

Klaus-Peter Gast

*Le Corbusier: Paris - Chandigarh.*

Basel: Birkhäuser, 2000

Reviewed by Steven Fleming and Michael J. Ostwald

Le Corbusier's designs have always provided fertile grounds for the study of geometry and mathematics in architecture. Le Corbusier is a rare twentieth-century architect who has outlined a detailed theory of proportions and has provided descriptions of how he applied this theory in his buildings. As a result, many hundreds of books and papers have been written on the topic of Le Corbusier and the application of geometry to design. Some of these books and papers have been ground-breaking and original, while others have been shallow and derivative. The key to determining the success of most of these scholarly investigations lies in the analytical method being employed. If the method is applied with the right combination of critical rigor and sensitivity (to the designer's era and intent) then the result can be highly informative. If the method is applied inconsistently, and with little regard for the designer or for history then the result will be no better than an interesting anomaly. Despite the vast quantity, and variable quality, of research already existing on the topic of Le Corbusier and geometry, works continue to be published that purport to provide a new or original interpretation. The success of these new works, like the old, ultimately rests on the methods they employ to support their aims.

Klaus-Peter Gast's latest book, *Le Corbusier: Paris – Chandigarh*, attempts to assert a lasting place for itself in a body of scholarship dealing, seemingly, with every conceivable aspect of Le Corbusier's theory, practice and personal life. Superficially at least, Gast achieves a clear point of difference through the extensive use of well-chosen photographs. Like his previous offering, *Louis I. Kahn: The Idea of Order* [Gast 1998], Gast's new book is supported by a variety of photographs that present Le Corbusier's architecture as it has rarely been seen. Whereas most published photographs of Le Corbusier's architecture have been taken specifically to assert a building's rightful place in the canon of great architecture, Gast provides a range of new or unusual views of these famous buildings. For example, his photographs of Chandigarh display the dramatic ruin that many of the buildings have become today and the Villa Shodan is pictured ringed by bamboo fencing. Gast has also captured those elements of Le Corbusier's architecture that intrigue the visitor to these structures but that are never published. The "mini-Savoie" gatehouse and the view of the lawn from the central bedroom window of the Villa Savoye are both rarely, if ever, seen in published photographs. Aside from his careful cropping of fellow pilgrims, Gast has captured much of the atmosphere of these buildings as they exist today.

However, the thoroughness Gast displays with his lens does not extend to his central thesis. For observant readers the sense of unease about this book commences with the cover design. The cover features a close-up of the *brise-soliel* façade of Le Corbusier's Parliament Building in Chandigarh. Overlaid on top of the photograph of the *brise-soliel* is a crisp, white, Fibonacci rectangle. Ironically the rectangle simply does not match the geometry of the *brise-soliel*. As an illustration of the kinds of proofs presented within the book, Gast could not have designed a less fortunate cover. The rectangle on the cover of Gast's book is produced by a consecutive spiral of

squares emanating from a double square figure at the centre of the spiral. It has a proportion of 55:34, which, to three decimal places, produces a ratio identical to that of the golden section, that is, approximately 1:1.618. Therefore, neither the Fibonacci rectangle that Gast has overlaid, nor the golden section, fit the underlying photograph exactly, as indeed they should for Gast's thesis to stand. Le Corbusier's *brise-soliel* is relatively close to the geometry of the golden section but it is also relatively close to several other geometric constructions that bear no relationship to the golden section. The book also commences with a Foreword by Arthur Rüegg that contains a number of veiled references to Gast's method that raise further concerns for the serious scholar. Rüegg clearly states that Gast's method does not rely on Le Corbusier's own stated theories of design and geometry "but uses a method developed from historical buildings of a different context" [p. 11]. Rüegg also argues that it is a characteristic of Le Corbusier's buildings "that they can be read in different ways" [p. 9] and thus, he finds Gast's interpretations "highly stimulating" [p. 11] alternative readings. While these are legitimate comments they clearly suggest that Gast's thesis is unconventional and they provide little support for it other than the simplistic argument that buildings can be interpreted in different ways and that we should embrace such interpretations. Such an argument has the aura of an apology rather than of unconditional support.

Gast's central thesis, which is described in the pages that follow Rüegg's Foreword, is that certain geometrical patterns, which he has unearthed in the plans of a number of Le Corbusier's buildings, prove that Le Corbusier was at once rational and irrational. Gast defines those sections of a building that conform to his geometric patterns (usually derived from the golden section or from the Fibonacci set) as "rational", and those sections that do not conform as "irrational" [p. 12]. Significantly, the geometrical patterns in question are not ones for which records exist in the form of sketches, drawings or statements left by Le Corbusier himself, or for which anecdotal evidence exists, in the form of recollections by Le Corbusier's associates. Instead, these are patterns uncovered by Gast, in isolation, using a method of analysis developed for historic seventeenth-century buildings. The details of this particular method, known as "plan analysis", are not outlined by Gast.<sup>1</sup> Instead, Gast refers the reader to what appears to be an unpublished German doctoral thesis by Harmen Thies, acknowledged by Gast as the inventor of this analytical tool [Thies 1980].

From the remainder of Gast's book it can be gleaned that this method relies on a series of geometrical expositions, whereby complex figures, and ultimately architectural plans, are shown to have been derived from the arbitrary diagonal and orthogonal bisecting of simple geometric forms, such as rectangles of golden mean proportion. For example, according to Gast's analysis of the Villa Stein, Le Corbusier used intersections between certain diagonals used to produce a golden section plan shape and a diagonal drawn across the whole plan, to generate regulating lines that, when crossed by other diagonals, generate yet more lines. These latter lines can be found to regulate the positions of such elements as doors and the outer edges of columns. From such examples it must be assumed that "plan analysis" entails the deduction of a designer's intentions based on geometrical relationships found to exist in working drawings. For example, a "plan analyst" might find a plan of square proportions and deduce that its designer was, for some reason, fascinated by the symbolic potential of squares. It would appear that "plan analysts" prefer symbolic explanations to structural, tectonic or otherwise mundane ones. Factors such as the lengths of available materials, modulation related to masonry units, dimensions of site boundaries or structural considerations are not mentioned lest they detract from the overarching assumption that the architect/genius is speaking to us, and that his or her language is geometry. When analyzing more complex plan forms, this assumption (about the direct relationship

between geometry and intent) is crucial to the implementation of the analytical method. Presumably thousands of combinations of geometric inscriptions must be tried before a sequence of growth patterns and/or bisections is found to match the plan in question.

While “plan analysis” may be an interesting deductive tool for the investigation of Baroque churches (which is what it appears to have been developed for), the application of this method to the works of architects who have left us detailed descriptions of how they designed seems eccentric to say the least. Gast’s central argument, that Le Corbusier was at once rational and irrational in his use of geometry, is exactly what Le Corbusier himself said many times, most notably in *The Modulor* [Ostwald 2001]. In *The Modulor*, Le Corbusier outlines a rational strategy for regulating building proportions, whilst allowing for intuition, or irrationality, by telling his reader that “your eyes are your judges” [Le Corbusier 2000: 130]. Of course Le Corbusier was both calculating and intuitive. He argues strongly in *The Modulor* that purely rational designs (to use Gast’s version of “rational”) can be “displeasing” to the eye [Le Corbusier 2000: 130]. *The Modulor* provides intrinsic proof that Le Corbusier was at once rational and irrational. The fact that Gast confirms this thesis by extrinsic means – that is, without reference to statements, sketches or recollections, but through “plan analysis” – is potentially interesting for scholars. Indeed, if Gast’s inscriptions were highly accurate they would constitute important discoveries, revealing a hitherto unfathomed dimension to Le Corbusier’s genius. If a line drawn from the inner corner of the Villa Stein to a geometrically determined point along its longer facade really did touch the outer surface of an internal supporting column, scholars would be forced to accept that Le Corbusier held an unconfessed fascination with imperceptible phenomena.

Unfortunately, readers with a serious interest in Le Corbusier’s use of regulating lines will be disappointed by the relative lack of documentary evidence throughout Gast’s book. Most significant is the fact that Gast does not provide reference to the specific working drawings on which his plan analyses are based. Presumably he studied these drawings in the course of his research and could simply quote their reference number and place of archival. For an author who accuses others of “throwing together collections of old material and presenting them as ‘new and up-to-date documentation,’” [p. 12] and who describes his own work as one that “attempts to get closer to Le Corbusier by applying concrete analysis,” [p. 12] it remains a mystery that Gast chooses not to disclose the dimensions from the working drawings on which he bases his findings. If Gast’s geometrical constructions really do conform to Le Corbusier’s working drawings, then what better proof could he provide than a series of simple trigonometric calculations! The scepticism aroused by Gast’s method and omissions is exacerbated by a succession of trivial and glaring inaccuracies throughout the book. Gast’s history of divine proportions contains several significant errors<sup>2</sup> and some of the few references he does provide are incorrect.<sup>3</sup> Ultimately, the striking illustrations, production design and intriguing asides do not make up for the flaws in this otherwise interesting book.

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### **Notes**

1. Gast uses the same method in his previous book, also without substantial critical description. See [Fleming 1999].
2. Despite Gast’s claims on page 96, Plato’s *Timaeus* makes no specific reference to the Golden Section.
3. For example, on page 97 Gast incorrectly refers to Anne Tyng’s Ph.D. thesis as “The Energy of Abstraction: a Theory of Creativity?”. Cf. [Tyng 1975].

### ***References***

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