luce tagliente dell'alba, che promette giorni completamente nuovi e alti sol dell'avvenire, ma quella che fa intravedere nella penombra una possibilità nell'esistente.

Richiamando e rinnovando la tradizione delle riviste cartacee italiane, *Vesper* ospita un paesaggio articolato di modalità narrative, accoglie forme di scrittura e stili differenti, privilegia l'intelligenza visiva del progetto, dell'espressione grafica, dell'immagine e delle contaminazioni tra linguaggi. La rivista è pensata nella sua successione di numeri tematici come discorso sulla contemporaneità, nello spazio di ogni singolo numero è articolata in un insieme di rubriche che gettano luci differenti sul tema. Nel procedere delle diverse sezioni – editoriale, citazione, progetto, racconto, lezione, saggio, inserto, traduzione, archivio, viaggio, ring, tutorial, fundamentals – mutano i riverberi tra idee e realtà, si accende l'intreccio tra evidenze concrete e loro potenzialità, potenziali trasformativi, immaginari. Le rubriche sono pensate non per aggiornare istantaneamente ma per indagare condizioni progettuali e per fornire strumenti e materiali dall'*ombra lunga*.

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Vesper is a six-monthly, multidisciplinary and bilingual scientific journal which deals with the relationships between forms and processes of thought and of design. Gazing into the dusk, when light slowly merges with darkness and the illuminating object is no longer visible, *Vesper* aims to interpret the act of designing through tracing and revealing the movement of transformation. Pythagoras identified in the planet Venus both the evening star (*Hesperos*) and the morning star (*Phosphoros*), assigning the two names to the same star observed in different temporal conditions. *Vesper* thus states a perspective rather than an object, privileging the condition that defines its status. Rather than the sharp light of dawn, heralding a brand-new day and promising a brighter future, it is the twilight that allows you to have a glimpse at the potential of what is already there.

Following the tradition of Italian paper journals, *Vesper* revives it by hosting a wide spectrum of narratives, welcoming different writings and styles, privileging the visual intelligence of design, of graphic expression, of images and contaminations between different languages. The journal is conceived as a series of thematic issues that build a discourse on the contemporary. Each issue is divided into sections that offer a range of diverse perspectives on the theme analysed: editorial, quote, project, tale, lecture, essay, extra, translation, archive, journey, ring, tutorial, fundamentals. Throughout the different sections, reverberations between ideas and reality change, connections emerge between tangible facts and their potentials, transformative prospects, collective perception. The principal aim of these sections is not to provide instant news, but to offer an in-depth investigation of different instances of design and to provide tools and materials that have a long-lasting effect.

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Le Corbusier, Unité d'Habitation, Marseille, 1945-1952.
Ph. Vincenzo Valentino. East front, 23/08/2024, 18:57.

Vincenzo Valentino

The Icarus Syndrome

The theme of the sun defines a cross-cutting interpretative layer in Le Corbusier's work, establishing a periodisation that traces his gradual approach to solar matter. Confident in modern tools, Le Corbusier challenges the 'sun dictatorship' (Le Corbusier quoted in Siret 2006, p. 5), risking, like Icarus, not only blindness but, even worse, burning. Daniel Siret, who has devoted numerous essays to the subject, suggests reading this history into three main periods. In the first period, described as 'more luminous than sunny' (Siret 2006, p. 2), the sun is still distant, almost absent. It is the purist phase, characterised by the 'masterly, correct and magnificent play of masses brought together in light' (Le Corbusier 1985, p. 29). Here, the light, in its dialectic with shadow, contributes to the material realisation and symbolic manifestation of the 'metaphysics of presence' (Barad 2010, p. 260), which, as Derrida later noted, finds its strongest fortress in architecture. The second period, from the early 1930s to the late 1940s, marks the beginning of actual solar research. It is the 'hygienist' phase, focused on the investigations into the application of the heliothermal axis theory, through which Le Corbusier sought to obtain 'maximum sunlight for each lodging of the Ville Radiuse' (Siret 2006, p. 2). However, it is also the phase in which the first difficulties caused by the use of *pan de verre* emerge. These difficulties lead Le Corbusier to explore solutions linked to technological innovation such as the 'neutralising wall', a new device intended to ensure the optimal functioning of the *machines à habiter*. These are the years of the first defeats. Both lines of research (the heliothermal axis and the neutralising wall) were partially abandoned to make room for what Le Corbusier would present in the late 1940s as the only possible solution for controlling the sun. 'Après vingt-cinq années de recherches, un élément nouveau […]: le brise-soleil qui, à vrai dire, introduit une technique nouvelle, le contrôle du soleil' (Le Corbusier quoted in Siret 2004, p. 2). This is the beginning of the third phase, in which 'the theme of the brise-soleil passes from the status of a technical sketch to that of an icon of the Corbusian imagery' (Siret 2006, p. 2). The watershed between the second and third phases is the study of the brise-soleil loggia for the Unité d'Habitation in Marseille, where, for the first time, Le Corbusier experiments with a passive solar device to control solar radiation. Here, the wall element, which in the Ville Savoye had been thinned to the point of becoming a membrane, regains its thickness and assumes a plastic form, even along its transverse axis. The loggia in Marseille is presented as 'une fleur d'architecture qui égaiera les villes, fleur du soleil, riante et bienfaisante. C'est un rapport plastique extraordinaire' (Le Corbusier quoted in Siret 2002, pp. 2-3). In short, Le Corbusier seems certain he has found the right tool to launch an 'assault' on the sky in his quest to conquer the sun, even if 'The rigor and precision invoked by the architect seem primarily aimed at preserving the appearances of doctrine and masking the difficult choices and less glorious compromises imposed by practice once it is liberated from theory' (Siret 2002, p. 2).

Ptolemaic Le Corbusier

In Marseilles, the 'transatlantic-type section', with the central corridor to which the sequence of duplexes is attached, and, above all, the east-west orientation chosen for the dwellings, renders the loggia ineffective for solar radiation control (Siret 2004). The sun dictatorship continues to assert its power. Despite these unresolved issues, one thing Le Corbusier seems to be certain of: 'C'est le soleil qui bouge à travers journée, saison, année. Le brise-soleil ne doit pas être une Mécanique' (Le Corbusier 1981, p. 53). Architecture and its parts are fixed, firmly anchored to the ground, while it is the sun that revolves around them. While the Copernican revolution is seen as a key step in Western culture's advancement, Le Corbusier's position reveals that Ptolemaic geocentrism remains an absolute reference. As the philosopher Emanuele Coccia writes, 'despite the numerous celebrations and the innumerable declarations of conversion […], we've never truly been heliocentrists: geocentrism is the deepest soul of Western forms of knowledge' (Coccia 2019, p. 92). Unsurprisingly, architecture has always expressed a desire to be 'rooted' in the ground. It is an immobile measure of all moving things. If we accept this view, Francesco Venezia argues that it is fortunate for us that 'impenitent Ptolemaics have survived to our time, [as] in our work it helps us that the Earth remains still, but more than helping us, it moves us, and it also moves us that every building is anchored to the Earth […] and that everything moves around it: the sun, the stars, the planets' (Venezia 2011, p. 60). The Tower of Shadows project in Chandigarh exemplifies Le Corbusier's Ptolemaic geocentrism, according to Venezia. It is an architecture devoid of content or function, serving as a pure sign and expressing the 'the discrepancy between the immutability of the body and the cyclical variation of the ensemble of its variable appearances' (Venezia 1978, p. 18).

Siret also identifies the Tower of Shadows episode as a key moment in the third period of Le Corbusier's solar studies and describes it as a 'Sorte de manifeste pour le brise-soleil, […] dont l'unique fonction est d'être ombragée toute l'année' (Siret 2004, p. 175), through which Le Corbusier demonstrates how it is possible 'que l'on peut maîtriser le soleil aux quatre points cardinaux d'un édifice et le manipuler même dans un pays chaud pour diminuer les températures' (Le Corbusier quoted in *ibid*., p. 175). From the standpoint of geometry, orientation and arrangement of the elements, Siret shows that, the Tower's effectiveness in shading the sun's rays is unquestionable: 'The arrangement of the sunshades on the tower […] almost never allows the solar rays to be filtered' (*ibid*., p. 175). However, Le Corbusier is forced to confront a new paradox: the omnipresence of shade does not guarantee the defeat of the sun. Solar matter, far from being reducible to a ray of light, is not exhausted in the realm of the visible and finds other ways to penetrate into the interior of architecture. In Chandigar 'Le principe trouve ici son accomplissement géométrique et prouve en même temps ses limites. […] Sous le soleil indien, le béton des tablettes et refends s'échauffe si fortement que le rayonnement devient insupportable' (*ibid*., p. 179). It is no longer a problem of a 'geotropic' nature, but rather thermodynamic, as it is related to the interaction between the physicochemical properties of reinforced concrete and those of solar matter.

The case of Chandigarh shows us that we have never truly been Copernican, not so much because immobile architecture has triumphed over mobile architecture, but because we have perhaps never fully questioned the profound nature of this incandescent astral matter – a portion of the electromagnetic spectrum visible to the human eye, known as light – through which the sun animates both the surface and the depth of the Earth.

Towards an Astrological Neomaterialism

In his *De revolutionibus orbium coelestium*, Copernicus writes: 'Thus indeed, as though seated on a royal throne, the sun governs the family of planets revolving around it. […] Meanwhile the earth has intercourse with the sun, and is impregnated for its yearly parturition' (Copernicus 1992, p. 22). With these words, Copernicus, far from merely revolutionising the mechanics of celestial bodies, seeks to demonstrate the astral nature of our planet and its indissoluble connection to the sun. To be Copernican means to interrogate the nature of this bond, of which luminous matter is a sensitive expression and, at the same time, the guardian of its deepest mysteries. The theories of the heliothermal axis and the brise-soleil share the same conception of sunlight, a conception that aligns with our common understanding. For Le Corbusier, light can be approximated as a collection of rays, that is, straight lines that extend from a point with intensity and direction. This view can be traced back to Descartes' *Treatise on Light*, which describes the main properties of the luminous substance emitted by the stars as follows: '(1) that it extends circularly in all directions around those bodies one calls luminous; (4) and ordinarily in straight lines, which should be taken as rays of light; (5) and that several of these rays coming from different points can collect together at the same point', (Descartes 2004, pp. 62-63). According to the British anthropologist Tim Ingold, this way of seeing things has led us to distinguish sunlight from other atmospheric phenomena and bring it closer to optical phenomena, which have to do with seeing. For Ingold, sunlight is, on the contrary, an atmospheric phenomenon on par with wind and rain. In order to achieve this cognitive shift, it is necessary to move from the idea of light as a 'ray' to the idea of light as a 'beam'. 'Beams are to be distinguished categorically from rays. Rays are emitted from a source and are conventionally depicted as straight lines. But beams curl around and within things; they are never straight. […] Like the wind, sunbeams get inside and saturate our consciousness' (Ingold 2015, p. 98).

We have never really been Copernican because we cannot break free from the Cartesian view and consider solar matter as a palpable and vibrating substance, an astral vortex that binds together the lithosphere, hydrosphere and atmosphere, ensuring the existence of that thickened portion of sky that we call Earth. The metaphysics of presence has harnessed the light (and shadow) of the sun to define clear and irreducible relationships between Platonic solids, phenomenology to investigate the perceptive and emotional potential of iridescent spaces, technological empiricism to extract the energy needed to satisfy our demands for comfort and well-being. However, perhaps, in no case have we ever really investigated the vital agency of this luminous whirlwind, whose visible field is not exhaustible within a semiotic or aesthetic dimension.

It is Le Corbusier himself, in an unusual passage from *La maison des hommes*, who describes an alternative scenario: 'From the physical point of view, the human being is nothing other than a "transformer of solar energy". […] For man directly absorbs it through his skin by means of a million papillae tuned to the luminous vibrations […]. Behind them, the entire cosmos reveals itself, approaches man and is ready to clasp him to its bosom' (Le Corbusier, de Pierrefeu 1948, p. 21). From this perspective, any heliocentrism is also a form of astrological neomaterialism. As in a work by James Turrell, it will involve rethinking light as a vivid and intense substance in which we are immersed, observing it both as a cosmic phenomenon, that is, as astral matter, and as a quantum phenomenon, that is, as composed of discrete packets of zero mass particles known as photons. The challenge of the new materialism, which rejects dualisms oppose life and inert objects, organisms and environment, visible and invisible, lies in interacting with the performative nature of these elementary particles emanating from the sun: their coming from elsewhere on an interplanetary journey to Earth infusing extraterrestrial matter into its mineral flesh through plants; their 'spectral becoming' as entities suspended in wave/particle indeterminacy (Barad 2010); their viscosity through which suddenly the environment 'seems to absorb me from all sides, without objects – or, rather, the environment itself has become one gigantic object, not simply a background or blank slate or empty stage set or envelope', but shows itself as 'a givenness without explicit content, vivid and intense, not blank' (Morton 2016, pp. 134-158). Thus, architecture will no longer be either a fixed measure of the cyclic variation of all moving things or a machine for controlling solar radiation, but rather a 'ripple' in spacetime, produced by the interaction with the performative nature of photons. It will be a 'device of conjunction between Earth and sky' (Coccia 2019, p. 96) capable of reminding us that 'we are the irreversible foam of free energy that was trapped in the disequilibrium between hydrogen and helium, freed by the Sun' (Rovelli 2023, p. 76); that life, objects, and events on Earth are nothing but slowed-down and cooled forms of an incandescent glow; that everything that lives was light.

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