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Research

The Octagon in the Houses of Orson Fowler

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Abstract. Orson Squire Fowler (1809-1887) was an American author who wrote a fantastic book about octagonal houses in the mid-nineteenth century. This present essay focuses on how radial geometry can be used as a tool placed for designing comfortable, affordable housing. Octagonal geometry can be used as a tool for controlling nature, or as a system for controlling construction. This duality is synthesized in Fowler's use of the octagon. The analysis is extended to two other buildings with octagonal plans, one ancient, the Hellenic "Tower of the Winds," the other contemporary, Álvaro Siza's "Mickey Mouse House."

Introduction

> It is the loveliest study you ever saw … octagonal with a peaked roof, each face filled with a spacious window … perched in complete isolation on the top of an elevation that commands leagues of valley and city and retreating ranges of distant blue hills. It is a cozy nest and just room in it for a sofa, table, and three or four chairs, and when the storms sweep down the remote valley and the lighting flashes behind the hills beyond and the rain beats upon the roof over my head – imagine the luxury of it.
>
> Mark Twain[1]

This present study focuses on the architectural thinking that Orson Fowler formulated in the book *A Home for All or The Gravel Wall and Octagon Mode of Building New, Cheap, Convenient, Superior and Adapted to Rich and Poor* [1848, 1853]. This treatise presented a persuasive array of practical actions that established a "community" of octagonal buildings still visible today, mostly in the eastern United States.

Outlining, although briefly, a kind of shape "genealogy" generated by the octagonal diagram allows us to locate the philanthropist and dilettante Fowler's proposal as an intermediate between such works as the Tower of Winds, built in Athens around the year 50 B.C. by the Greek Andronicus of Cyrrhestes, and the modern-day Pego Guesthouse in Sintra, Portugal, nicknamed the "Mickey Mouse House" designed by Álvaro Siza with António Madureira. The time span presupposes a systematic recourse to a particular geometrical form as the generating source of an order determinant for its rationality.

The example of these two singular buildings enables us to evoke some paradigmatic circumstances in the use of geometry as a system of formal, functional, technical and design control. In particular, on one hand, octagonal geometry as a tool for controlling nature; on the other, octagonal geometry as system for controlling construction. This duality is crucial for understanding the significance of Fowler's ideological and architectural proposal.

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The Tower of Winds: the urgency to rationalize nature

The Tower of the Winds is mentioned in Book I of Vitruvius's *Ten Books of Architecture* and was the object of considerable attention in the Beaux-Arts academies of the late eighteenth century, thanks to the success of the drawings included in the book *The Antiquities of Athens* [Stuart and Revett 1787] (figs. 1 and 2). The Greek octagonal tower was built for reading the sun and the winds, in addition to hosting a monumental water clock powered by a water tank attached to one façade. This clock guaranteed the reckoning of time regardless of whether or not weather conditions made it possible to read the sundial. The construction was praised as a precision instrument for identifying the various winds.

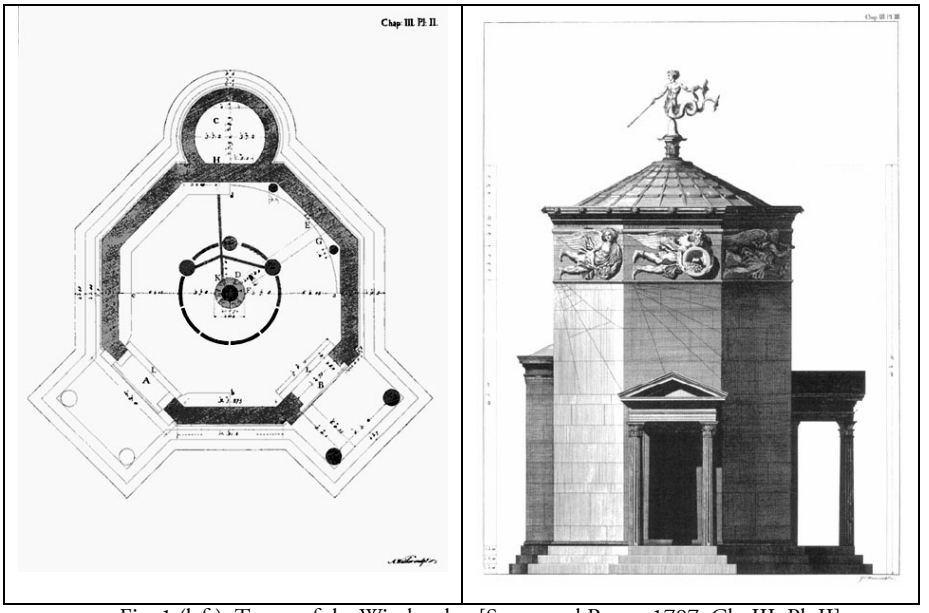


Fig. 1 (left). Tower of the Winds, plan [Stuart and Revett 1787: Ch. III, Pl. II]
Fig. 2 (right). Tower of the Winds, façade [Stuart and Revett 1787: Ch. III, Pl. III]

Vitruvius used the tower to warn about the problem of unhealthy cities. He said that the urban planning should take into account topography and its relation to the prevailing winds, which "if cold, are unpleasant; if hot, are hurtful; if damp, destructive" [Vitruvius 1826: I, VI, 24]. Thus, to determine the winds' orientation, it was necessary was to place a marble slab with a gnomon in the centre of the future city, on which could be traced the shadow of the sun in order to establish the cardinal directions; then a circle divided into eight equal parts would establish the direction of the eight winds. After describing the geometrical rules, Vitruvius suggests:

> Divide the remainders of the circumference on each side into three equal parts, and the divisions or regions of the eight winds will be then obtained: then let the directions of the streets and lanes be determined by the tendency of the lines which separate the different regions of the winds. … Streets or public ways ought therefore to be so set out, that when the winds blow hard their violence may be broken against the angles of the different divisions of the city, and thus dissipated [Vitruvius 1826: I, VI, 27].

The Hellenic construction is in fact a cosmic machine and essentially represents a kind of scientific control over nature: its geometry tends to organize natural phenomena systemically. Vitruvius's transposition of geometry to city planning expands on this fact, using it to govern the construction of a new organization: in this case, urban morphology. This is an action of domination which, through a process of geometrical measurement and organization, leads to an abstract order. The structure of geometry thus provides a rationality that gives rise to an abstract built environment in opposition to the chaos of nature. As Ortega y Gasset said, the Greeks were the first ones to extend a "scientific reticular" over the natural phenomena and, therefore, put order in the "original confusion" [Ortega y Gasset 1995:123].

The Mickey Mouse House: abstract or organic

Regarding the advantage of geometry when it is subject to recognizable and rational rules, Wilhelm Worringer (1881-1965) mentions the elimination of the last life residue:

> We therefore put forward the preposition: The simple line and its development in purely geometrical regularity was bound to offer the greatest possibility of happiness to the man disquieted by the obscurity and entanglement of phenomena. For here the last trace of connection with, and dependence on, life has been effaced, here the highest absolute form, the purest abstraction has been achieved; here is law, here is necessity, while everywhere else the caprice of the organic prevails [Worringer 1997: 20].

This thought, first expressed in 1908, opened a discussion about the organic and abstract meaning, a debate which was of great significance to Modern Movement. On one side there was the abstraction of the geometrical forms with recognizable structure, product of a rational culture; on the other side, the organic, with biological links, which maintains the emotional and ontological connection between man and nature, recalling its position relative to the mechanics of the natural world.

The dialectic between abstract and organic forms can be observed in several of Álvaro Siza's works. For example, in the Pego House,[2] the octagonal "house-object" is contrasted with the contiguous "house-landscape" (figs. 3-5).

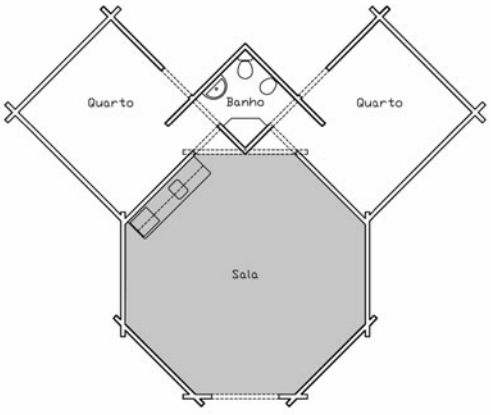


Fig. 3. Pego Guesthouse, nicknamed "Mickey Mouse," ground floor plan
(António Madureira Personal Archive)

The organically designed structure of the main house – irregular and apparently arbitrary – differs from the monolithic accuracy of the formal rigidity of the small volume of the guesthouse.

It is possible to identify two attitudes in the project linked to different architectonic languages[3] placed in close proximity: the spontaneous, sinuous and apparently unordered form, where "organicism" is augmented by the use of a wooden surface coating the façade; and the regularity and repetition of architectonic elements that emphasize the solitude of the octagonal house.

Fig. 4. Mickey Mouse House, Sintra, 2007 (Author's Personal Archive)

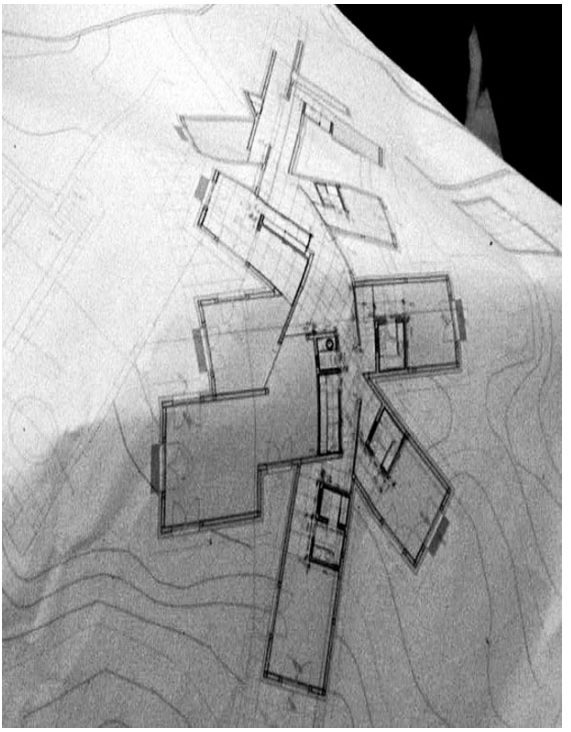
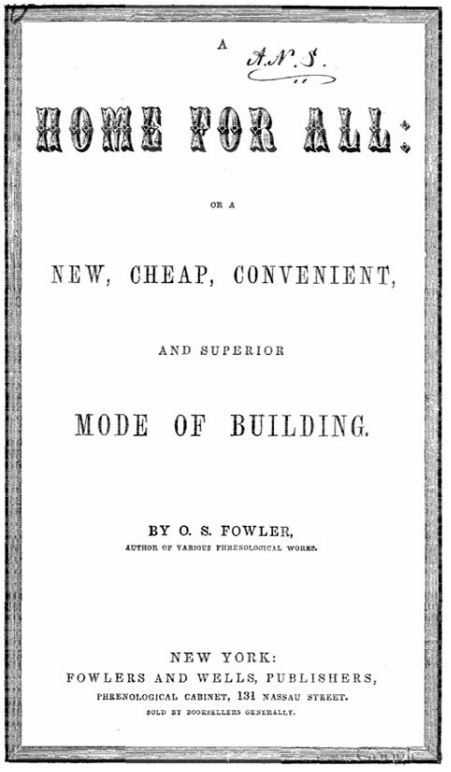


Fig. 5. Pego Main House, ground floor plan (Author's Personal Archive)

To use Christian Norbert-Schulz's (1924-2000) terms, the high degree of "concentration" [Norberg-Schulz 1966: 136] ascribed to the octagonal prism means that it is only able to accept expansion by aggregating other, autonomous elements. This condition leads to the independence of the pieces attached and a topological isolation. The desire and use of simple geometrical forms makes it possible for us to to put some concepts already present at the very beginning of the Modern Movement in direct relation to each other, particularly those related to categorization and standardizing. Although it doesn't make sense in the Sintra guesthouse to talk about a mass produced solution, the use of standard solutions was important for the building design process to ensure the rapid speed of execution and low cost of construction. The problem of submitting to criteria such as industrial design, pre-fabrication, typical elements or prototypes was solved by the capacity of the regular octagon plan to synthesize these requirements.

These two distinct uses of the octagon figure allows us to focus on the limits of Orson Fowler's proposal – the relation with the natural order and the creation of an abstract legitimacy – as well as its ability to solve different kind of problems in a single logical system.

The octagonal geometry of Orson Fowler's houses


A

A Home for All

HOME FOR ALL:

OR A

NEW, CHEAP, CONVENIENT,

AND SUPERIOR

MODE OF BUILDING.

BY O. S. FOWLER,

AUTHOR OF VARIOUS PHRENOLOGICAL WORKS.

NEW YORK:

FOWLERS AND WELLS, PUBLISHERS,

PHRENOLOGICAL CABINET, 131 NASSAU STREET.

SOLD BY BOOKSELLERS GENERALLY.

In 1848, Orson Fowler published the book *A Home for All: or a New, Cheap, Convenient, and Superior Mode of Building* (fig. 6).[4] The work is a manual of practical construction; the numerous re-editions it enjoyed during the second half of the nineteenth century attest to its influence and popularity.

Fowler was the most important advocate and practitioner of phrenology: now a pseudoscience, it was the precursor of modern psychology and neurology.[5] An idealist and man of action, his conception, focusing on "phrenological reason," eloquently addresses some of the social problems of industrial society and, particularly, Victorian age prejudices related to the emancipation of women, sexual education, the conjugal relationship in marriage, family organization and, therefore, the transformation of domestic space.

Fig. 6. Cover of Orson Fowler's *A Home for All: or a New, Cheap, Convenient, and Superior Mode of Building*, 1848

In Fowler's view, man's ability to build is a latent quality of thought because it is a primary need. Particularly, the revelation of man's "Inhabitiveness" and its "Constructiveness" [6] – to know how to Inhabit and to know how to build – gives him a special flair for designing his own home. This capacity allows him to develop his thinking about an "ideal house," which must be based on the octagonal panoptical geometry.[7]

Besides its historical significance as sacred geometry to structure religious architecture, namely those dedicated to the Virgin Mary and the Saviour, the octagon also seems to have a remarkable aptitude to support domestic programs. Before Fowler, we can identify other cases: Wadstrom proposal for temporary houses during the colonization of Africa [Wadstrom 1764]; Inigo Jones's octagonal house stated by William Kent in 1727 [Kimball 1922]; Thomas Jefferson's sketches of Octagon Houses (ca. 1800) and his famous Poplar Forest, Virginia (1809) [Fletcher 2011].

However, the model proposed by Fowler is drawn from outside the tradition that elects geometry as a mean of approaching the symbolic or the control of certain spatial effects. The universe in which Fowler moves is more prosaic and pragmatic. His scholarship is primarily an eclectic self-education that allows him, through the logical-deductive thinking stimulated by Phrenology, to synthesize and systematize some problems related to the conception, production and use of buildings in the social and economical context of the time.

Fowler's ideal form

The fourth chapter of the book *A Home for All*, entitled "Superiority of the Octagon Form," opens eloquently with the following question:

> But is the square form the best of all? Is the right-angle the best angle? Can not some radical improvement be made, both in the outside form and the internal arrangement of our houses? Nature's forms are mostly SPHERICAL [Fowler 1853: 82].

The problem of the ideal form is not found in formulas and geometric rules anchored in the classical academic tradition. The proposition is as follows:

> … [because] the octagon form is more beautiful as well as capacious, and more consonant with the predominant or governing form of Nature – the spherical – it deserves consideration [Fowler 1853: 88].

Why does Fowler use the octagonal shape to support his thinking about a new "architecture of the house," contrary to the very tradition he himself calls the "Doric Style"? As we will see, the title chosen for the 1853 revised third edition sums up the reason for his preference: *A Home for All or The Gravel Wall and Octagon Mode of Building New, Cheap, Convenient, Superior and Adapted to Rich and Poor.*

To the question asked in the preface of the book – "Why so little progress in architecture, when there is so much in all other matters?" – Fowler replies with formal design austerity, with a new functional rationality and with a program of technical innovations, unusual for the times.

The house he built for his family in Fishkill, New York, illustrates and justifies the formal, technical and ideological proposals that the book outlines (fig. 7).

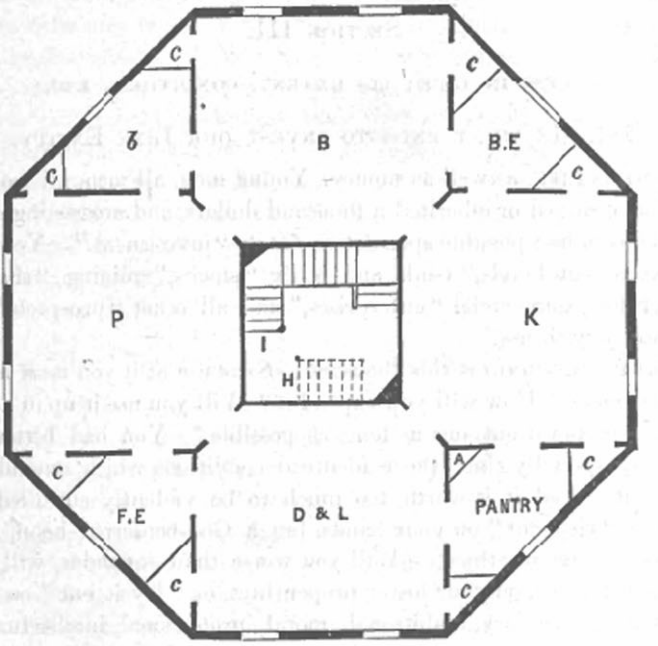
In keeping with the ideology of the *new man*,[8] the octagon is the accomplice of an architecture rooted in the practical sense of life and the promotion of a hygienic and comfortable environment. Surprisingly, in the nineteenth century this will make it possible to support a functionalist view of architecture based on certain basic principles: health criteria in the implementation, simple rules for circulation, space and technical functionality, establishment of environmental control mechanisms, updating and rationalization of materials and construction processes.

The octagonal diagram accommodates and orders this complexity, justifying it as an ideal model placed in the service of its doctrinal expansion.

occupied little during sunshine, but mostly evenings, and on special occasions; whereas living-room is used early and late, summer and winter. One often needs to lotch in sunshine, and sitting-room is its place. This a bay window, facilitated by the octagon form, promotes.

A COOL SOUTHERN BREEZE always accompanies right hot weather. This renders your sitting-room the coolest in the house, except those

20-FEET AND CENTRAL STAIRWAY PLAN.



No. 211.—THE BEST YET.

right above it, whilst in fall, winter, and spring you want all the sun you can get in your *sitting*-room, even though it robs the others.

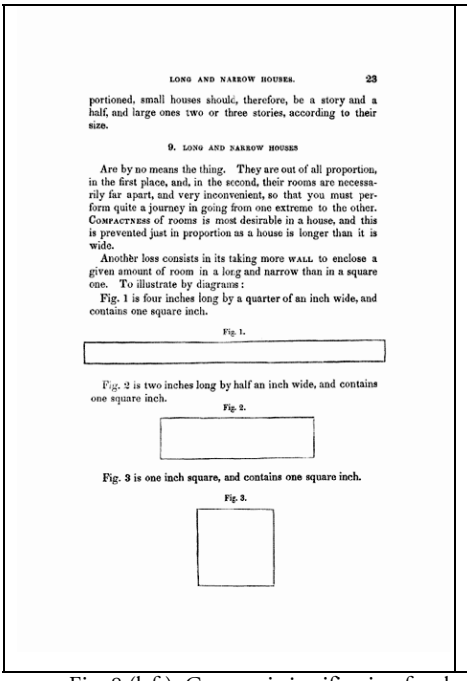
AN EAST OR WEST entrance will enable you to put your parlor on the north and sitting-room on the south side, while a northern entrance naturally gives the sun to the kitchen, and a southern to your parlor. These facts are worth considering in laying out the house you are to live in always, yet have heretofore remained unnoticed.

WOMEN SHOULD TURN ARCHITECTS. They are naturally adapted

Fig. 7. Ground floor plan, Octagon House built in Fishkill, ca. 1848 [Fowler 1873: 1179]

Fowler starts his argumentation with a harsh criticism of the spatial organization and ostentatious ornamentation of the traditional American house. The metamorphosis of space suggested by Fowler is based on the principle of economy of means to provide a comfortable home accessible to everyone.

The persuasive strategy to establish his ideal is directly addressed to the matter of why the octagon should be chosen. Through a discourse based up on simple mathematical language and linear arithmetic relations, Fowler begins by comparing the efficacy of "compactness" determined by the ratio of areas between covered spaces and façades required for space enclosure (fig. 8). By implication, this will also correspond to the circulation areas required for the rooms. Because of its efficient correspondence between perimeter and area, the circle was deemed the perfect shape (fig. 9).



LONG AND NARROW HOUSES. 23

portioned, small houses should, therefore, be a story and a half, and large ones two or three stories, according to their size.

9. LONG AND NARROW HOUSES

Are by no means the thing. They are out of all proportion, in the first place, and, in the second, their rooms are necessarily far apart, and very inconvenient, so that you must perform quite a journey in going from one extreme to the other. COMPACTNESS of rooms is most desirable in a house, and this is prevented just in proportion as a house is longer than it is wide.

Another loss consists in its taking more WALL to enclose a given amount of room in a long and narrow than in a square one. To illustrate by diagrams:

Fig. 1 is four inches long by a quarter of an inch wide, and contains one square inch.

Fig. 1.

Fig. 2 is two inches long by half an inch wide, and contains one square inch.

Fig. 2.

Fig. 3 is one inch square, and contains one square inch.

Fig. 3.

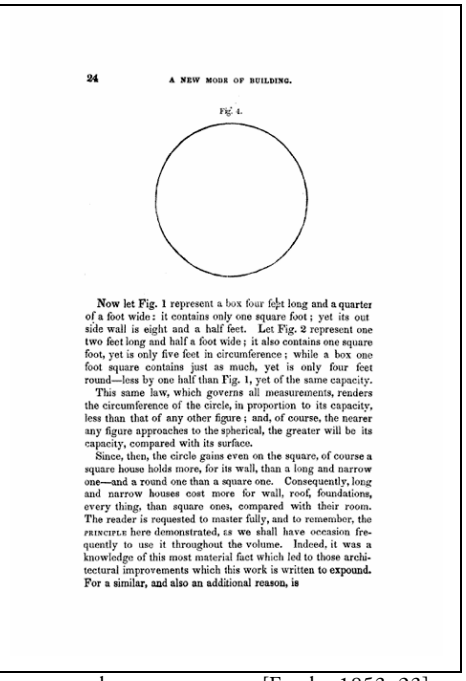


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Fig. 4.

Now let Fig. 1 represent a box four feet long and a quarter of a foot wide: it contains only one square foot; yet its out side wall is eight and a half feet. Let Fig. 2 represent one two feet long and half a foot wide; it also contains one square foot, yet is only five feet in circumference; while a box one foot square contains just as much, yet is only four feet round—less by one half than Fig. 1, yet of the same capacity.

This same law, which governs all measurements, renders the circumference of the circle, in proportion to its capacity, less than that of any other figure; and, of course, the nearer any figure approaches to the spherical, the greater will be its capacity, compared with its surface.

Since, then, the circle gains even on the square, of course a square house holds more, for its wall, than a long and narrow one—and a round one than a square one. Consequently, long and narrow houses cost more for wall, roof, foundations, every thing, than square ones, compared with their room. The reader is requested to master fully, and to remember, the PRINCIPLE here demonstrated, as we shall have occasion frequently to use it throughout the volume. Indeed, it was a knowledge of this most material fact which led to those architectural improvements which this work is written to expound. For a similar, and also an additional reason, is

Fig. 8 (left). Geometric justification for the octagon plan: compactness [Fowler 1853: 23]
Fig. 9 (right). Geometric justification for the octagon plan: perfection of the circle [Fowler 1853: 24]

The primacy of the circular plan thus promised to provide an alternative to the great bourgeois houses, with equal or greater comfort and at less expense.

With the cylinder as a conceptual framework, Fowler continues listing the reasons why the two most common housing types, the "winged house" and the "cottage," should not be built. Regarding the irrationality of the winged house he states:

> Wings on houses are not in quite as good taste as on birds. How would a little apple or peach look stuck on each side of a large one? Yet winged houses are just as disjointed and out of taste. … [L]et purse-proud, empty-headed nabobs throw away themselves, their comfort, and their Money on winged houses, but give me some other form [Fowler 1853: 74].

The winged house was problematic in terms of the comfort of space: the grandeur that was outwardly manifested corresponded to small and tight spaces inside; there were serious functional problems (for example, the "parlor" was too far from the kitchen); the radiant heat dissipated without creating a warm environment; the extension required to so that every room could be included in a single floor meant an increase in direct contact with the soil, increasing humidity problems, which was especially critical in the bedroom areas; the large surface area increased all thermal problems. All of these problems and others were used to justify the compact form as a matrix for establishing a new detached house solution.

Fowler also criticised the traditional English country house, which he calls "Doric style." The use of this typology essentially serves as a means to introduce the problem of ornament into his discourse.

> And here let me develop the law which governs this whole subject of taste and beauty. Nature furnishes our only patterns of true ornament. All she makes is beautiful, but, mark, she never puts any thing exclusively for ornament as such. She appends only what is useful, and even absolutely NECESSARY [Fowler 1853: 75].

One of the architectural issues that would be discussed at the turn of the century was related to a domesticity that is either in tune with the natural world, or in opposition to it, assuming an abstract form to be more consistent with the phenomenon of the mechanization of society. Fowler anticipated the theoretical bickering that would be conducted in the beginning of the twentieth century by critics like Adolf Loos (1870-1933). Regarding the utility of the absurd "cottage" with its multifaceted form and inclined roofs, he said:

> The BEAUTY of a house is scarcely less important than its room. True, a homely but CONVENIENT house is better than a beautiful but incommodious one, yet beauty and utility, so far from being incompatible with each other, are as closely united in art as in nature. … beauty and utility are as closely united in architecture as they are through out all Nature. … Form embodies an important element of beauty [Fowler 1853: 87].

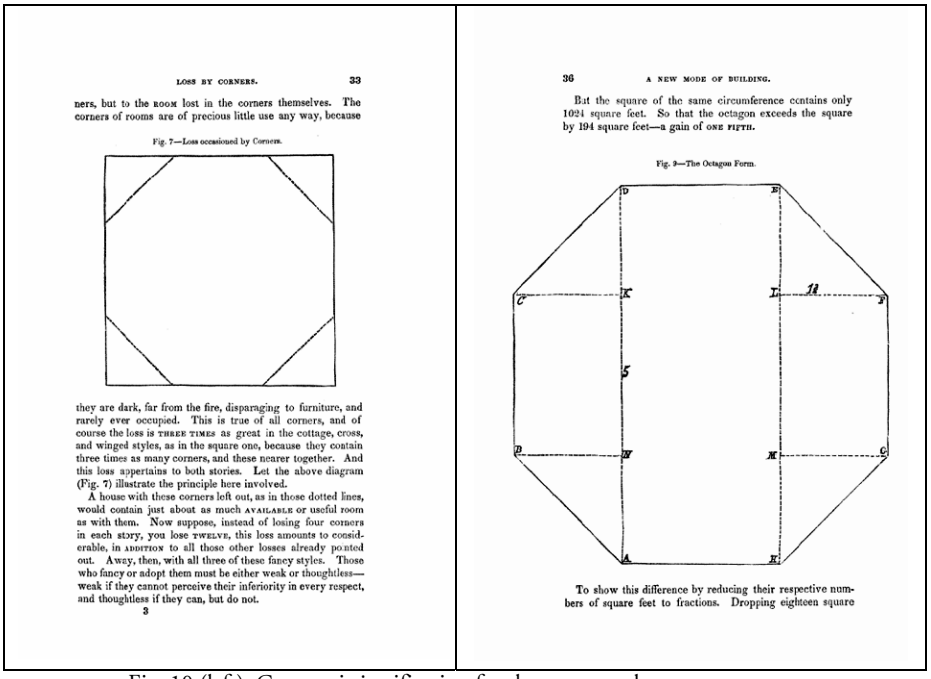
Concerning the differences between the circle and the square shapes, Fowler discusses the problem of dead spots in the square plan (fig. 10). The spaces formed by planes arranged perpendicularly suffer from the non-use of these corners. The defects are categorical: the amount of material and labour expended unnecessarily to build them; it is more difficult to heat, ventilate and light these spaces; they impose constraints on the provision of furniture. It was here that the sphere hit upon the perfect order:

> Nature's forms are mostly SPHERICAL. She makes ten thousand curvilinear to one square figure. Then why not apply her forms to houses? Fruits, eggs, tubers, nuts, grains, seeds, trees, etc., are made spherical, in order to enclose the most material in the least compass.
>
> …Why not employ some other mathematical figures as well as the square? These reasoning developed the architectural principle claimed as a real improvement, and to expound which this work was written [Fowler 1853: 82].

In a comparative analysis between natural objects and the sense of beauty of form, Fowler establishes a clear relationship between Beauty and round shapes as a universal principle. Therefore on a scale of values the triangle is at the lowest level and the circle at the highest. For Fowler this is an immutable law of nature, and he contrasts the beautiful

shape of a dome with the sharp lines of the "cottage." Thus, by approaching the perfection of natural order, represented by the circle, the intermediate octagonal shape provides the geometric matrix that encapsulates the benefits of the Octagon House (fig. 11).

Given the superiority of the octagonal plan, only a historical doubt remains: Why haven't octagonal houses been successful in the past? Fowler attributes this to the use of wood. Wood was the material of choice during the expanionist period in the United States for two complementary reasons: it was readily available and abundant; it was easier to work with than stone masonry and didn't require skilled labour. Thus, except for institutional buildings, the foundation and urban development of cities was done using lightweight constructive solutions in wood that evolved into the typical "balloon frame." Now, this way of building favoured right angles; this is the reason that Fowler cites for the lack of interest in the circular plan in general and octagonal plan in particular.



LOSS BY CORNERS. 33

ners, but to the ROOM lost in the corners themselves. The corners of rooms are of precious little use any way, because

Fig. 7.—Loss occasioned by Corners.

they are dark, far from the fire, disparaging to furniture, and rarely ever occupied. This is true of all corners, and of course the loss is THREE TIMES as great in the cottage, cross, and winged styles, as in the square one, because they contain three times as many corners, and these nearer together. And this loss appertains to both stories. Let the above diagram (Fig. 7) illustrate the principle here involved.

A house with these corners left out, as in those dotted lines, would contain just about as much AVAILABLE or useful room as with them. Now suppose, instead of losing four corners in each story, you lose TWELVE, this loss amounts to considerable, in ADDITION to all those other losses already pointed out. AWAY, then, with all three of these fancy styles. Those who fancy or adopt them must be either weak or thoughtless—weak if they cannot perceive their inferiority in every respect, and thoughtless if they can, but do not.

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But the square of the same circumference contains only 1024 square feet. So that the octagon exceeds the square by 194 square feet—a gain of ONE FIFTH.

Fig. 9.—The Octagon Form.

To show this difference by reducing their respective numbers of square feet to fractions. Dropping eighteen square

Fig. 10 (left). Geometric justification for the octagon plan: octagon vs square [Fowler 1853: 33]
Fig. 11 (right). The octagon as a mediating geometrical figure [Fowler 1853: 36]

The solution he proposed was the "gravel-wall" system. As stated in the title of the revised third edition of his book, the buildings must be constructed with a "gravel-wall." The affirmation is evidenced in several passages of the text; the construction was to be based on peripheral walls built using a kind of concrete that could use local rocks. He traces the discovery of this solution back to an episode in 1850 in Jaynesville (Wisconsin), when he met Joseph Goodrich [Fowler 1873: 20]. The discretion of the system coincides with the formulation presented in 1836 in London by George Godwin (1813-88). Godwin is regarded as the inventor of modern concrete (without steel); his "Essay on the nature and properties of Concrete, and its application to construction, up the present period" (1836) earned him that year's prize of the Institute of British

Architects of London. To Fowler, the discover of such material was crucial to the recovery of the octagonal building and, therefore, to the construction of a new "modern" and "democratic" housing solution. For this propose, the radial geometry was beneficial because permits technical innovations and creates a rational distribution of space, structure and infrastructures;[9] meanwhile, its panoptical quality allows a new kind of control over domestic movements.

Although the discussion of the advantages of the spherical shape finds a parallel in the utilitarian thinking of the classical academies of the late eighteenth century,[10] the sense that the American phrenologist gives it constitutes a unique moment in the context of domestic architecture in the Victorian age.

The success of the Octagon House due to a hybrid description that ranges from the scientific to the empirical, makes explicit an analytical and operative rationality that could be illustrated by examining the daily reality of the nineteenth century. A simple statement of the problem and the appointment of a solution that was standardized yet adaptable, comfortable yet inexpensive, innovative yet built using available means, not only led to an unprecedented number of houses being built, it also triggered a process which recognizes in Fowler's proposal a "support," that is, to use the definition of the Dutch architect John Habraken (b. 1928), that which is structural, unchangeable and collective [Habraken 1972: 92-93].

Conclusion

In the wake of encyclopedists and naturalists of the eighteenth century, the practice of phrenology involved a process of cataloguing, selection and standardization of human behaviour intended to establish *types*. Fowler would transpose that same desire into the field of architecture in order to structure a simple and logical form whose ideal could be disseminated. The selection of the octagon as a functional and formal unit of a morphological type appears to emerge from a process analogous to that of "phrenological" rationality.

The model proposed by Fowler became a house archetype that would last for a century. The exotic nature of the octagonal became secondary in the pursuit of an architecture rooted in the practical sense of life, in comfort and in hygiene, in the relationship to territory and climate. Fowler transforms the octagon into an *apparatus* of a social ideal based on technical generosity disciplined by a regular geometry. This fact becomes particularly important for architecture, if we think of George Fred Keck's House of Tomorrow[11] and Buckminster Fuller's Dymaxion House, proposals built at the start of the Modern Movement and directly inspired by the octagon house.

The survival of the model is based on a geometrical justification that explains two guiding principles. The first is concerned with natural phenomena understood in a physical dimension (climate, topography, etc.), and also perceived as manifestations of a universal organizing law that rationalizes Beauty. The second matches a particular geometry to a technical skilfulness that makes it possible to create a type, and therefore the ability to adapt without losing the logic of form.

Notes

1. Mark Twain, in a letter to William Dean Howells, 1874.
2. The Pego House constructed in Sintra, by architects Álvaro Siza Vieira and António Madureira, was finished in 2007. It consists of the main house and an adjacent, smaller one, which served as a seasonal residence during the construction phase of the main residence; it

now is used as a guesthouse. The small pre-fabricated building was designed to be rapidly built and functionally pragmatic.

3. We can compare this with what had happened in The Hague (Netherlands) twenty years earlier. We refer to the twin houses "Punkt und Comma," built between 1983 and 1988; see for example, Alvaro Siza Vieira Progetti per L'Aja and J.D.Besh, "Elogio della transformazione", in *Casabella* 538, Electa, September 1987, pp. 4-15.They constitute a formal counterpoint between the functionalist rationalism and the expressionism; two aspects that had marked the history of modern Dutch architecture.
4. *A Home for All or The Gravel Wall and Octagon Mode of Building New, Cheap, Convenient, Superior and Adapted to Rich and Poor* [Fowler 1853] is the updated third edition of the book published in 1848. The 1853 edition will be the most widespread in the successive editions.
5. During the nineteenth century Phrenology – knowledge and classification of human behavior through "topographical" readings of the skull – gained social recognition as a form of psychological insight and personal growth, which would only come to vanish with the advent of psychology and neurology in the twentieth century. In Fowler's own words: "PHRENOLOGY, derived from two Greek words, [mind, or discourse, and treatise] consists in certain cause and effect relations existing between particular developments and forms of the brain, and their corresponding manifestations of the mind; thereby disclosing the natural talents and proclivities of persons from the forms, sizes, and other organic conditions of their heads" [Fowler 1873: 115] The distinguished patients Fowler tells of are Samuel Langhorne Clemens (1835-1910) – Mark Twain – and the writer Walt Whitman (1819-92). For example, in his work Whitman include some of the topics covered in phrenology; in turn, Fowler published some of Whitman's texts in his publications, namely, in the *American Phrenological Journal*.
6. "Inhabitiveness" and "Constructiveness" are part of the faculties of the mind relatable to certain areas of the brain: "Inhabitiveness" corresponds to "Species I - Domestic Propensities," while "Constructiveness" are part of the "Species II - semi-intellectual Sentiments" which are part of "Genius II - Human, Moral, and Religious Sentiments," both included in the Order I (Affective Faculties and Feelings) [Fowler 1840: 45-50].
7. The term used is derived from the work of English philosopher and jurist Jeremy Bentham (1748-1832), a Reformist. In *The Panopticon Writings* [1995], Bentham proposes a circular prison with a convergent organization of space in the centre. "Centre power," as a spatial value, was implemented by Orson Fowler in the Octagon House; the centre is the area of distribution, the lighting, essential both in terms of structure and management of infra-structure.
8. With specific reference to the hygienist idea of "healthy body, healthy mind" and a new status of the family based on a greater independence of the household.
9. For example, the Fishkill Octagon House had running hot and cold water supplied by gravity, central heating, roof top coverage with tanks to collect rainwater and subsequent filtering for consumption, artificial lighting with natural gas, and ventilation system by convection.
10. One of the paradigmatic examples in the environment of the Academy is the French architect Jean-Nicolas-Louis Durand (1760-1834). The tendency to produce efficient buildings by the affirmation of *utilitas* and *firmitas* will be transported by Durand to a rationality that separates beauty of form from its ornamentation. As stated by Peter Collins, the theory of Durand was particularly marked both by their connection to Ecole Polytechnique and by the financial situation of France which determined preferably utilities programmes [Collins 1977: 19].
11. The octagon houses of Orson Fowler were built over a widespread area; one of these houses was built in 1853 in Watertown, in a property that bordered upon the family of George Fred Keck (1895-1980). During his academic education in architecture, the octagon house would gradually go from being an object of curiosity to the subject of intense study. This will be one of the reasons why, in 1933, the radical functionalism and technical patent in the House of Tomorrow is repeated in a container similar to that Fowler had used fifty years.

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