

COVER PAGE

Dr Christina Malathouni

Lecturer in Architecture

School of Architecture
University of Liverpool
Abercromby Square
Liverpool, L69 7ZN
United Kingdom

www.liverpool.ac.uk/architecture

E-mail: c.malathouni@liverpool.ac.uk

Alternative e-mail: c_malathouni@hotmail.com

Telephone: +44 (0)151 795 0639

Biographical note

Dr Christina Malathouni is Lecturer in Architecture at the School of Architecture, University of Liverpool, UK. She is a qualified architect and holds a PhD from The Bartlett, UCL, UK. Her research focuses on the early history and cross-disciplinary origins of the notion of “architectural space”. Publications include articles in: *Architecture and the Unconscious* (Hendrix and Holm, eds.; 2016); *The Journal of Architecture* (2013); *Claude Bragdon and The Beautiful Necessity* (Ellis and Reithmayr, eds.; 2010); and *From Models to Drawings* (Frasconi et al, eds.; 2007). Dr Malathouni also specialises in twentieth-century architectural heritage. She is full member of the Institute of Historic Building Conservation (UK) and associate member of ICOMOS’s International Scientific Committee on 20th-century Heritage.

TITLE PAGE WITH ABSTRACT

Claude Bragdon’s “Projective Ornament”: mineral, vegetable, animal, human

Abstract

This paper discusses the work of the American architect, mystic and theorist Claude Fayette Bragdon (1866—1946). It focuses on his “Projective Ornament” which, it is argued, puts forward a “higher” type of “organicism” that adds a fourth “step” – that of the human – to earlier theories that presented minerals, vegetables and animals as part of an evolutionary, hierarchical sequence. In this connection, Bragdon’s theories can be seen to develop a new type of “humanist” architecture that relates to the full scope of human nature, namely, embracing human consciousness, psychological attributes and spiritual qualities as well as its embodied presence. This position serves to highlight the “subjective” aspect of “space” that was crucial for its adoption as a principal architectural category and remains to date topical.

WORD COUNT

| | |
|-------------------------------|--------------|
| Biographical note: | 116 |
| Abstract: | 125 |
| Main body: | 5,652 |
| Main body including endnotes: | 7,789 |

MAIN TEXT

Introduction

In 1915 the American architect, mystic and theorist Claude Fayette Bragdon (1866—1946) had a new book published under the title *Projective Ornament*.¹ The book presented a new type of ornament that was heavily reliant on the representational method of projection as well as on the concept of the “fourth dimension” of space. His adherence to “ornament” and his leading role in the popularisation of the notion of the “fourth dimension” of space in America are indeed amongst the most characteristic, and therefore widely recognised, features of Bragdon’s work. His writings on “Organic Architecture” have also attracted the attention of critics and scholars.²

However, Bragdon’s deep-seated interest in the human has gained less attention to date, or is usually presented as supplementary to other key themes in his work. Equally, his pioneering role in the introduction of the term “space” into the modern architectural vocabulary has only recently been acknowledged. What is more, to date no direct connection has been attempted between Bragdon’s parallel interest in “space” and “ornament”. On the contrary, these two concepts are often considered as representing contradictory elements as regards architectural modernism. The former is seen as marking a notable new direction in early twentieth-century architectural theory and practice, whereas the latter is commonly associated with remnants of earlier traditions.

This paper argues that the human has actually been a central consideration in Bragdon’s worldview that brings together a number of his diverse interests, such as mysticism, aesthetics, symbolism and mathematics. It also argues that Bragdon built his position on the sequence “mineral, vegetable, animal”, mentioned in one of his private notebooks as early as 1891,³ which is implicitly related to his subsequent interest in architectural organicism too. An analysis of the foundations of his *Projective Ornament* in parallel to his aesthetic philosophy and his particular interest in the “fourth dimension” of space suggests that Bragdon effectively put forward a new type of humanism. This new humanism related to the full scope of human nature, namely, it embraced human consciousness, psychological attributes and spiritual qualities as well as its embodied presence.

It will be demonstrated that Bragdon’s reference to the sequence “mineral, vegetable, animal” adopted an implied evolutionary hierarchy and further associated this to dimensional sequences. His subsequent adoption of theories of fourth-dimensional space would offer him the tool by which he could expand this sequence to include the “human” and, at the same time, graphic representations of the “fourth dimension” would directly feed into his proposed new ornament. Underlying all these is of course “space” and Bragdon’s composite understanding of the notion as both physical extension and a mental property. As will be discussed, this foundation is also critical for the new type of humanism discussed here as the means by which the human relates to the external world in general and architecture in particular.

Claude Fayette Bragdon (1866—1946)

Bragdon lived and practised in the northeast of the United States of America. His practice, based in Rochester, became a successful one in the region in the first two decades of the twentieth century and his built designs were popular. Before turning to architecture Bragdon had variously attempted to become a wood engraver, get a job as a cartoonist, and become a draughtsman for architectural rendering, and throughout his lifetime he remained interested in different forms of graphic design. Between 1915 and 1918, he was involved in the popular “community singing” festivals of Song and Light, in the role of the “Master of Light”, and became interested in the new art form of “colour music” (the art of “mobile colour”) which later evolved to adopt the newly developed technique of cartoon animation. In 1923 he called himself a theatrical designer, rather than an architect, and moved to New York City.⁴

In parallel to these design-related activities, from the early 1890s to the end of his life, Bragdon devoted a great deal of his time and energy to the development of his own theories as well as writing and lecturing on a broad variety of subjects, ranging from mysticism and Theosophy, to architecture, colour music and theatre. He was a prolific author. He had more than twenty books published during his lifetime and also numerous articles published in architectural, mystical, Theosophical, and popular magazines and newspapers, on a wide variety of subjects that range from poetry to architectural history and mystical explorations. His principal books relating to architecture date from 1910 to 1932 and include the following titles: *The Beautiful Necessity* (1910); *Projective Ornament* (1915); *Architecture and Democracy* (1918); *The Frozen Fountain* (1932).⁵ From 1891 onwards he also had architectural articles published in popular and influential professional outlets, such as: *Architectural Review*, *Architectural Record*, *Architectural Forum*, *American Architect and Architecture*, *Interstate Architect and Builder*, *Brickbuilder*, and *Journal of the American Institute of Architects*.⁶

Bragdon was therefore not unknown to his contemporaries, including some leading figures of his time. He was personally acquainted with Louis Sullivan – and, in fact, acknowledged as one of the earliest architects and theorists to have recognized the value of Sullivan’s work⁷ – and with Frank Lloyd Wright.⁸ Lewis Mumford knew of Bragdon’s Song and Light festival work in the second half of the 1910s and of his architectural writings.⁹ Repeated complimentary mentions of his work were also included in the writings of his contemporary, art and theatre historian Sheldon Cheney¹⁰ and, through inclusion in William Lescaze’s *On Being an Architect*,¹¹ Bragdon was quoted in Bruno Zevi’s landmark study *Towards an Organic Architecture*.¹²

Bragdon’s principal books were popular in the New York bookworld and re-published several times. By the time of his death, some of his writings had been translated into Italian, Japanese and Russian.¹³ An upsurge in their popularity was to occur in the late 1960s and early 1970s and even today facsimile reproductions of most of Bragdon’s books are available in print. Interest in Bragdon’s oeuvre revived again in the early years of the twenty-first century. The first decade of the century saw four doctoral theses exploring different aspects of Bragdon’s work, completed between 2001 and 2010.¹⁴ One of these theses was published as a monograph in 2009,¹⁵ and a second book on Bragdon’s work was published a year later.¹⁶ The latter comprises an exhibition catalogue and eleven essays by an equal number of scholars, contextualizing Bragdon within American architecture and various facets of American

culture. Various journal articles that focus on Bragdon's work have also been published in recent years.¹⁷

“Mineral, vegetable, animal, human”

Several of the recent studies mentioned above engage with Bragdon's interests that are central in the discussion here: “ornament”, “space”, the “fourth dimension”, “organicism” and human subjectivity. However, to date there has been no reading of the close association of all these elements which can be read an expansion of the “mineral, vegetable, animal” sequence towards a new humanism, as proposed here.

First of all, the art historian Linda Dalrymple-Henderson's seminal 1983 work *The Fourth Dimension and Non-Euclidean Geometry in Modern Art*¹⁸ draws attention to Bragdon's advocacy of the “fourth dimension of space” by highlighting the central role that his fourth-dimensional writings played in the dissemination of this novel notion in early twentieth-century art circles in America. Her work, though, does not look any closer into any particular aspects of architectural theory or practice.¹⁹

Jonathan Rider Massey's 2001 thesis and 2009 book extensively discuss Bragdon's interest in human subjectivity, mainly by reference to his Theosophical beliefs and also via analysis of the implications of his preferred representational techniques, such as axonometric projection. Massey also interprets an original relationship between the striking flatness of the “Projective Ornament” and the actual three-dimensionality of physical structures as related to Riemann's 1854 definition of space as a dimensional manifold. He goes on to relate this engagement with dimensionality with what he reads as Bragdon's distinctive embracing of organicism: “a technique of disjunctive synthesis between structure and ornament, based on the concept of space as a dimensional manifold”.²⁰ However, Massey does not identify “space” as an area of innovation for Bragdon, but conversely considers his strong interest in ornament as confirmation of his lack of engagement with what Adrian Forty called “built space” in his *Words and Buildings: A Vocabulary of Modern Architecture*, published in 2000.²¹ Nonetheless, Massey challenges Bragdon's virtual exclusion from modern architectural historiography by an extensive analysis of his use of ornament and the significance of its difference from decoration.²² Finally, Massey also provides an extensive analysis of Bragdon's graphic work, including aspects of the Projective Ornament as well as a comparison to Sullivan's 1924 *System of Architectural Ornament* and how his use of geometry in this work compares to Bragdon's.²³

Christina Malathouni's 2010 thesis and three of her papers (2010; 2013; 2016) complement the above positions. They acknowledge the significance of Bragdon's fourth-dimensional ideas, but they also place particular emphasis on his earlier interest in the more generic notion of “space”. This was innovative and groundbreaking and in effect constitutes the foundation for Bragdon's subsequent involvement in the “fourth dimension” tradition.²⁴ The same scholar Malathouni also partly prepares the discussion here as she demonstrates the influence of nascent psychological and psychoanalytical ideas – especially that of the “unconscious” – on Bragdon's “spatial” thinking.²⁵

Finally, Eugenia Victoria Ellis's 2005 thesis follows a distinct path and therefore presents yet another reading of the notion of “space” within Bragdon's oeuvre by

elaborating on spatial qualities in his built work. Ellis associates these qualities with Eastern philosophical ideas. On this basis, she too relates Bragdon's work to human subjectivity, as she puts forward a re-consideration of architecture by means of experiential spatial qualities instead of formal relationships, but does not provide any links to the evolutionary progression discussed here and its expression in Bragdon's Projective Ornament.²⁶

Aiming to explain how diverse elements of Bragdon's oeuvre are brought together towards a revised sequence that would be more complete – “mineral, vegetable, animal, human” – the following sections will address specific parts of this position. Firstly, there is a discussion of Bragdon's composite understanding of the notion of space and how this made the human the central consideration within architecture. Secondly, Bragdon's approach to “ornament” will be considered, especially how this related to his architectural aesthetic theory, was linked to “organicism” and embraced the paramount importance of “life”. Thirdly, the particular opportunities offered by the novel concept of the “fourth dimension” will be explored, both as a design tool for the Projective Ornament and as a symbol for human attributes beyond the first three stages of “mineral, vegetable, animal”. This section will also compare the “higher” symbolism of the fourth-dimensional geometry employed for Projective Ornament to earlier representations of the human figure in Bragdon's oeuvre. On this basis, it will demonstrate how Bragdon expanded his engagement of the human in his design work by devising a symbolic representation of “higher” human attributes, such as consciousness.

Bragdon's “space”

Although a remarkably novel idea, Bragdon's introduction of the term “space” into his architectural theories can pass unnoticed if considered from our contemporary perspective according to which space is often considered the indisputable essence of architecture. However, as Malathouni (2013) has demonstrated, Bragdon's adoption of the notion of “space” holds a central position in his oeuvre that allowed him to stand out as a true pioneer in the introduction of the term into the modern architectural discourse. Through an extensive and complex intellectual construct, “space” serves as a pivotal concept in Bragdon's work that brings together the full scope of his diverse interests.²⁷

The origins of Bragdon's “spatial” ideas can be traced in philosophical, Theosophical, mathematical and scientific (or pseudo-scientific) sources. His exploration of spatial ideas expanded over numerous articles and books and he remained committed to these ideas to the end of his life. His most notable books as regards diverse aspects of the subject of space include: his principal architectural treatise, *The Beautiful Necessity: Seven Essays on Theosophy and Architecture* (1910); his principal introduction to the mathematical “fourth dimension”: *A Primer of Higher Space (The Fourth Dimension)* (1913); the presentation of his own ornamental mode: *Projective Ornament* (1915); his discussion of non-mathematical aspects of the “fourth dimension”: *Four-dimensional Vistas* (1916); and, finally, his considerably later re-iteration of the significance of space in relation to design, his *Frozen Fountain: Being Essays on Architecture and the Art of Design in Space* (1932). In addition to these books, Bragdon also discussed space in a number of articles which equally varied in terms of their particular focus. Most notable in terms of timing or content are the following:

“The ‘Village Bank’ Series: I” (1900); “The Music of Architecture” (1902); “L’Art Nouveau and American Architecture” (1903); “The Sleeping Beauty” (1903); “The ‘Dead Hand’ in Architecture; Or A New Space-Language For To-Day” (1914); and “The Fourth Dimension” (1927).²⁸

Bragdon’s writings also reveal his composite understanding of the notion: both as extension or dimension (for instance, by his references to “intervals of space”) and as a mental property (most commonly referred to as one of our two “modes of consciousness”). His first reading of space – as physical extension or dimension – offered him a graphic tool for a direct connection to design. His second interpretation of “space” links back to Kant’s reading of space and time as our two *a priori* intuitions. Interestingly, it is also directly linked to the origins of Bragdon’s direct association of “space” and “architecture”, first adopted from Arthur Schopenhauer’s *Die Welt als Wille und Vorstellung* as early as 1891.²⁹

“Ornament”, “beauty” and “life”

Bragdon saw “ornament” as a necessary component of architectural art, essential for this to be distinguished from mere “building as a working mechanism”.³⁰ This was to be most determinedly expressed when he devised his own ornamental mode and presented it in his 1915 book *Projective Ornament* (Figure 1), but also in numerous articles.³¹ The direct continuity from Bragdon’s architectural aesthetics in his 1910 *Beautiful Necessity* to his own ornamental mode in the *Projective Ornament* in 1915 was to be demonstrated in his two Scammon lectures delivered at the Art Institute of Chicago the same year.³² After presenting the “sum and essence of [his] æsthetic philosophy”³³ in his first lecture, “Organic Architecture”, Bragdon concluded his talk by positioning himself with regard to this new phase in his work. He situated “ornament” within this theory and prepared his audience for the area he would subsequently focus on. Arguing that it was eclecticism that caused a discrepancy between “inner structure” and “its outward manifestation”,³⁴ Bragdon named “outward expression” - or “the language in which the story is told to the beholder” - as the aspect that needed further attention. He made this the main subject of his second lecture, “The Language of Form” and set out to clarify how such a language could rise to the conditions of its time.³⁵ He distinguished between three main elements which “formulate the rhetoric of spatial expression”³⁶ and presented ornament as the second necessary element in a language of form.³⁷

Bragdon’s reference to the relationship between “inner structure” and “outward manifestation” is particularly important, as it points to the most commonly accepted use of the term “organic” within architecture. That is, despite the mathematical origins of his ornament, which he considered to be the “solid”, or “sure”, foundation needed by the “ornamentalist”,³⁸ Bragdon also embraced the role that nature can play as design prototype. In this connection, he effectively acknowledged Sullivan’s leading role, yet at the same time he also acknowledged industrialisation and urbanisation as indisputable conditions of contemporary life. He pointed out that he could identify two other possible sources for ornament and listed these two alternatives: “the single-handed creation of an original genius” and the “conventionalization” of natural forms. Yet, he explained, for different reasons, both of these were eliminated. The former could not guarantee the development of a new style³⁹ because it would be “calamitous to impose the idiosyncratic space rhythm of a single individual upon an entire architecture” and, as the example of Louis Sullivan has shown, the secret of such a

genius is usually incommunicable. The latter source, nature, was of little help, Bragdon contended, in an age in which industrialisation and urbanisation have resulted in “our divorce from nature”.⁴⁰

Bragdon had indeed followed closely the early phase of “functionalism” as this was linked to “organicism”, through Ralph Waldo Emerson’s texts of which he had been an avid reader from a young age.⁴¹ Bragdon might not have read *English Traits* (1856) in which Emerson referred to Horation Greenough’s essay “American Architecture”⁴², first published in 1843 in the *United States Magazine and Democratic Review*⁴³ and in which Greenough discussed all principal positions that were to mark architectural functionalism.⁴⁴ Nonetheless, he was well versed in Emerson’s *Conduct of Life* (1860, revised 1876) and therefore aware of the reference to the abridged English translation of Georg Moller’s *An Essay on the Origins and Progress of Gothic Architecture, Traced in and Deduced from the Ancient Edifices of Germany*, published in 1824 by the London booksellers Priestley and Weale and therefore predating Greenough’s articles⁴⁵. Whether — upon Emerson’s ‘suggestion’ — Bragdon actually gained access to, and consulted, Moller’s *Essay* or not, the fundamental functionalist position quoted by Emerson from Moller is openly embraced in his “Beautiful Necessity” essays. Both in his full length series of articles, published in 1902 and in 1909, and in his book, published in 1910, Bragdon firmly advocated this position about fitness and adaptation of means to ends, as originating in nature.⁴⁶

Bragdon adhered to the unique role that he attributed to ornament to the end of his life.⁴⁷ As mainstream “strip tease” modernism was gaining momentum in America in the early 1930s, Bragdon wrote a number of texts maintaining the necessity of “ornament” for architectural art and named it “the *flower* of architecture” [emphasis in the original].⁴⁸ He re-asserted the primary role of “beauty” and “aesthetics”, as regards architecture as a form of art, and distinguished this from building and mere engineering⁴⁹. He also firmly adhered to “organicism”, as the original version of Functionalism that was related to “life”. Under the new circumstances of the machine aesthetic, as was the position of “second generation of Functionalists”, newly imported from Europe, Bragdon returned to Emerson’s saying “To die for Beauty than live for bread”⁵⁰ and opposed the “machine aesthetic” as lacking the connection to the “life element”. The “excess of beauty” was seen as directly associated to an “excess of life”, argued to be found everywhere in organic life, and realized in architecture by the addition of ornament to structure. Because “man cannot live by bread alone”,⁵¹ Bragdon argued that the “machine ideal applied to architecture” was inadequate and that a modern ornamental mode was required.

“Fourth Dimension”: “meaningful beauty” and “the rebirth of wonder”

Inherent in Bragdon’s emphasis on the “organic” and “life” – as re-asserted in his 1930s and early 1940s writings – was a strong evolutionary hierarchy. In this hierarchy humankind featured as a higher form of life in comparison to vegetable or animal life. In this connection, Bragdon’s association of “ornament” with the “life element” constitutes the first step towards the characterisation of his approach as “humanist”. The next step towards Bragdon’s “humanism” relates specifically to his employment of fourth-dimensional geometry as “raw material” for his Projective Ornament. Bragdon sourced this material from his own most comprehensive exposition of the “Fourth Dimension”, his 1913 book *Primer of Higher Space*, as well

as a number of other publications on the fourth dimension and “magic squares”,⁵² which varied from strictly mathematical articles to Hinton’s *Fourth Dimension* and texts on mathematical recreations.⁵³ In his endeavour to translate all this to his *Projective Ornament*, Bragdon concentrated on a limited number of regular polyhedroids (four-dimensional polytopes) and used a wide range of methods of representation, some of these already introduced in his *Primer* and some first introduced in his *Projective Ornament* (Figures 2 and 3).⁵⁴

Although a full exploration of the “Fourth Dimension” of space is beyond the scope of this article, a brief introduction will be presented here. This was a code name used to denote fourth-dimensional geometry, which in its turn was one version of *n*-dimensional geometry. *N*-dimensional geometry, established for the first time during the second quarter of the nineteenth century, together with Non-Euclidean geometry, first formulated in the 1820s, revolutionised the field of mathematics. These two “New Geometries”⁵⁵ were established novel as coherent geometrical systems after almost two millennia in the course of which Euclidean geometry had been thought to be the only possible geometry. They therefore raised crucial questions concerning the nature of geometrical axioms – which was linked to the possibility of attaining true knowledge – and the nature of space – which in its turn challenged the long-lasting influence of Kant’s pronouncement of time and space as our two *a priori* intuitions – and therefore caused no small intellectual turmoil. Subsequently also associated with mystical ideas and the development of experimental psychology, both New Geometries were to have a widespread effect on the public imagination and artistic production which has been systematically studied in Henderson’s 1983 book.⁵⁶

In his writings Bragdon engaged with the alternative types of space put forward by the New Geometries, predominantly higher-dimensional, and specifically fourth-dimensional space, but occasionally curved space too. He also explored their implications on our subjective existence and relationship with the external world. Interestingly, although largely overlooked in modern architectural historiography, the concept of a “fourth dimension” was widely known amongst other early twentieth-century artists and architects, as acknowledged by key architectural figures such as Frank Lloyd Wright and Le Corbusier.⁵⁷

Fourth-dimensional space can be technically considered as part of Bragdon’s first reading of space – as extension or dimension. Indeed, this aspect of it directly provided a design tool via graphic representations used as the “raw material” for *Projective Ornament*. However, “higher space”, as was one of its alternative names as used by Bragdon, was also related to his second interpretation of space and therefore strongly linked to human subjectivity. It was via this second reading that this new type of space offered an opportunity for the expansion of “organicism” to a “higher” level that included attributes and qualities associated with the human.

As Bragdon explained his employment of fourth-dimensional figures for the generation of his *Projective Ornament*, he provided a strong statement as regards the symbolic strength of the “Fourth Dimension” and the particular benefit of employing this within ornament. Relating his discussion to his commitment to “meaningful beauty” as expressed in his 1901 article “Mysticism and Architecture”,⁵⁸ Bragdon stressed that “ornament must not only satisfy the aesthetic sense but it must also be symbolically significant”.⁵⁹ He proposed as the answer to this riddle the association

between ornament and psychology and contended that “the problem may be solved by recourse to the fourth dimension of space”. He identified “the fourth dimension of space” with “the rebirth of wonder” – witnessed, as he maintains, in the past few years in science, in philosophy, and in religion⁶⁰ — and therefore pointed to the broad implications of this notion. The Fourth Dimension therefore made a markedly original contribution towards a new symbolism that departed from the “organic” level of the “vegetable” or the “animal”, or even the human body, to that of the “human” as a more complex entity that comprises “higher functions of consciousness” too. To demonstrate this transition, Bragdon’s earlier interest in representations of the human figure will be discussed below.

Dimensional progression and evolutionary hierarchy

Bragdon first included the “human figure” in his 1901 “Mysticism and Architecture”, alongside “nature”, “mathematics”, and “music”, as the areas whose study could be beneficial to those architects who would be interested in participating in the “new movement towards a more sincere architecture”.⁶¹ This section expanded to become one of the essays that were to be included in all successive published versions of his *Beautiful Necessity* treatise between 1902 and 1909 and, of course, also included in his 1910 book, under the title “The Bodily Temple”.⁶² Indeed, Bragdon’s studies of the human figure were laborious and his sources varied from “a curious little book, *The Rosicrucians*, by Hargrave Jennings” to the more architecturally-focused Vitruvius or the more “scientific” *Art Anatomy* by Doctor Rimmer.⁶³ All of these sources can be traced back to his journals and notebooks of the early 1890s and provided Bragdon with a wealth of diagrams that illustrated the various ways in which the human figure could be analysed by means of numerical ratios, or regular geometrical figures, and therefore serve as a prototype for architectural beauty too (Figure 4).⁶⁴

Since these early studies focused specifically on the human figure, but not in any spiritual or intellectual human attributes, they can still be considered to fall within the broader category of the organic, no higher than the “animal” stage. It is argued here that it was through his employment of fourth-dimensional geometry for his new ornamental mode that Bragdon went on to raise this earlier symbolism of the human figure to a higher level that aimed to express human attributes beyond our bodily existence.

The symbolism of dimensional progressions was extensively discussed in Bragdon’s short parable “Man the Square”, first published in January 1912 (Figure 5). This parable discussed the relationship between two and three dimensions and also adopted a model of geometrical symbolism for his discussion of human traits by means of imaginary two-dimensional beings. In this way, this little pamphlet provided a clear exposition of the ways in which Bragdon envisaged the “higher space” hypothesis as offering the possibility of representation of a higher level of human attributes. In the very first page of his pamphlet, Bragdon made the basis of his position clear, as the title under the illustration at the top of the page⁶⁵ read: “Man: A three-dimensional projection of a higher-space unity”.⁶⁶

Earlier ideas of dimensional progressions in relation to evolutionary hierarchy first appeared in Bragdon’s notebooks of the 1890s. Although these lacked the fourth-

dimensional extension that was to be added in later years, it is noteworthy that this quote was added to Bragdon's notebook on 10 February 1891, just one day before he quoted from Schopenhauer that "architecture is in space alone" – a most critical quote as regards his innovative association between architecture and space.⁶⁷

[QUOTE] Everywhere is progression, that is evolution, the development of manifestation in space and time of that which is inherent. Points generate lines, lines surfaces and surfaces solids. The seed is a point, the stem is a line, the leaf is a surface, the fruit is a solid. In the mineral kingdom lines predominate, in the vegetable, surfaces, in the animal, solids.⁶⁸

Although limited to the first three dimensions (point-line-surface-solid), suggestions to the potential for an expansion to a higher level were not lacking. References to Theosophical books over this same period included particular mentions of Theosophical ideas such as the "higher plane" of existence, or "higher life", and also discussed the notions of evolution and involution and the role that "mathematics and high mathematics" could play in the past and future of man.⁶⁹

Bragdon's "New Humanism": "higher space" and "higher organicism"

Following these early associations between evolutionary hierarchy and a dimensional ladder, Bragdon's involvement in the "fourth dimension" tradition can clearly be seen as a natural development of his thought. From the proportional qualities of the human figure and the evolutionary hierarchy between natural forms Bragdon's interest broadened to include those "higher regions of thought and feeling which man alone inhabits".⁷⁰

The final part of his discussion in his "Man the Square" made these connections most evident. As Bragdon proceeded to his discussion of the world-Saviour, he signified this higher level of existence by raising his symbol of the square by one dimension to the figure of the cube. By "folding down" this higher-dimensional figure so that this could be perceived in the two-dimensional plane where the square is limited, Bragdon was able to relate this discussion to the symbol of the Cross (Figure 6). This "folding-down" of the cube-Christ, Bragdon argued, represents the incarnation of the saviour.⁷¹ Quoting from what he presented as one of Christos's discourses that were preserved, Bragdon wrote:

[QUOTE] This is my body, broken for you. This cruciform figure formed by these six figures is not my immortal body; the squares are but boundaries of it, folded down into a lower-dimensional world. When my mission is accomplished and I ascend again into heaven, I shall refold these squares into a single symmetrical figure, my heavenly body, a solid of the higher-dimensional space beyond your ken.⁷²

Such higher levels of existence, or worlds of different dimensionality, were not considered by Bragdon to be out of reach. Instead, Bragdon understood successive dimensionalities as part of an evolutionary process and adopted the notion of a "threshold of consciousness", from Carl du Prel's *Philosophy of Mysticism*.⁷³ Du Prel argued that it was such a "threshold" that marked the line at which the distinction between the "real" and the "transcendental" was drawn, but that this line was

“movable”. Bragdon commented: “if this shifting psycho-physical threshold is simply the dividing line between lower and higher spaces, then the whole evolutionary process consists in the conquest, dimension by dimension, of successive space-worlds”.⁷⁴

Continuing from his reference to Du Prel’s “psycho-physical threshold” in his *Primer*, Bragdon again discussed the concept of “Evolution” as “Space-Conquest” in his second book on the fourth dimension, *Four-dimensional Vistas*,⁷⁵ first published in 1916. As he wrote that “Evolution is a struggle for and a conquest of space”,⁷⁶ he extended this “conquest” to all manifestations of life: the birth and growth of organisms; the fight of nations over land; or as measure of individual success by means of the amount of space each commands as part of his property.⁷⁷

Because Bragdon included architecture in humankind’s creations, this point attains particular significance. He discussed the creation of architecture as a progression from one to three dimensions and, in this context, saw the tunnel and the skyscraper as the “third-dimensional extension” of this conquest of space. In an interesting way, in these architectural examples, Bragdon did not proceed further than the third dimension. As in all his discussion about dimensional sequence in humankind’s creations,⁷⁸ he justified this limitation to three dimensions as due to the difference between organisms and artefacts, that is, machines. He contended that man’s creations cannot be compared to live organisms – and, in this connection, man’s conquest of space by means of his own creations would stop in three dimensions.⁷⁹ In this context, it was his adoption of symbolism as a principal element of all his art⁸⁰ that allowed him to introduce “higher space” in his “Projective Ornament”. Considering this particular approach to Projective Ornament in parallel to his emphasis on the association of ornament with beauty and life, it is argued here that Bragdon put forward a new type of humanist architecture that aimed to express the *higher* beauty of *conscious* life.

Indeed, according to Bragdon, the life principle, that is, the power of growth and renewal, distinguished the “most perfect machine” from the “humblest flower” and, in an analogous way, “the highest product of the vegetable kingdom” is inferior to man, since man “can reflect upon his own and the world’s becoming, while the plant can only become”.⁸¹ It is precisely on this basis that Bragdon’s use of fourth-dimensional geometry as the raw material for his Projective Ornament is interpreted here as “humanism” – or, a higher type of “organicism”. This aimed to represent not merely the human figure but a more complete “picture” of human nature, including the “higher functions of consciousness – volition, emotion, intellection” that “according to the Higher Space Hypothesis” are “correlated” with “the higher powers of number, and with the corresponding higher developments of space”.⁸² It is in this same way that they are also the next step in the sequence “line, surface, solid” that was associated with the mineral, the vegetable and the animal “kingdoms” in the entry to his 1891 notebook.⁸³ **Conclusion**

In his autobiography Bragdon appears to distance himself from “Humanism” as he notes that in *The Beautiful Necessity* he “attempted to show forth a mystical and symbolical content traceable in the architectures of ancient Egypt, Greece, and northern Europe during the two mystical centuries of the Middle Ages, but lost sight of after the rise of Humanism”.⁸⁴ However, closer study of his work reveals a deep

affinity with “subjective” elements associated with the notion of space as well as a keen interest in developments regarding the study of human subjectivity, such as the transition from belief systems and metaphysics to nascent psychological and psychoanalytical explorations.⁸⁵

Despite this apparent contradiction with Bragdon’s rejection of Renaissance architecture in his autobiography, the adjective “humanist” is used here to explain a fundamental property of his work that developed from an interest in the human figure as a prototype for beauty to explorations of psychological and spiritual aspects of the human and their symbolic representations in architecture via his Projective Ornament. Although seemingly idiosyncratic, Bragdon’s work actually reflects the wider intellectual milieu in which evolutionary theories, the two New Geometries, the composite nature of the notion of space, and psychological and psychoanalytical theories developed.

Considering the limited coverage of Bragdon’s work and of “New Geometries” in relation to architecture, further research on the impact that special types of space had on architectural theory and practice is invited. This research is of historic interest but also remains relevant to cross-disciplinary connections that continue to the present day, for instance, intersections between architectural theory and psychoanalytical or neuroscience studies. It can also contribute to critical engagement with contemporary developments regarding electronic media for architectural representations, artificial intelligence as well as virtual realities that continuously challenge the formal and material means of architectural expression and communication. As a result, thought-provoking ideas discussed by Bragdon resonate with contemporary challenges to proven or time-honoured approaches to architecture. A parallel consideration of Bragdon’s work and current experimentation along these lines is therefore also invited, as it could enrich the role that architectural theory and practice can play between the human and their physical environment.

ENDNOTES

-
- ¹ Claude Bragdon, *Projective Ornament*, Brighton, Seattle: Unicorn Bookshop, (1915) 1972.
- ² Lewis Mumford, ed., *Roots of Contemporary American Architecture*, New York, 1956, 422, as quoted in Siân Loftus, “Bragdon in Context”, *Edinburgh Architecture Research*, Vol. 26 (September 1999), 155—85; Bruno Zevi, *Towards an Organic Architecture*, London, 1950.
- ³ Rochester, NY, Bragdon Family Papers (Department of Rare Books, Special Collections and Preservation, Rush Rhees Library, University of Rochester, NY, USA) [hereafter “BFP”], A.B81 36:1, 10 February 1891.
- ⁴ Claude Bragdon, “Salvaged from Time”, *American Architect and Architecture*, 5 parts (1936—37), IV (February 1937), (81—84) 84.
- ⁵ Claude Bragdon, *The Beautiful Necessity: Seven Essays on Theosophy and Architecture*, Rochester, NY, 1910; Claude Bragdon, *Projective Ornament*, Brighton, Seattle, (1915) 1972; Claude Bragdon, *Architecture and Democracy*, New York, 1918; and Claude Bragdon, *The Frozen Fountain (Being Essays on Architecture and the Art of Design in Space)*, New York, 1932.
- ⁶ A list of Bragdon’s published writings is available online: <http://www.lib.rochester.edu/index.cfm?PAGE=1762> (accessed on 9 May 2016).
- ⁷ Claude Bragdon, “Letters from Louis Sullivan”, *Architecture*, 64 (July 1931), 7—10; Claude Bragdon, *The Secret Springs. An Autobiography*, London, 1938, 154—159; Jonathan Rider Massey, “Architecture and Involution: Claude Bragdon’s Projective Ornament”, doctoral thesis, University of Princeton, 2001, 38—39 and Ch. 10; Louis Sullivan, *Kindergarten Chats on Architecture, Education and Democracy*, ed. and introd. Claude Fayette Bragdon, S. l., 1934.
- ⁸ BFP A.B81 Box 33, 16 and 17 July 1908. For more information on Bragdon and Wright see also Massey, “Architecture and Involution”, 25 and 34; Bragdon, *Secret Springs*, 151; and BFP A.B81 2:3, Letter from Frank Lloyd Wright to Claude Fayette Bragdon, 27 May 1932.
- ⁹ Lewis Mumford, “Towards Modern Architecture”, in *The Brown Decades*, 2nd edn, New York, 1955, 152; and Mumford, *Roots*, 422, as quoted in Loftus, “Bragdon in Context”.
- ¹⁰ Seldon Cheney, *A Primer of Modern Art*, 10th revised and enlarged edn, New York, 1939; Seldon Cheney, *The New World Architecture*, London, 1930; and Seldon Cheney, *Expressionism in Art*, New York, 1934.
- ¹¹ William Lescaze, *On Being an Architect*, New York, 1942.
- ¹² Bruno Zevi, *Towards an Organic Architecture*, London, 1950.
- ¹³ Obituary in *New York Times*, 18 September 1946; Bragdon, *Secret Springs*, 254; BFP, A.B81 1:17—18; Eugenia Victoria Ellis, “Squaring the Circle: The Regulating Lines of Claude Bragdon’s Theosophic Architecture”, doctoral thesis, Virginia Polytechnic Institute and State University, 2005, 26 n. 63.
- ¹⁴ Massey, “Architecture and Involution”; Mary Nixon, “Technically Symbolic: The Significance of Schema and Claude Bragdon’s Sinbad Drawings in ‘The Frozen Fountain’,” doctoral thesis, University of Pennsylvania, 2005; Ellis, “Squaring the Circle”; Christina Malathouni, “In Search of the Beauty of Conscious Life: Claude Bragdon’s ‘Spatial’ ‘Philosophy of Architecture’ and the ‘Fourth Dimension’ Tradition”, doctoral thesis, University College London, 2010. See also: Dorothy M. Cantor, “Claude Bragdon and His Relation to the Development of Modern Architectural Theory”, M.A. Dissertation, University of Rochester, 1963.
- ¹⁵ Jonathan Rider Massey, *Crystal and Arabesque: Claude Bragdon, Ornament, and Modern Architecture*, Pittsburgh, PA, 2009.
- ¹⁶ Eugenia V. Ellis and Andrea G. Reithmayr, eds., *Claude Bragdon and The Beautiful Necessity*, Rochester, NY, 2010.
- ¹⁷ Jonathan Rider Massey, “New Necessities: Modernist Aesthetic Discipline” (Claude Bragdon), *Perspecta*, no. 35, 2004, 112—133; and “Looking Through Axonometric Windows”, *Architectural Theory Review*, Volume 12, Issue 1, 2007, 8—35. Christina Malathouni, “Claude Bragdon Reads Arthur Schopenhauer”, in eds. Eugenia Victoria Ellis and Andrea G. Reithmayr, *Claude Bragdon and The Beautiful Necessity*, Rochester, NY: RIT Cary Graphic Arts Press, 2010, pp. 3—8; “Architecture is the pattern of human mind in space”, *The Journal of Architecture*, Vol.18, No.4, pp. 553—69; and “Gradations of Consciousness and Claude Bragdon’s ‘Space-Conquest’,” eds. John Shannon Hendrix and Lorens Eyan Holm, *Architecture and the Unconscious*, Routledge, 2016, 57—75.
- ¹⁸ Linda Dalrymple Henderson, *The Fourth Dimension and Non-Euclidean Geometry in Modern Art*, Princeton, NJ, 1983. This publication remains to date the definitive study on the subject and a second revised edition by MIT Press was published in March 2013.

-
- ¹⁹ See Ch. 4 in Henderson, *The Fourth Dimension*; and Linda Dalrymple Henderson, “Claude Bragdon, the Fourth Dimension and Modern Art in Cultural Context”, in *Claude Bragdon and The Beautiful Necessity*, eds. Eugenia V. Ellis and Andrea G. Reithmayr (Rochester, NY, 2010), 73—86.
- ²⁰ Massey, “Architecture and Involution”, 115.
- ²¹ Adrian Forty, *Words and Buildings: A Vocabulary of Modern Architecture*, 2000.
- ²² See Chapter 3 in Massey, “Architecture and Involution”, 92-134.
- ²³ Massey, “Architecture and Involution”, 110—118; and Massey, *Crystal and Arabesque*.
- ²⁴ Malathouni, “Claude Bragdon Reads Arthur Schopenhauer”; “Architecture is the pattern of human mind in space”; and “Gradations of Consciousness”.
- ²⁵ Malathouni, “Gradations of Consciousness”.
- ²⁶ Ellis, “Squaring the Circle”.
- ²⁷ Malathouni, “Architecture is the pattern of human mind in space”.
- ²⁸ Claude Bragdon, “The ‘Village Bank’ Series: P”; “The Music of Architecture”, *N.Y. Evening News*, 21 June 1902; “L’Art Nouveau and American Architecture”, *Brickbuilder* 12 (October 1903), 204—06 (this article also appeared in: *Architectural Review* (October 1903); *Articraft*, 1 (December 1903), 29—42; *Builder* (December 1903); *Inland Architect and News Record*); “The Sleeping Beauty”, *Craftsman*, 4 (August 1903), 338—47; “The ‘Dead Hand’ in Architecture; Or A New Space-Language For To-Day”, *The Brickbuilder*, 23 (July 1914), 149—51; and “The Fourth Dimension”.
- ²⁹ Malathouni, “Claude Bragdon reads Arthur Schopenhauer”; “In Search of the Beauty of Conscious Life”; and “Architecture is the pattern of human mind in space”.
- ³⁰ Claude Bragdon, “Art and the Machine Age”, *Tomorrow*, 1 (November 1941), (9—14) 9—10.
- ³¹ Claude Bragdon, “Art and Geometry”, *Architectural Review*, 2 parts, Vol. IV, Nos. 3—4 (March—April 1916), 29—32 and 58—61; “Patterns from Magic Squares”, *Architectural Forum*, 26 (March 1917), 71—76; “Mathematics as a Source of Decorative Design”, *American Architect*, Vol. 112, No. 2192 (26 December 1917), 465—70; “A Dissertation on Dynamic Symmetry”, *Architectural Record*, 56 (October 1924), 305—15; “Ornament from Magic Squares”, *Architectural Record*, 60 (December 1926), 506—16; “Experiments in a Language of Form”, in *New Image* (1928), 117—37; “Ornament from the Platonic Solids”, *Architectural Record*, 63 (June 1928), 504—12; “The Problem of Ornament”, *Architecture*, 65 (April & June 1932), 203—08 and 317—21; “To Be Skipped By The Casual Reader”, in *Frozen Fountain*, 102—115; “A New Ornamental Mode”, *Architect's World*, 1 (April 1938), 115—159.
- ³² For a discussion on all six Scammon lectures presented in 1915, see Ch. 3 in Massey, “Architecture and Involution”. More privately, Bragdon had given an interesting account of his plans for more writings to his second wife, Eugenie, in April 1912. (BFP A.B81 27:2, Letter from Claude Fayette Bragdon to Eugenie Macaulay Bragdon, 25 April 1912.)
- ³³ Claude Bragdon, “Organic Architecture”, in *Six Lectures on Architecture; The Scammon Lectures at The Art Institute of Chicago*, Ralph Adams Cram, Tomas Hastings and Claude Bragdon (Chicago, 1917), (123—144) 143; Bragdon, *Secret Springs*, 180.
- ³⁴ Bragdon, “Organic Architecture”, 135—136.
- ³⁵ Claude Bragdon, “The Language of Form”, in *Six Lectures on Architecture; The Scammon Lectures at The Art Institute of Chicago*, Ralph Adams Cram, Tomas Hastings and Claude Bragdon, Chicago, 1917, (145—172) 145.
- ³⁶ Bragdon, “Language of Form”, 145.
- ³⁷ Bragdon, “Language of Form”, 171.
- ³⁸ Bragdon, “Mathematics as a Source of Decorative Design”, 469.
- ³⁹ Bragdon noted in his article “Language of Form”: “We do not want an ornament which is individual, but one which is universal; not one which has style, but one which *is* a style” (160).
- ⁴⁰ Bragdon, *Projective Ornament*, 3—5.
- ⁴¹ Bragdon, *Secret Springs*, 3; BFP A.B81 Box 33; and Malathouni, “In Search of the Beauty of Conscious Life”, 69—72.
- ⁴² Horatio Greenough, “American Architecture” (1843), in *Form and Function: Remarks on Art, Design, and Architecture*, eds. Harold A. Small, introduction by Erle Loran, Berkeley and Los Angeles: University of California Press, 1958, 51—68.
- ⁴³ Greenough, “American Architecture”, footnote in page 51.
- ⁴⁴ David Michael Hertz, *Angels of Reality: Emersonian Unfoldings in Wright, Stevens, and Ives*, Carbondale and Edwardsville: Southern Illinois University Press, 1993, 27.

-
- ⁴⁵ Ralph Waldo Emerson, *The Collected Works of Ralph Waldo Emerson*, Vol. VI: “The Conduct of Life”, Historical Introduction by Barbara L. Packer, Notes by Joseph Slater, Text Established and Textual Introduction and Apparatus by Douglas Emory Wilson, Cambridge, Mass., and London, England: The Belknap Press of Harvard University Press, 2003, 196 n. 60.
- ⁴⁶ See, for example, Claude Bragdon, *The Beautiful Necessity: Seven Essays on Theosophy and Architecture*, 2nd edn, London: G. Routledge & Sons, Ltd, 1923, 32.
- ⁴⁷ Claude Bragdon and Cleome Carroll, “Art and Industry”, *Outlook*, 158 (10 June 1931), 176—78; “And What of Art?”, in Part IV of *Where Theosophy and Science Meet*, Madras, India, 1939, pp. 191—92; “Art and the Machine Age”, 9—10. See also Bragdon, *Secret Springs*, 168—69.
- ⁴⁸ Bragdon, “A New Ornamental Mode”, 157; also repeated in Bragdon, “And What of Art?”.
- ⁴⁹ Claude Bragdon, “Abstract Thoughts on Concrete Bridges”, *Architectural Record*, Vol. LIII, No. 53 (January 1923), 2—10. Most of the discussion in this article is also copied in Bragdon, “Salvaged from Time”. See also Bragdon’s review of Le Corbusier’s *Towards a New Architecture*, included in Bragdon’s 1928 article under the same title: Claude Bragdon, “Towards a New Architecture”, *The Outlook*, 148 (15 February 1928), 242—46.
- ⁵⁰ See Emerson’s essay “Beauty” in *The Conduct of Life* (1860, rev. 1876).
- ⁵¹ Bragdon, “Problem of Ornament”, 320; also *The Frozen Fountain*, 70.
- ⁵² Magic squares constitute the second major source of “raw material” for his Projective Ornament. These are squares which contain numbers arranged in equal rows and columns such that the sum of each row, column, and sometimes diagonal is the same (Bragdon, *Projective Ornament*, 47—58).
- ⁵³ See “Credits” included in the Foreword of Bragdon’s *Projective Ornament* book.
- ⁵⁴ For example, the method of inscribing regular four-dimensional figures in a hypersphere. (See Bragdon, *Projective Ornament*, 26.)
- ⁵⁵ “‘New geometry’ is used as a relative term, in that the n -dimensional and non-Euclidean geometries, which seemed so novel and modern at the turn of the century, had actually existed since the first half of the nineteenth century” (Henderson, *The Fourth Dimension*, pp. xx, n. 3).
- ⁵⁶ Henderson, *The Fourth Dimension*. This publication remains to date the definitive study on the subject and a second revised edition by MIT Press was published in March 2013.
- ⁵⁷ Frank Lloyd Wright, ‘In The Cause of Architecture IX: The Terms’ (1928), in Wright, *Frank Lloyd Wright Collected Writings*, Vol. I, 1992, 310—316 (first published in *The Architectural Record*, December 1928); and Le Corbusier, ‘Ineffable Space’, in Le Corbusier, *New World of Space*, New York; Boston: Reynal & Hitchcock; The Institute of Contemporary Art, 1948, 7—9.
- ⁵⁸ Claude Bragdon, “Mysticism and Architecture”, *Interstate Architect a Builder* (13 & 20 July 1901), 10—11, 13—14.
- ⁵⁹ Bragdon, “Language of Form”, 162.
- ⁶⁰ Bragdon, “Language of Form”, 162—65.
- ⁶¹ Bragdon, “Mysticism and Architecture”, 10.
- ⁶² Bragdon, *Beautiful Necessity*, 64—75. Bragdon explained this title by quoting from Carlyle that “there is but one temple in the world, and that is the body of man” and further maintained that “a temple or any architectural art is a larger body which man has created for his uses”. (Bragdon, *Beautiful Necessity*, 50).
- ⁶³ William Rimmer, *Art Anatomy*, Boston, MA, 1877.
- ⁶⁴ In addition to the essay “The Bodily Temple” in Bragdon’s *Beautiful Necessity*, see his early 1890s notebook in BFP A.B81 36:2 and 36:4.
- ⁶⁵ This illustration presents - within a semi-circular frame: a baby crawling, a young, upright standing adult (who looks like an ancient Egyptian) and a hump-backed old man leaning on a walking-stick.
- ⁶⁶ Claude Bragdon, *A Primer of Higher Space, The Fourth Dimension* (to which is added *Man the Square, A Higher Space Parable*), London, 1939, 63.
- ⁶⁷ BFP A.B81 36:1, 11 February 1891; Schopenhauer, *World as Will and Idea*, vol. III, 239. See also Malathouni, “Architecture is the pattern of human mind in space”.
- ⁶⁸ BFP A.B81 36:1, 10 February 1891.
- ⁶⁹ See reference to G. W. – M. D., *Theosophy and the Higher Life* (London, 1880) (in BFP A.B18, Box 33, 20 March 1890) and notes from Two Chelas in the Theosophical Society, Man: Fragments of Forgotten History, London, 1885 (in BFP A.B18, Box 33, 21 March 1890).
- ⁷⁰ Bragdon, *Beautiful Necessity*, 49.
- ⁷¹ Bragdon, *Primer of Higher Space*, 75 Fig. 7.
- ⁷² Bragdon, *Primer of Higher Space*, 76—77.
- ⁷³ Carl Du Prel (Dr. PHIL.), *The Philosophy of Mysticism*, transl. C. C. Massey, 2 Vols (London, 1889).
- ⁷⁴ Bragdon, *Primer of Higher Space*, 22—23.

⁷⁵ Claude Bragdon, *Four-Dimensional Vistas*, 2nd edn, London: G. Routledge & Sons, (1916) 1923.

⁷⁶ Bragdon, *Four-dimensional Vistas*, 31.

⁷⁷ Bragdon, *Four-dimensional Vistas*, 31—32.

⁷⁸ Bragdon's examples of dimensional sequences in humankind's creations include: architecture; ship design: points-lines-planes-solids; and books-shelves-racks of shelves-library rooms. Bragdon also writes: "Man has been called the thinking animal. *Space-eater* would be a more appropriate title, since he so dauntlessly and persistently addresses himself to overcoming the limitations of his space" (Bragdon, *Four-dimensional Vistas*, 33—35, 127).

⁷⁹ Bragdon, *Four-dimensional Vistas*, 33—35.

⁸⁰ For an extensive discussion of the "communicative" role of Bragdon's ornament, see Ch. 3 in Massey, "Architecture and Involution".

⁸¹ Bragdon, *Four-dimensional Vistas*, 35—36.

⁸² Bragdon, *Four-dimensional Vistas*, 36.

⁸³ BFP A.B81 36:1, 10 February 1891.

⁸⁴ Bragdon, *Secret Springs*, 254.

⁸⁵ Malathouni, "Gradations of Consciousness".