

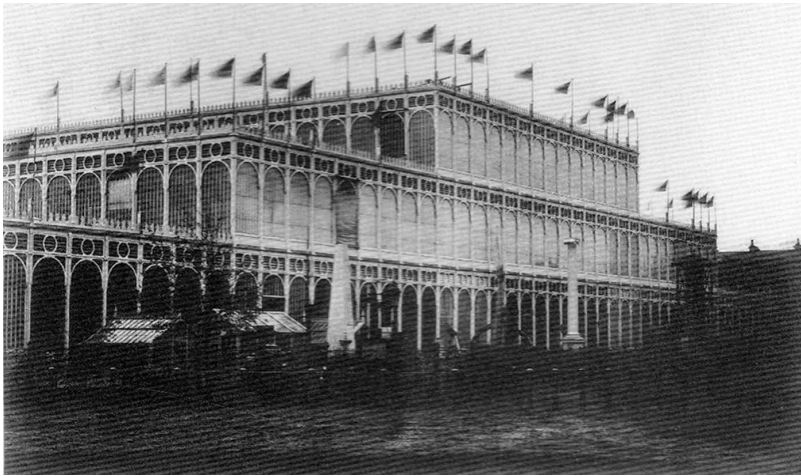
Joseph Paxton's Lily House: A Heterotopia at the Roots of the Myth of Transparency

“Now, in spite of all the techniques invested in space, despite the whole network of knowledge that enables us to determine or to formalize it, contemporary space is perhaps still not entirely desacralized. [...] And perhaps our life is still ruled by a certain number of oppositions that cannot be touched, that institution and practice have not yet dared to undermine; oppositions that we regard as simply givens: for example, between private space and public space, between family space and social space, between cultural space and useful space, between the space of leisure and that of work. All these are animated by an unspoken sacralization.”¹

— Michel Foucault

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A basic presumption of the historical narrative dominating architectural debates throughout the Twentieth Century was the fact that the architectural use of glass followed a consistent and rational line of progress toward pure transparency as an end in itself. For this historical conjecture, the Crystal Palace designed by the gardener Joseph Paxton for the Great Exhibition in 1851 served as the origin of the acceleration in the line of development. (Figure 1) In the last two decades, however, the critical discourse questioning diverse social and intellectual faces of modernity has animated a reassessment about the meaning and position of the Great Exhibition in the map of modern culture. A series of recent historical surveys calls attention to the conflicting implications that the Great Exhibition stimulated in the Nineteenth Century.² Nevertheless, despite increasing doubts about the purity and transparency of the exhibition's political objective, Paxton's structure maintains its emblematic status for the contemporary architects who recall the greenhouse and transparent glass envelop as the magic antidote for the growing environmental anxiety.³ Offering an alternative reading of the Crystal Palace in view of Paxton's gardening background, this essay aims to reveal that transparent glass promised the gardener neither a continuity between the built and rural environments nor a more natural space. In contrast, it attracted Paxton by virtue of its invisible opacity; it was the excellent apparatus that let Paxton imitate nature in the most artificial way and bring it into the industrial city as a permanent alien.



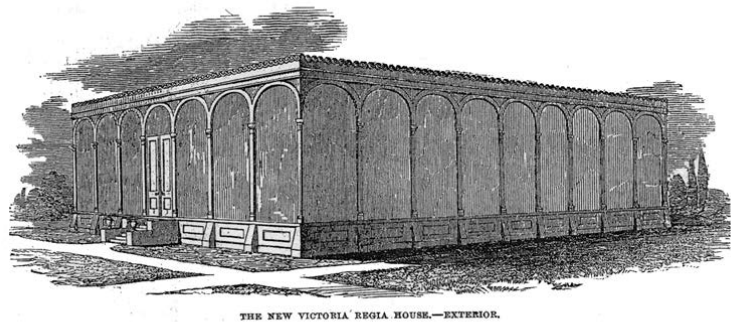
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ARTIFICIAL NATURE

Once the Great Exhibition in London was over, the Crystal Palace closed its doors on October 11, 1851. At issue, then, was the question about what to do with the structure at Hyde Park. Paxton restated the proposal he had put forward initially; the exhibition hall whose origin he traced back to the Lily House he had built in 1850, could be kept on as a winter garden. (Figure 2) In fact, the main idea that motivated the design of the exhibition hall derived from Paxton's conception of the whole structure as a schematic replica of the Amazonian water lily in the hothouse. For Paxton, the plant's leaf was an excellent example of "natural engineering." Yet, Paxton's enthusiasm for the water lily was not only due to its structural physiology, which was visible only on its underside. His actual passion was to be the first horticulturist on the island who saw its blossom of outstanding elegance, a blossom Charles Dickens compared to the "flowers Polyphemus must have gathered for Galatea's nosegay."⁴ After detecting this "noblest flower ever discovered," English plant hunters believed that its beauty justified it being named after the queen, thus Victoria Regia. Paxton's glass house successfully made the plant enact its performance in less than six months. Dickens praised the gardener's skill with the following words: "He coaxed the flower into bloom by manufacturing a Berbician climate in a tiny South America, under a glass case." This could be achieved only by a savant whose alma mater was Nature.⁵ According to Dickens, Paxton succeeded in motivating Victoria Regia by speaking the language of Nature in the dialect of her native soil and climate through his artificial instruments. Yet a twenty year process of trial and error was required for Paxton to learn this language.

After being assigned to be the head gardener of Chatsworth by the Duke of Devonshire, Paxton shined in horticulture, with some flora awards which indicated his familiarity with the cornucopia of flowering plants. Especially, his arboretum at Chatsworth, which housed an outstanding collection of more than 1600 species, not only demonstrated Paxton's advanced horticultural skill but also was of greatest significance for the implementation of the emerging gardenesque style. The Scottish gardener and architect, John Claudius Loudon whose *Encyclopedia of Gardening* (1822) was the fixed reference in the hands of young Paxton coined the term gardenesque to distinguish pleasure grounds displaying "the beauty of trees, and other plants, individually" from the picturesque landscape.⁶ Loudon was against the disintegration of two complementary modes of building, cultivation—cultura—and construction—aedificare, and sought to redefine the professional skill of gardeners—the act of cultivating—in combination

Figure 1: The Crystal Palace, Side View



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with contemporary artistic vision and scientific understanding. Loudon issued the term landscape architecture, which he borrowed from Gilbert Laing Meason, to point to a “mixed art” between the “fine arts—arts of imitation” and “useful arts.”⁷ The leading principle of this mixed art was to “create and heighten the natural character” of land and “to be recognizable at once as works of art.”⁸

In the early Nineteenth Century, the friction in the judgment of to what extent a garden could look and be identified as natural despite the human interference in its cultivation characterized the discussions of gardening. The central question in the debate was then what the garden should display and how. Against the priority given to the visual delight of the landscape in the picturesque, Humphry Repton, the first professional English gardener who wrote a treatise, revised the deal between art and nature in the garden. Explicitly, unlike his peer Lancelot “Capability” Brown, who sought to eliminate all artificial vestiges and foreign traces in English gardens in pursuit of a “more natural” and “national” beauty, Repton’s search was for a landscape that could serve social and intellectual impulses. While Brown’s penchant was to make use of la belle nature’s indigenous vocabulary, Repton was critical of the static and depopulated scenery calculated to be seen only from a distant standpoint. Repton saw gardens as places of gathering that would draw people nearer to the landscape and allow them to survey various objects in it “in motion” and “in different situations.” This intricate experience would arouse visitors’ “mental curiosity.” The image of the landscape in Repton’s eyes was an artificial arrangement that appealed to the mind by combining the sublime with the beautiful.⁹

An immediate response to Repton’s call for a more artificial and formal garden layout came from Loudon. Loudon undertook gardening as a “work of art, rather than of nature.” Having gradually developed a critical insight for gardeners who mimicked aspects of unassisted, wild nature, Loudon argued that “any creation, to be recognized as a work of art, must be such as can never be mistaken for a work of nature.” Accordingly, instead of “the imitation of nature in a wild state,” gardeners should prefer the “nature subjected to a certain degree of cultivation or improvement, suitable to the wants and wishes of man.”¹⁰ Seemingly, cultivation, for Loudon, implied an art of modifying the landscape to conclude its potential rather than watching its natural results. Only the artificial disposition of ground could convey beauty and furnish human life. In consequence, Loudon described the gardenesque style as the calculation of a series of scenes that would display and bring each plant to a finish in its full potential. The gardening

Figure 2: The Lily House, J. Paxton, “The Industrial Palace in Hyde Park,” *The Illustrated London News*, 16 November 1850, p. 385

rule, he advised, was to single out the spots devoted to plants of different physiological characteristics and to organize these spots in a manner appropriate to the conditions of each different plant's own particular environment. In such a garden, one would learn better about the nature of plants by contemplating them independently as individual cases. In fewer words, for Loudon, the meaning of the garden did not change, but its content absolutely did. As John Dixon Hunt noticed, in the former period, "the garden offered itself as virtually a memory theater of architectural and garden history." It was a "small laboratory" to experience and learn about nature as well as the past.¹¹ In Loudon's garden under the influence of an increasing scientific appetite for botany and horticulture, curious plants became the scenic objects on display. It could be better described as a laboratory of horticultural science and a museum of nature.

Accordingly, to expose to view as many plant wonders as possible was a primary criterion of gardening. For instance, in his Derby Arboretum, Loudon introduced more than one thousand different kinds of trees and shrubs. All of the specimens that he collected from different nurseries were arranged in groups according to French botanist Antoine Laurent de Jussieu's natural system of classification. However, on closer examination, it was possible to see that each plant was given the support that it could never receive in nature and had room enough to exhibit its individual characteristics. Despite its natural outlook, the management of the arboretum was evidently artificial. In the footsteps of Repton, Loudon sought to reinterpret the landscape as an extension of the built environment, but the horticultural concern about the relationships among the species on display preceded his meditation on how to engage the garden with human life. Basically, in Loudon's mind, the main inhabitants of the garden were the vegetables and trees, which he saw as "things of beauty."¹²

For Loudon, the Nineteenth Century was the time to concentrate on plants and to understand them better in the mind of a botanist; it was the time for practical knowledge of gardening to be replaced with scientific and artistic curiosity.¹³ Throughout his writings, he advocated that the architect of gardens designing with nature should be seen as a metaphysician and painter rather than as a practical craftsman. The common point in gardeners' and painters' approaches to the landscape was their search for a higher beauty, in other words, an ambition to reach to nature's ideal. What visitors encountered in gardens were no longer works of nature but free variations of the plants. Emphasizing the artificial aspects of gardens, Loudon was in pursuit of a rational answer to the dominant criticism of English landscape gardening by Antoine Chrysostome Quatremère de Quincy.¹⁴ While Quatremère de Quincy redefined the "arts of imitations" by stressing the distance between the work of art and the work of nature, the prevailing picturesque tendency to replicate landscape with a naturalist vocabulary led him to evaluate gardening as a deceptive art and to exclude it from the fine arts. Following Quatremère de Quincy's avowal of every work of art being a fictive recreation of reality, Loudon stressed the necessity of an artistic impulse to creatively "extend the truth of nature." To distinguish the fictive recreation or imitation of nature in gardening from a passive reproduction of the natural world, Loudon placed his emphasis on artificial deviation from natural conditions. Particularly, in horticulture, this could be done either by forming new varieties of vegetables that would enlarge the local flora by blending the native plants with exotic ones or by repositioning plants in conditions as perfect as possible "so that each could realize its ideal nature." According to Loudon, the beauty of a plant



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“could be truly appreciated only if [...] its natural form is allowed to develop to perfection.”¹⁵ In this sense, cultivating referred to the acts of collecting, relocating and regenerating. And, transparent glass was the scientific apparatus in hand that would bring these three acts to perfection.

OPAQUE TRANSPARENCY

Loudon’s comparison between the gardener’s work on land with the painter’s work on canvas was intended to explain how a gardener perceived nature’s own arrangements and how he represented them. Yet, a practical difficulty for this comparison was the fact that, while the painter could easily keep the canvas clean and free from surrounding effects, unanticipated detrimental conditions of the environment directly impinged upon the gardener’s work. Could advanced techniques help the gardener surpass this practical impediment? According to Loudon, they could. To achieve this, the first and most important step was to procure the “desired plants” by removing them from their vicinity open to “depredations of animals, unsuitable weather,” or “objects likely to impede [their] progress” to “a spot already protected.”¹⁶ To procure and protect delicate plants against unfavorable environmental conditions and to monitor their life forms, the excellent instrument was transparent glass. It could easily provide the vital inviolable environment necessary for the plant’s survival. Already in 1825, Loudon wrote that as soon as the plants were taken away from their native habitat and enclosed by a glass envelope, they were placed “in the most artificial situation in which they [could] be.”¹⁷ A human-made setting covered by glass could operate as artificial climate and re-create the native habitat of any plant. What Loudon understood by habitat was the appropriate arrangement of the four basic elements (from which all plants were given life) in a protected domain.

Scientific approval for Loudon’s view came by the Wardian case, the closed glass container that was discovered by the medical scientist Dr. Nathaniel B. Ward, Dr. Ward’s experiments with different plant species demonstrated that a closed glass case in which one placed water and mold formed an economy of forces that fulfilled the necessary conditions for the organic life within it. This led him to conclude that glass, which successfully pacified harmful external conditions while letting in light, could be helpful to imitate habitats in three different environments: land,

Figure 3: Joseph Wright Derby, *An Experiment on a Bird in the Air Pump*, 1768 (The National Gallery, London)

water, and air.¹⁸ As long as the internal conditions, specifically, the heat and moisture, could be kept under control, such an artificial setting could be enlarged to other species and could even be used to host a self-sustaining community on a micro scale. It is clear that the departure point of Ward's discovery was his handling of glass as an experimental instrument that provided the means for observing living beings. As can be seen in Joseph Wright Derby's painting *An Experiment on a Bird in the Air Pump* (1768) which dramatically depicts a scene reminiscent of the natural philosopher Robert Boyle's pneumatic experiments, by the second half of the eighteenth century, it was well-known that a domain secluded by glass could be controlled mechanically.¹⁹ (Figure 3)

For Boyle, the duty of glass as a tool of empirical research was to provide a visible closed chamber purified from external forces or actions that were out of the control of scientists. In this neutral, uncharged vacuum, the correspondence of the occupant with its surroundings could be freely manipulated and measured by the temporary suspension of some selected constituent elements or forces of nature. Likewise, for Loudon and his successor Paxton, the glasshouse served similar to the glass sphere in the hands of Boyle. It was an epistemological tool that allowed for the study and measurement of all of the physiological necessities required for plants' survival. The gardeners' observations were directed toward nutrition, respiration, and similar metabolic operations, which explained the natural forces governing plants' behavior in the determinist framework of cause-and-effect relationships. In their mechanical view, plants appeared as passive receptive fixed bodies, away from the ideas of heliotropism and geotropism, which would later rationalize vegetables' adaptive strategies and their ability to reposition themselves. In summary, for Loudon and Paxton, glass rendered the very essence of plant life as well as the interior amenable to precise measurement and calculation. The transparent glazed surface was the scientific equipment that helped gardeners replace natural agents with mechanical ones.

Glass efficiently supported Loudon's construal of the plants as artificial constructs and allowed him to compare gardening with visual arts. It was the apparatus that let the gardener penetrate the secrets of nature and imitate it more freely as a work of art. Loudon associated the formal transfiguration in the eyes of a painter with the gardener's perfection of the natural form through cultivation. Undoubtedly, the glass in the gardener's hands did not perform as a visual instrument that dramatically transformed the sight, like the tinted Claude mirror used by the eighteenth-century nature lovers who sought to frame a view of the landscape similar to the one in the varnished paintings of Claude Lorrain. Yet, in its own way, by masking the spatiotemporal dimension of the external conditions, it created the vacuum that empowered gardeners to re-identify the interior by mechanical means; so that the plant inside could transcend surroundings and learn its origin. Concisely, through his analogy of painting with gardening, Loudon compared the glazed surface of greenhouses with the canvas upon which the calm and order of the painter reigned. Glass furnished gardeners with a protected enclosure devoid of any wild sign and supplanted the authority of nature. It was equipment that could be used against the vagaries and instability of the environment and that enabled gardeners to understand and dominate it.

PAXTON'S EPIDEICTIC SPEECH

Unsurprisingly, in gardening, Paxton's works were distinguished by the high level of control that he achieved over nature. In the case of Lily House, as Dickens noted, he

won over Victoria Regia by telling a pleasant lie. Dickens was right; the Lily House proved that Paxton was the orator who knew all tricks of rhetoric. Paxton's passionate dialogue with the water lily developed through a complicated care and control procedure reflecting how the glass house was engaged with two acts ethically in conflict: nursing and forcing. During the first phase, which might be called acquaintance, it was Victoria Regia who led the dialogue and directed the gestures of the gardener. Paxton was well aware that in the glass house "where there [was] so much art, there must be a greater tendency to disease and accident than in ordinary nature, unless there was "unremitting attention" to reconcile the artificial setting with the demands of the plant.²⁰ She was overly dependent on artificial conditions. But, after the environmental needs and habits of Victoria Regia were accurately recognized and the nurturing mechanism started to work, the tone of the dialogue changed. Now, equipped with essential horticultural knowledge and technology, Paxton reached the power to prescribe and regulate her germination and blossoming. By the first anniversary of the Lily House, Paxton declared his victory by reporting that the plant "produced [...] one hundred and twenty-six flowers!"²¹

Many Victorians applauded Paxton's achievement. He built a spatial mechanism that turned the hostile environment into a paradise for the lily. The gardener's capacity to resituate exotic plants' native habitats incorporated an image of nature mastered by humanity and encouraged many to see glass structures as mechanisms of environmental control that enlarged the sphere of human freedom. In metaphorical terms, Victorians were seduced by the epideictic quality of Paxton's speech but disregarded that this speech had not other purpose than to display the talent of the orator and the power of his tongue on his listeners. Furthermore, rather than bringing closer his audience to what was good, Paxton merely intended to persuade and control them by manipulating their preconceived views and beliefs. Literally, with glass, Paxton devised a diaphragm that rejected the environment that he saw as a threat and danger. The glass enclosure successfully acted as a mechanism of inclusion and exclusion that precisely controlled the interaction of its occupant with surroundings. Paradoxically, while the glass house provided a privileged space for the lily, it imposed restriction on its capacity to mutate and adapt in the new environment. The Lily House was supposed to be the only shelter of Victoria Regia in England. Even if it provided the comfort necessary to make the lily perform at her best, it never aimed to rescue the overseas guest from estrangement; the plant was compelled to remain as a hidden alien in the island. All in all, the spatial mechanism that Paxton built was a heterotopia that can simultaneously serve as a space of care and a system of control.

Describing such places as heterotopia, Michel Foucault refers to the mirror's capacity to bring into play a dichotomy of reality. Foucault explains: "[t]he mirror functions as a heterotopia in the respect that it renders this place that I occupy at the moment I look at myself in the looking glass at once absolutely real, connected with all the space that surrounds it, and absolutely unreal, since, in order to be perceived, it has to pass through this virtual point, which is over there."²² Through this ambiguous description, it is hard to recognize if the mirror represents the reality or distorts it. But, it is certain that, Paxton's green house was a mirror which created an illusion. Acting like the idyllic unknown milieu of the new world, it introduced Victoria Regia to England while its invisible glass envelop always kept it apart from surroundings. Seemingly, although the Lily house may seem to establish a bridge connecting different and distant realities, Paxton did not celebrate alterity but distance that supported hegemonic power.

The success of the Crystal Palace which safely exhibited the new mysterious industry and foreign cultures, strengthened Paxton's confidence in this mechanism. For Dickens, Paxton succeeded to redefine habitat in terms of the two key criteria of modern life: comfort and hygiene. Then, the same spatial mechanism can serve to perfect the city life in London. Some of the squares could be covered at all seasons to provide comfortable and safe spaces reserved for the protégés of the city. Or, the glazed structure could efficiently serve to treat people infected by tuberculosis in a warmed and purified space distant from the society. Simply, in Paxton's view, the principles of exclusion, purification and control could be seen as the spatial and political logic of the modern city. The anthropologist Mary Douglas who compares the quest for cleanliness in various cultures, cautiously underlines that were purity read literally as a life norm instead of a symbol, it could easily turn out to be a supporter of authority more than wisdom, in the shape of an impenetrable and unchanging system that isolates a community and deprives it from other, different forms of life. Surprisingly, to illustrate the awkwardness of disrupting the polarity between purity and dirt, Douglas resorts to gardening as a metaphor. "If all the weeds are removed," writes Douglas "the soil is impoverished. Somehow the gardener must preserve fertility by returning to what he has taken out."²³

Briefly, while the Crystal Palace has still been examined by virtue of its technical aspects, it is necessary to remember that the glass enclosure which denied seasonal changes, characterized the alienation of the city life in London from other unknown worlds. Nevertheless, in spite of the fact that Loudon's venture of cultivation under glass comprises an inner conflict, recent geopolitical and ecological transitions seem to recall his suggestion to integrate construction and cultivation as two complementary modes of thinking. Basically, extending Loudon's suggestion, can one reconsider the frameworks of the disciplines of architecture, landscape architecture and urbanism? Can the juxtaposition of construction and cultivation provide a productive ground to restudy seemingly incompatible inherent characters of the city and nature, and to question the role the architect plays in relation to the ecological link between nature and the city? Finally, in architecture, can we think of a transparent opacity that will acclimatize itself to heterogeneous cities by simply serving as a background of urban as well as natural events? Answering these questions, one should never forget John Ruskin's cries against the second Crystal Palace raising at the Sydenham Hill. Ruskin explains the difference between his and Paxton's approaches to nature in following words: "here, man contending with the powers of Nature for his existence; there commanding them for his recreation; here a feeble folk nested among the rocks with the wild goat and the coney, and retaining the same quiet thoughts from generation to generation; there, a great multitude triumphing in the splendour of immeasurable habitation, and haughty with hope of endless progress and irresistible power."²⁴

ENDNOTES

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6. Loudon, "Introduction," in Humphry Repton. *The Landscape Gardening* (London: Longman, 1840), vii-ix.
7. Melanie Louise Simo. *Loudon and the Landscape: From Country Seat to Metropolis, 1783-1843*. New Haven, CT: Yale University Press, 1988), 160.
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13. *Ibid.*, 12.
14. *Ibid.*, 172-5.
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16. Loudon, *An Encyclopaedia of Gardening*, 261-4.
17. Loudon. *The Green-House Companion* (London: Harding, Triphook and Lepard, 1825), 2.
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21. W. H. Seaman, "The Victoria Regia," *Proceedings of the American Society of Microscopists* 13 (1891):166.
22. Foucault, "Of Other Spaces (1967)," 17.
23. Douglas. *Purity and Danger: An Analysis of Concept of Pollution and Taboo*. (London: Routledge, 2002), 201-2.
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