The Journey of the Modernist Line: The Metropolitan Cathedral of Brasilia and The Chapel of Notre-Dame du Haut in Ronchamp

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The curve of Oscar Niemeyer, internationally known and symbolic of the renowned Brazilian exuberance, paints the landscape of Brazil but also the minds of all modernist thinkers. At a time when the purist international straight line reigned, this exotic and unfamiliar curve seemed to have a striking effect on onlookers and architects alike. One could speak of two opposing views, of two conflicting ideals: the rational Apollonian straight line and the sensuous Dionysian curve, revealing the conflict that opposed purism and reason versus excess and ecstasy. This conflict was epitomised by two architects of contrasting personalities: the tropical, creative, sensuous and samba loving Niemeyer and the Swiss measured, puritan Calvinist monk, Le Corbusier. However, more important than thinking about two contrasting personalities, is to reflect upon what led the father of modernism to design the “Chapel of Notre-Dame du Haut” in Ronchamp (1954)? What was the journey of the modernist line that allowed both the “Metropolitan Cathedral of Brasilia” (1958) and Ronchamp?

The landscape of Brazil in all aspects, in particular the mountains and bay of Rio provided inspiration for Oscar Niemeyer's design ethic. In his memoirs he claimed that his disregard for the right angle and his embracing of the curve, “arose from the environment in which I lived with its white beaches, huge mountains, its old Baroque churches, and the beautiful suntanned women.”

There is a well known drawing of Niemeyer of the mountains of Rio as a naked woman lying down which reinforces this view of the curve as arising from (tropical) nature.

![Image](image1)

**Fig 1. Sketch by Niemeyer**

However, the mistake is to think that the curve sprung solely from this exuberant nature as Frampton seemed to imply. For Frampton, the curve was a symbol of a “domestication and civilisation of the jungle, transformed into a benign source of delight”\(^1\). In fact, the curve is deeply embedded in the non conformist project of Brazilian Modernism which mocked the European superiority over tropical countries, seen as bogged down by laziness and sensuality\(^4\). The Brazilian Modernist movement counterposed this idea with an “antropofagic” manifesto, which praised the irreverent cannibal that enjoys the sensuality and exuberantly “devours” all influences. This movement was a watershed in Brazilian culture and it had a major impact in literature with the

1 Oscar Niemeyer, The Curves of Time (London: Phaidon, 2007), 170
3 Styliane Philippou, Oscar Niemeyer: Curves of Irreverence (London: Yale University Press,2008), 15
4 Ibid, 24
works of Mario de Andrade and Oswaldo de Andrade, in music with Villa Lobos, and in art with Tarsila do Amaral and Di Cavalcanti. In architecture the most important names associated with it were Lucio Costa, Affonso Eduardo Reidy and of course Oscar Niemeyer. These architects were not interested in copying the fashionable European 19th Century designs, as the new avenues of Pereira Passos and the Municipal Theatre in Rio were doing.

One of the major points of reference for the Brazilian Modernists was the 18th Century's Baroque sculptor and architect Aleijadinho. Aleijadinho was the illegitimate son of a Portuguese master builder and an Afro Brazilian woman, therefore already a symbol of the miscegenation of races. He was a self taught artist who, in spite of a progressive disease that made him lose his hands and feet, built outstanding churches and sculptures using local materials, such as the soap stone. Mario de Andrade, the theorist behind the Modernist project, claimed that Aleijadinho “translated” the European Baroque into a more Brazilian form. His most famous Church, the “Santuario de Bom Jesus de Matosinho” (1738-1814) is adorned with life-size sculptures of the prophets, whose intensity illustrates this particularly Brazilian understanding of Baroque theatricality. The stairs leading up to the nave take the penitent (or curious observer) up levels of stairs where he/she encounters one by one the prophets, in their twisted and bent poses that emphasize the Hogarthian serpentine line of beauty. In the tropical setting of Congonhas do Campo, the Baroque is brought to life and the pilgrim feels awed and enraptured as if aware of what purgatory might be.

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5 Charles Garnier “Paris Opera” also known as “Palais Garnier” (1861) http://architecture.about.com/od/theaters/ig/Theaters-/The-Paris-Op-ra.html 6th December 2012
7 Jose M.Teixeira, Aleijadinho, O Teatro da Fe (Sao Paulo: Metallivros, 2007),14
8 William Hogarth, The Analysis of Beauty (New York: Cosimo Classics,2009), 101-127
9 Antonio Francisco Lisboa, Aleijadinho, “Santuario de Bom Jesus de Matosinho” 1761
Before we discuss Niemeyer, we have to introduce Le Corbusier, the great architectural thinker of the 20th Century and creator of the International Style. Le Corbusier is without a doubt, a critical figure for architecture in the twentieth Century, and he is particularly important for an understanding of the quality of line in the designs of Oscar Niemeyer. For Le Corbusier, to create an architecture is to create a space and an order - a construct of lines and light, in which life can be held, organised, created and carried out. As Le Corbusier once said, “The regulating line is a means; it is not a formula. Its choices and its expressive modalities are integral parts of architectural creation.”

Fig 5. Unite d’Habitation, Independent cross-over duplex being slid into the structural frame Hand is of the assistant of Le Corbusier

The image above shows this idea that the straight line is one which allows and creates functionality, the idea of units and a modular system which can be slotted into a space.

For Le Corbusier, the Art Nouveau and the Baroque styles with their ornaments and S-lines were not a reflection of the needs and requirements of the post-war industrial age. For him, ornament had imploded on itself, creating a mess of lines, a lack of directness, and so there was a need to look towards a “new architecture”. Agreeing with Loos, Le Corbusier thought that “the more cultivated the people become, the more decoration disappears.” Pillippou highlights Le Corbusier’s cultural bias when he says that “rational forms with their basis in geometry are the forms of Classicism as opposed to Barbarism.” In fact, he tended to see the curve as a backward symbol. In “City of Tomorrow”, he mentioned with horror “the crooked lines of the pack-donkey” and in “Precisions” he used the image of a sinuous river as a symbol of “the incoherent loops of the meanders of an outworn civilisation”. He associated the Amazonian river basin amidst the tropical forest, glimpsed from an airplane, to the “veins of rotting bodies.” This praise for classicism and orthogonality were central for his five points for architecture, which formed the canon for modernist design and became in itself a straight line, a dogmatic rational path which had to be followed.

10 Le Corbusier, Toward an Architecture (London: Frances Lincoln Ltd: 2008), 132
12 A. Loos, Ornament and Crime (Riverside: Ariadne Press, 1998)
13 S. Pillippou (2008), 103
14 Ibid, 67
15 Ibid, 67
16 Ibid, 100
In 1936, Le Corbusier and Niemeyer met for the first time, during the “The Ministry of Education and Public Health” (1936-1944) project. Based on an original idea of Le Corbusier, the final design developed by the Brazilian team departed from its original purity and included some important moderations. Although Niemeyer looked up to Le Corbusier “as Jehovah” according to Lucio Costa\textsuperscript{17}, he was not afraid to rethink the whole facade, by adding what could be considered as a detracting ornament: rows of brises-soleil which could be adjusted according to the sunlight, thus creating a variety of possible beautiful patterns. He also extended the Corbusian recommendation of four to six metres height of pilotis to a massive ten metres high\textsuperscript{18}.

Fig. 6. Drawings for the Ministry of Education and Health building, by Le Corbusier on the left column and by the Brazilian group of architects (including Oscar Niemeyer) on the right\textsuperscript{19}

This was of course in accordance with the antropofagic view that took the evangelical cannon of modernism and reinterpreted it in terms of the Brazilian new found national identity. Thus, the brises-soleil made reference to the sun screens taken from the Portuguese/Arab influenced colonial

\begin{itemize}
\item \textsuperscript{17} S.Philippou (2008), 57 and O. Niemeyer (2007), 60
\item \textsuperscript{18} S. Philippou (2008), 65
\item \textsuperscript{19} Le Corbusier (on the left) and Lucio Costa, Carlos Leao, Oscar Niemeyer (on the right), “Sketches for the Ministry of Education” in Oscar Niemeyer: Curves of Irreverence, Philippou, S. (London: Yale University Press, 2008), 65.
\end{itemize}
houses and their playfulness were in line with the addition of curved tropical gardens designed by Burle Marx. The pilotis created an elevation of impressive height, producing a feeling of free circulation, as if one was walking amidst the Imperial palm trees of the Botanical Gardens in Rio. Although the team always acknowledged the genius of Le Corbusier and his contribution in terms of the original first drawing, they were irreverently reinventing the modernist cannon.

According to Costa, one of the most important outcomes of the Ministry of Education project was the “awakening” of the genius of Niemeyer20, who would go on to do the magnificent “Pampulha Complex” and Brasilia. For Niemeyer, a militant Communist Party member, “form follows beauty”, rather than “form follows function” In fact, he even added, “form follows feminine” as he endlessly sketched the feminine form21. He did not believe that architecture changed life but rather, against what he saw as the false moral high ground of functionalism, he thought that life changes architecture 22. For Niemeyer, the sensual beauty of the curve and the ornament could play along the straight line. This is very clear in his “Poem of the Curve”:

I am not attracted to straight angles or to the straight line, hard and inflexible, created by man. I am attracted to free-flowing, sensual curves. The Curves that I find in the mountains of my country, in the sinuousness of its rivers, in the waves of the ocean, and on the body of the beloved woman. Curves make up the entire Universe, the curved Universe of Einstein.23

We know how different Le Corbusier's views were. Apart from the scathing references to sinuous rivers, meanders and packed donkeys24, when he wrote his comprehensive statement of his artistic worldview, he called it “Le Poeme de l'Angle Droit”25, once again showing his preference for straight lines and mathematical relations.26

The line qualities - one could say the identities of these two men - are radically different. They wrote against each other. They knew each other's work and the “pack-donkey” or the “rotting veins” were clearly addressed to Oscar, and Niemeyer's jocular comments against functionalism were explicitly directed against Le Corbusier. There was a rivalrous tone, possibly a lot of conflicting feelings, specially related to the authorship of their work in Rio and in the United Nations in New York.27 Yet, interestingly, in the later years of these two men's careers, their work started to permeate each other's in interesting and subtle ways. Niemeyer's “Metropolitan Cathedral of Brasilia”, although curved, embodies the elements of modernism intrinsic to Le Corbusier in its most exemplary manner: simplicity, purity and directness. In contrast, Le Corbusier's Chapel at Ronchamp has a sculptural quality indebted to the work of the Brazilian architect. These two buildings provide a certain clarity, unity and connection of theme that allows for the discussion and discovery of the journey of the straight line to the curve. Choosing two chapels allows us to concentrate on the different conceptions of a "religious" building, thus providing a real understanding of what happened to Le Corbusier and Niemeyer, beyond a simplistic understanding of the influence on one another.

The Cathedral in Brasilia, although a religious building in its own title and intention, at first glance has a more secular appearance, not being riddled with ostentatious religious iconography. In fact, in the beginning it was planned as an Ecumenical Temple, but as the Cathedral of the capital

20 S. Philippou (2008), 57
21 S. Philippou (2008), 102, O Niemeyer (2007)
22 S. Philippou (2008), 90: “(Le Corbusier) thought that architecture can change life … I (Niemeyer) don't agree with that view. I believe exactly the opposite is true. It is life that influences architecture.”
23 O. Niemeyer (2007) , 3
24 See above, footnote 9
27 S. Philippou (2008), 57 and O. Niemeyer (2007), 59-61
city of a Catholic country it could not remain so. It is a building of conceptual representations with symbols and metaphors of religious and social concepts and ideas. What is most apparent and striking about this building are the sixteen “ribs”, curves that shoot upwards like hands reaching towards infinity or like the crown of thorns of Jesus Christ. Made from white reinforced concrete curves and rings that tie the building at the top and the base, there is a definite emphasis on creating a clean, unified, untainted volume that embodies the ultimate expression of a sanctuary from 360 degrees. There is a quality in the monumentality of the sculptural, expansive curves, void of ornament that seem to grow out from the ground shooting to the sky as if it was a human on their knees reaching out. Oscar Niemeyer once said:

The exterior: the aerial structure born of the earth, a cry of faith and hope; then the gallery situated in shadow to prepare the faithful for the religious spectacle; in short, the contrasts of light and the exterior effects, with the faithful leaving the world behind and projecting themselves from the cathedral into infinite space.

These ideas create a narrative which is in its own way, a curve, as one is moved in an “indirect”, less obvious way, to understand how Niemeyer thinks and what he wants us to feel and believe. Even the way in which one is physically forced to enter the Cathedral is in a curving motion, walking downwards into the ground, through darkness, and then curving back up through a ramp into the light. The reference to Brazilian Baroque and Aleijadinho is there, as one approaches the ramp to enter the Cathedral: lining the way we have the four Evangelists, as we have the prophets in Bom Jesus do Matosinho. But the statues have a powerful simplicity and accompany us rather than strike us. The performance is bared to its strict minimum, as are the ornaments inside the Cathedral. The three angels hanging from the ceiling come almost to human level. Oscar Niemeyer says in his memoirs:

In the Metropolitan Cathedral at Brasilia (…) I avoided conventional solutions which had produced the old dark cathedrals reminding us of sin. On the contrary, I designed a dark entrance hall, leading to the nave, which is brightly lit, colourful, its beautiful, transparent stained glass windows facing infinite space.

![Fig 7. Sketches by Niemeyer](image)

![Fig 8. Exterior view/entrance of The Metropolitan Cathedral of Brasilia](image)

![Fig 9. Interior view - Cathedral](image)

28 David Underwood, Oscar Niemeyer and Brazilian Free-form Modernism (New York: George Braziller, 1994), 84
29 Josep M. Botey, Oscar Niemeyer: Obras y proyectos (Barcelona: Editorial Gustavo Gili, 1996), 164-170
30 Ibid, 164
31 O. Niemeyer (2007), 173
33 Interior view of “Metropolitan Cathedral of Brasilia” in Oscar Niemeyer, Salvaing, M. (New York: Assouline, 2004), 19
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Le Corbusier's Chapel is linked and dedicated to nature\textsuperscript{35} and was meant as a place for pilgrimage, although apparently, nowadays, it is mostly frequented by the architectural geek. The “Chapel of Notre Dame du Haut” in Ronchamp, is unlike many of his other architectural structures. Still bearing his signature white walls, it has, nevertheless a more sculptural quality\textsuperscript{36} and instead of his usual right angled geometry, one finds convex and concave structures and a roof reminiscent of a shell. The rendering of the building was hand thrown, in a thick manner, having a vast coverage about five centimetres thick, creating a weightless quality of papier-mâché. However the building sits with a definite purpose, not raised on pilotis, on a top of a hill. To contradict his rationalism even further, we see ornamentation in the forms of punctures in the facade as well as a ten centimetre crack between the ceiling and wall letting in light, in a manner which can be compared to the more current Tadao Ando's “Church of Light” (1999) or even the brises-soleil on the “Ministry of Education” building. These windows are brightly painted and there are also coloured tiles creating images like that in Oscar Niemeyer's work in the “Pampulha Complex” (1943). These murals and windows create a flourish and ornamentation. The walls curve, the ceiling curves and even the ground curves due to the topography of the site, but there is still a very plain interior – he was not moving away from his more purist ideals in that sense. Still, Le Corbusier, renowned for his geometrical forms, had distorted his iconography, and one should ask why? Why did Le Corbusier abandon here his traditional rectilinear forms, highly regarded as the pinnacle of successful modernist architecture, like that of “Villa Savoye” at Poissy? Could one regard this as a crisis? Was Le Corbusier trying to create a rhythm and poetry he had picked up from Niemeyer? He was playing with his own syntax, treating the building with a plasticity that is reminiscent of Niemeyer.

![Figure 10. Views of the Chapel of Notre Dame du Haut by Le Corbusier \textsuperscript{37}](image)

In order to answer these questions, we have to think about these two buildings and these two key figures of the modernist movement in many levels. At a first level, one acknowledges their

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\textsuperscript{35} K. Frampton (2001), 168. Frampton reminds us that it was the topography of the site that led Le Corbusier to accept the project.

\textsuperscript{36} K. Frampton (2001), 168

\textsuperscript{37} Images of “Chapel of Notre Dame du Haut”, Ronchamp

\url{http://www.greatbuildings.com/buildings/Notre_Dame_du_Haut.html}

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mutual influence and rivalry. Ronchamp then becomes the consequence of meeting Niemeyer and an awareness of Pampulha. In this sense, Niemeyer would have “antropofagised” Le Corbusier but in the process of “being eaten”, Le Corbusier himself had been transformed into a more “tropical savage being”. At a second level, we think of these figures in terms of what they represent in the modernist architectural movement: Niemeyer, the Dionysian figure of excess, creativity and sensuality and Le Corbusier as the Apollonian, rational, controlled man of thought. However, these two gods – Apollo and Dyonisious - are representations of aspects of mankind and we all know that humans are both rational and irrational, body and soul, imagination and control. So, it should not surprise us that, as these architects evolved, aspects of their personality which were controlled in their early careers, were more able to flow and express themselves. At a further level still, it is fundamental to think about the relationship between the straight line and the curve. Robin Evans, in his essay “Translation from Drawing to Building” spoke about how modernism never really questioned the relationship between line, drawing and construction. Evans discusses how a construction is not the simple transpositions of drawings and ideas to reality and how creativity arises at each level. An awareness of the conventions that rule the transfers from paper to building allows for an understanding of the possible distortions which Le Corbusier did at Ronchamp by extending and distorting his strict laws. Maybe Le Corbusier realised that the curved structural shapes of Niemeyer had a fundamental relationship to the straight line drawings which can be thus transformed when transposed to a three dimensional reality. The same could be said about the curves of Niemeyer's Cathedral. The sixteen curves are so monumental that they make us think of infinity. When a curved line is stretched to an extreme, it becomes a straight line, as we well know when we remember that the ancient Greeks, though great scientists, believed that the Earth was flat, because they could see the straight line of the horizon. Therefore, it could be argued that both architects have become aware of the conventions they are using and of the possibilities of their language. The reality is, convention allows us to continue to believe that the initial drawings and ideas match reality exactly. However, this is an illusion. The ability to visualise spatial relations is enhanced by drawings and projective geometry but it is not guaranteed by it – drawings do not guarantee what you end up with, let alone creativity. Le Corbusier and Oscar Niemeyer in Ronchamp and Brasilia show that they are aware of the language and possibilities of their craft. Le Corbusier extends and distorts the conventions of modernism by being freer, thus fully realizing his modernist project. He fulfilled the choice to experiment. Niemeyer and his Cathedral on the other hand show his return to a more pure and contained idea of modernism, one where the curve alludes to the straight line.

Therefore, the two architects - freer because in command of their craft - have more in common than we initially were made to believe. Interestingly enough, Niemeyer remembers how in their last meeting, Le Corbusier alluded to that. The Swiss master said, “Our work is like a river, it has a definite end, but it varies and meanders all along its course.” In the end, it was the metaphor of the river, with its sinuous line, that allowed the recognition of their shared background.

Figure 11 Sketch by Niemeyer

38 Robert Evans, Translations from Drawing to Building and other Essays (London: AA Documents, 1966)
39 S. Philippou (2008), 104
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