

Pilotis and Sunshades: The Influence of Le Corbusier on Modern Architecture in Brazil

Curriculum Project

2007 Fulbright-Hays Seminar Abroad

Learning and the Land: How Sustainable Development Can Build A Strong Educational Foundation

Lisa D. Schrenk, Ph.D.

Associate Professor of Architecture and Art History

School of Architecture and Art

Norwich University

158 Harmon Avenue

Northfield, VT 05663

Pilotis and Sunshades: The Influence of Le Corbusier on Modern Architecture in Brazil

Introduction to the Project

The following curriculum project is a unit designed for the seminar, *Architecture, Culture, and (Un)Sustainable Practices in Brazil*, which focuses on the development and impact of man-made environments in Brazil. The seminar will be offered in the School of Architecture and Art at Norwich University as FA250: Special Topics in Art, but will also be available to architecture students as AP405: Seminar in Architecture. The course is open to all students at Norwich; however, most who enroll in these seminars are juniors and seniors who plan to complete the Masters in Architecture program. This seminar on Brazil is currently a work in progress and will be taught for the first time during the Spring 2008 semester.

Special Topics in Art seminars are designed to encourage both group and independent explorations by the students. Most classes include a background lecture by the faculty member, student presentations, discussion, and various interactive exercises. When appropriate sources such as video clips and web sites are explored. In addition to weekly readings and occasional short (2-3 page) papers, design projects, and brief presentations, students are required to complete a major research paper and give a class presentation on a topic of their choice that relates to their own interests and the theme of the seminar.

The curriculum project, *Pilotis and Sunshades: The Influence of Le Corbusier on Modern Architecture in Brazil*, looks at the tremendous influence of the Swiss architect and artist Charles-Edouard Jeanneret-Gris, better known as Le Corbusier, on Brazilian architecture, in particular on the work of Lúcio Costa, Oscar Niemeyer and other designers of their generation. It includes in-depth explorations into the design of the Ministry of Education and Health Building in Rio and the city plan and architecture of Brasília. Below is a short description of the overall seminar with a list major course objects, a brief background of Le Corbusier's relationship with Brazil and the designs of the Ministry of Education and Health Building and Brasília. This is followed by an outline of the curriculum project. Also included are a series of illustrations and an extensive bibliography of related sources.

Description for the Course *Architecture, Culture, and (Un)Sustainable Practices in Brazil*

The special-topics seminar, *Architecture, Culture, and (Un)Sustainable Practices in Brazil*, will examine man's impact on the natural environment of Brazil. It will focus on architecture, but will also involve explorations into other artistic forms, including visual arts, music, and dance. The course will be loosely structured using a chronological approach, but will incorporate theme-based explorations. It will look at indigenous architecture and the role outsiders, including Europeans, Africans, and other Americans, played in the development of various built environments throughout Brazil's history. Course discussions will incorporate a wide range of issues that impacted architectural design in Brazil, including philosophy, economics, politics, and aesthetic, technological, and scientific developments. In addition to lectures by the instructor, students will be responsible for short weekly papers and design exercises, brief presentations on specific readings or issues, and a major term paper and related class presentation.

In addition to *Pilotis and Sunshades: The Influence of Le Corbusier on Modern Architecture in Brazil*, some of the other topics to be explored in the seminar include:

- *Colonialism and Brazil I: The Impact of Outside Influences on Brazilian Building Design.*

This section examines the influence of European and African cultures on Brazil, in particular the Portuguese on Minas Gerais and both the Portuguese and Africans on Salvador. This section will specifically look at the transmission of European Baroque architectural forms to Brazil as realized in the designs of religious structures in Ouro Prêto and Salvador, and examine the relationship between art and architecture in Baroque designs through exploring the contributions of the artist Aleijadinho.

- *Colonialism and Brazil 2: Mono-Economies and the Architecture of Brazilian Cities.*

This section will explore the built environments of “boom-and-bust” cities like Santos, Belém, and Manaus, that went through periods of financial prosperity followed by dramatic downfalls due to changes in world markets of the products that dominated their economies (Coffee for Santos, and Rubber for Belém, and Manaus). Students will focus on the influence of various architectural styles from Europe, including neoclassical and art nouveau, and address how they were adapted for the different cultural and climatic situations of Brazil. Students will also analyze the role architecture played in the local societies and will examine the present economic states of these cities and the current conditions of their historic architectural legacies.

- *International Modernism and Brazil: The Next Generation.*

This section explores Brazil’s fashionable architectural scene during the past few decades. Students will examine the work of current architects, including Lina Bo Bardi, designer of the Museu de Arts de São Paulo, and Paulo Mendez da Rocha of Brazil, winner of the 2006 Pritzker Prize (the highest honor awarded in architecture). Students will also study the later designs of Oscar Niemeyer and address how his architectural ideology evolved throughout his career.

- *Brazil and the Rise of an International “Green” Movement in Architecture.*

This section will focus on both the globalization of the building industry and the lessons (both positive and negative) that architects around the world can learn from Brazil in regards to sustainable practices in architectural design and construction. Included will be an exploration into the world market of building products, in particular lumber and other natural materials. It will also examine new design practices that have grown out of the use of sunshades and other “green” design features that first appeared in mid-twentieth-century buildings by modern architects.

- *Brazilian Favelas and the Development of Self-Supporting Communities.*

This section will examine the design aesthetics and social structure of favelas. Students will study the basic designs of individual houses and the creative uses of various materials in the construction of these buildings. They will also explore how the architectural designs reflect the political and social structures within and beyond the favelas. Finally the students will look at the impact government sponsored “replacement” housing has had on the lives of the residents of these neighborhoods.

Course Objectives

There are five major objectives for the course. They include:

1. To understand the role of Brazil’s multi-faceted culture in the development of the country’s built environment.
2. To comprehend how cultural and technological changes that have taken place between the arrival of the first outsiders and today have influenced the development of architectural design in Brazil.
3. To develop a familiarity with the major issues and debates that shaped Brazilian culture.
4. To grasp the significant impact of man’s effects on the natural world and to be able to debate some of the current major issues regarding sustainable design at an intellectual level.
5. To further basic research and writing skills.

Unit Description: Pilotis and Sunshades: The Influence of Le Corbusier on Modern Architecture in Brazil

The unit *Pilotis and Sunshades: The Influence of Le Corbusier on Modern Architecture in Brazil* consists of two major parts: 1) An exploration of the impact the architect's early ideas on modern building design (in particular his five points on architecture) had on modern urban buildings in Brazil; and 2) An examination into the role the architect's ideas on city planning (particularly his concepts for Chandigarh) played in the design and realization of Brazil's modern capital city, Brasília.

Background Information on Topic

As pointed out by architectural historian Kenneth Frampton, the influence between Le Corbusier and Brazil in the mid twentieth century was a two-way street.¹ In 1929 Le Corbusier traveled to Latin America to present lectures in Buenos Aires, Montevideo, and Rio de Janeiro. He was overwhelmed by Rio, writing that it was a place where "ideas attack you."² This feeling may have derived in part from the less than welcoming reception he received during his visit. Many progressive Brazilians at the time resented the influx of European culture on their society, including on architectural ideologies. (Lúcio Costa even walked out of Le Corbusier's lecture in Rio.) By the end of the following year, however, the tide had turned and Costa and other forward-looking Brazilian designers began to accept and even identify with Le Corbusier's ideas on modern building design. This change in view was largely due to the publication of Le Corbusier's *Precisions On the Present State of Architecture and City Planning* in 1930, which showed the Brazilians how his ideas were applicable to their country. The treatise consisted of lectures that the architect had presented in Argentina and Brazil during his 1929 trip, along with an introductory essay that described his experiences in South America and the effect the travel had on his architectural ideology. The untamed, natural landscapes that he saw from the air during his visit had a profound impact on him. It was during this trip that he began recognizing the incredible power of nature and to see it more than just a counterpoint to human creation.³ The book also included sketches Le Corbusier had made on the trip, including radical solutions to Rio's major urban design problems of traffic congestion and lack of land for expansion that were based on *Ville Contemporaine*, his early utopian urban plan.

The powerful impact of Le Corbusier's ideas on young progressive Brazilian designers was reflected on by Costa many years later. He recalled that in the years immediately after Le Corbusier's visit, there was a little purist stronghold "of those interested in the technical and expressive renewal of architecture" who had become passionately interested in the ideas of the European modernists, including Walter Gropius and Ludwig Mies van der Rohe, and, above all, Le Corbusier, whose writings they closely studied.⁴ By the time Le Corbusier returned to Brazil in 1936 he was viewed by Costa and a number of the other young designers studying and practicing in Rio, including Oscar Niemeyer, Affonso Reidy, and Jorge Moreira, as something of a prophet.

Ministry of Education and Health Building

Le Corbusier made the long arduous journey back to Rio de Janeiro in 1936 specifically to consult on the designs for a new university campus and the Ministry of Education and Health Building. At the time Brazil was experiencing an era of economic prosperity and the government of Getúlio Vargas wanted to present to the world the image of Brazil as a modern state. One of the main ways he sought to achieve this was through the creation of new edifices to house the various government ministries and other public

¹Kenneth Frampton, "Le Corbusier and Oscar Niemeyer: Influence and Counter Influence, 1929-1965" in *Latin American Architecture, Architecture 1929-1960: Contemporary Reflections* (New York: Monacelli Press, 2004), 35.

²Le Corbusier, *Precisions on the Present State of Architecture and City Planning* (1930), trans. Edith Schreiber Aujame (Cambridge, MA: MIT Press, 1991), 236.

³Mary McLeod, Review of *Precisions on the Present State of Architecture and City Planning* (1929), by Le Corbusier, *Journal of the Society of Architectural Historians* 55:1 (March 1996): 91.

⁴Valerie Fraser, "Cannibalizing Le Corbusier: the MES Gardens of Roberto Burle Marx," *Journal of the Society of Architectural Historians*, 59:2 (June 2000): 186.

institutions.⁵ The most important of these commissions was for the headquarters of the Ministry of Education and Health. A design competition announced in April 1935 for the new Ministry building attracted 35 entries. When a conservative, stripped-classical design was selected as the winner, the Minister, Gustavo Capanema, talked Vargas into abandoning the competition all together and allowing him to personally select the architects. Capanema viewed the responsibilities of the Ministry of Education and Health as falling within the broader scope of Brazilian culture and wanted a building that would artistically reflect this position.⁶ A building exhibiting historical precedents, such as the winning scheme, was not in his mind an acceptable solution. To attain a more appropriate proposal, Capanema turned to Costa and a group of energetic architects currently involved in the design of the Cidade Universitária.⁷ By January 1936, the Minister, at Costa's request, was also appealing to Vargas to invite Le Corbusier back to Brazil to help out with the designs of both the university and the ministry building. While Le Corbusier returned to Rio that summer and produced two schemes for the Ministry, his contribution to the actual project was only as an advisor rather than a design partner. His presence and influence, however, were felt as after his departure from Brazil Costa scrapped the original approved design in favor of one that incorporated some of the ideas that Le Corbusier had presented in his schemes. Costa wrote to the architect that the idea of building the "mummy," after having seen the "beautiful things" which Le Corbusier had created, no longer thrilled the Brazilian designers, and that they were proposing a new solution that consisted of a single block, such as the architect had suggested, with only a few alterations.⁸

While the plans for Cidade Universitária were never realized, Costa and Oscar Niemeyer's design for the Ministry of Education and Health Building was built. The final design consisted of a fifteen-story office block with a perpendicular lower section that includes an amphitheater and exhibition halls. It was the first major modern building in Brazil that exhibited a clear understanding of Le Corbusier's ideology, including the existence of a roof garden (designed by Roberto Burle Marx) and the use of piers (*pilotis*) to raise the offices block above ground level. The presence of structural columns allowed for the continuous use of windows on the north and south facades, making the Ministry one of the first buildings in the world to include glass curtain walls. The building's design was also significant for presenting an early example of a *brise-soleil*, a form of sun shading that had been introduced by Le Corbusier several years earlier.

The design of the Ministry of Education and Health Building was extremely influential in Brazil as dozens of later office buildings in Rio and other major cities soon began appearing with glass walls, *pilotis*, and *brise-soleils*. While most of these later skyscrapers do not exhibit the aesthetic beauty of the Ministry, a new city produced approximately two decades later by Costa and other members of his design team from Rio illustrates further development of these modern building forms by Brazilian architects, as well as the influence a second major area of Le Corbusier's ideology had on Brazil, that of the modern utopian city.

Brasília

More than a mere aesthetic trend, and above all more than the projection into our culture of a universal movement, [it is] a solution that takes carefully into account climate and scenery, perhaps the most original and precise expression of the creative intelligence of modern Brazil.⁹ Juscelino Kubitschek

President Juscelino Kubitschek believed in the transformative powers of architecture and he attempted to illustrate this on a monumental scale through the creation of Brasília. In ordering the construction of the new capital city, he was fulfilling an article of the country's constitution that stated that the center of the

⁵Lauro Cavalcanti, *When Brazil Was Modern* (Princeton, NJ: Princeton Architectural Press, 2003), 13-14.

⁶Daryle Williams, *Culture Wars in Brazil: The First Vargas Regime, 1930-1945* (Durham: Duke University Press, 2001), 73.

⁷Zilah Quezado Deckker, *Brazil Built: The Architecture of the Modern Movement in Brazil* (New York: Spon Press, 2001), 27-29.

⁸Lucio Costa, to Le Corbusier, 31 December 1931, as quoted in Zilah Quezado Deckker, *Brazil Built: The Architecture of the Modern Movement in Brazil* (New York: Spon Press, 2001), 39.

⁹Carlos Brillembourg and Terrence Riley, *Latin American Architecture 1929-1960: Contemporary Reflections* (New York: Monacelli Press, 2004), 31.

Federal Government should be moved from Rio de Janeiro to the interior of Brazil.¹⁰ By shifting the capital inwards, the Brazilian Government had hoped that it would lead to a population transfer from the Atlantic Coast into the heartland of the country. With Kubitschek's slogan "fifty years in five" as a motto, construction of Brasília began in 1956 and the city was officially inaugurated as Brazil's new capital in April 1960. Lúcio Costa supervised the overall plan of the city, while Oscar Niemeyer served as chief architect and Roberto Burle Marx oversaw the landscape design.

Costa declared that the new city must be orderly and efficient, but also be a city of "vitality and charm, conducive to reverie and intellectual speculation, capable of becoming not only the seat of Government, the administrative headquarters of the nation, but also a centre of culture which will attract to it the finest and most perceptive intellects in the country." He went on to argue that "it should be conceived of. . . not as an *urbs* . . . but as a *civitas*, having the virtues and attributes appropriate to a true capital city."¹¹

The design of Brasília was a realization of the principles established in the Athens Charter of 1933 by the *Congrès International d'Architecture Moderne* (CIAM). CIAM had been founded in 1928 by Le Corbusier and 28 other leading European modernists interested in advancing the ideas of functionalism in architecture. The Athens Charter laid out a 95-point program for the planning and construction of rational, modern cities that developed out of the fourth meeting of the organization, which was held on a boat sailing from Marseilles to Athens. Building upon earlier radical explorations into urban designs by Le Corbusier, it favored the use of high-rise residential blocks and called for the clear separation of zones for living, working, recreation, and circulation. The Athens Charter was further refined and eventually published by Le Corbusier in 1942. In 1950, the architect was able to finally realize his vision for a new utopian city in the construction of Chandigarh, the regional capital of Punjab and Haryana in Northern India. The modern planned city, which centered on an administrative zone of prominent government buildings, served as a major source for Costa and the other designers involved in the creation of Brasília.

Brasília presented a sharp contrast to the disorganization and density of organically developed Brazilian cities along the Atlantic Coast, like São Paulo and Rio de Janeiro. When seen from above the plan of Brasília resembles a bow and arrow or a bird in flight surrounded by large open spaces. The central Monumental Axis running down the body of the bird is a broad open grassy esplanade lined with public buildings. Neighborhoods of high-density housing in super-quadrants fill the wings.

At the head of the bird, Costa located the *Praça dos Três Poderes* (Plaza of the Three Powers). Three major buildings in a triangular formation representing the three branches of government surround the broad, concrete plaza. The elegant design of the *Palácio do Planalto* (Presidential Palace) to the north was balanced by the *Supremo Tribunal Federal* (Supreme Court) to the south. In the center of the axis is the main congressional building, with two large office towers and, on the roof of a lower section, upright and upside down bowl-shaped forms symbolically representing the two congressional chambers located below.

Running down the sides of the Monumental Axis are the governmental ministry buildings. Those of Foreign Affairs and Justice, each a unique design by Oscar Niemeyer, were placed just west and to the sides of the Congressional complex. Beyond are situated rows of nearly identical structures that house other ministries. The designs of these buildings, which consist of rectangular blocks raised on *pilotis* and curtain walls with *brise-soleil*, clearly reflect the formal ideology of Le Corbusier. Continuing further down the central axis are cultural institutions, including *Teatro Nacional*, a large performance hall to the north and the Cathedral and cultural institutions to the south. Costa located shopping malls and a transportation hub at the major intersection of the Monumental Axis and the residential wings, with commercial and banking districts conveniently placed nearby. Further towards the tail are hotel sectors to each side and a transmitter tower with an observation platform in the center of the axis. Beyond this area large tracts of land were reserved for a cemetery, sporting facilities, zoological and botanical gardens, and other recreational uses.

¹⁰The idea of moving the capital of Brazil had been suggested as early as 1789. José Bonifácio de Andrade e Silva first proposed the idea for a new capital with the name of Brasília in 1823.

¹¹Lúcio Costa as quoted in Valerie Fraser, "Brasília: A National Capital Without a National Museum," *Forum Permanente* <http://forumpermanente.incubadora.fapesp.br/portal/journal/articles/Brasília-a-national-capital-without-a-national-museum> last modified 17/09/2007 17:25 (accessed 24 November 2007).

The residential districts housed in the wings of the plan consisted of large “superquadra” blocks of uniform height, surrounded by bands of green space. The large buildings clearly reflect Le Corbusier’s ideas on housing, and, like the ministries, include *pilotis* and *brise-soleils*. Elementary schools and other public facilities were built within walking distance of the housing, while commercial businesses and secondary schools were placed on central arteries nearby.

Brasília has provided the world with a real-life experimental laboratory testing the basic tenets of CIAM’s modern urban design ideology. Initial results were not all that favorable. Construction of the city resulted in a debt of over 2 billion dollars. The scale of the open spaces and reliance on the automobile for local transportation, along with a lack of the rich, multi-layered activity usually associated with urban street corners, resulted in a sterile presence to the city. This led many early critics to cite Brasília as an example of modern architecture’s failure to fully address the most basic physical and psychological aspects of human needs. Time, however, has begun to provide a patina to the city of the organic character that it initially lacked. Fifty years after its birth, Brasília continues its role as a testing ground for the design ideology of Le Corbusier as interpreted by the Brazilian modernists.

Outline of Unit *Pilotis and Sunshades: The Influence of Le Corbusier on Modern Architecture in Brazil*

Below is an outline of the curriculum unit, *Pilotis and Sunshades: The Influence of Le Corbusier on Modern Architecture in Brazil*, with brief descriptions, potential readings, and suggested discussion topics and other related activities. The unit was designed to be flexible. It can easily be expanded into a curriculum that would span a full semester or be compacted into a short unit of a course with a broader scope. Individual elements of the unit can also be used as stand-alone entities and incorporated into survey course or other classes.

Introduction:

1. Background: This section introduces students to the basic characteristics and underlying ideology of modern architecture, and the political, social, and cultural background of mid-twentieth-century Brazil.

Readings: - Levine and Crocitti, “The Vargas Years,” *The Brazil Reader: History, Culture, Politics*. (1999), 149-155.

- Lauro Cavalcanti, *When Brazil was Modern* (2003), Introduction, 8-25.

- Valerie Fraser, “Introduction” (“The Modern Movement in Architecture and Urbanism,” and “Translating European Theory into Latin American Practice,”) in *Building the New World: Studies in the Modern Architecture of Latin America 1930-1960* (2000), 1-21.

- Tim Benton, “Foreword,” in *Brazil Built: The Architecture of the Modern Movement in Brazil* (2001). x-xiii.

Discussion Topics: Explore the status of major urban centers of Brazil during the 1920s and 1930s and discuss how developments in Brazilian culture and, more specifically, architecture reflected and differed from what was going on concurrently in Europe and in the United States.

2. The Early Ideology of Le Corbusier: This section involves the students attaining an understanding of the basic tenets of Le Corbusier’s design ideology.

Readings: - Le Corbusier, *Towards a New Architecture* (1923), all.

- Deborah Gans, *The Le Corbusier Guide* (Princeton, NJ: Princeton Architectural Press, 1987), skim.

- Lisa D. Schrenk, "Weissenhofsiedlung, Deutscher Werkbund (Stuttgart, 1927)" in *Encyclopedia of Twentieth-Century Architecture* (2004).

Discussion Topics: Identify Le Corbusier's "Five Points of Architecture" and discuss the impact of each point and how they fit into the technological and cultural developments taking place in architecture during the early twentieth century.

Design Project: Explore some of the architect's major works, including Villa Savoye, Poissy, and Chapelle Notre Dame du Haut, Ronchamp, and examine his projects for large buildings, such as Unité d'Habitation, Marseille, and the Pavillon Suisse and the Maison du Brésil at the Cité Universitaire, Paris, through analyzing major aspects of the designs in relation to Le Corbusier's writings. Present findings in either a poster or PowerPoint presentation.

3. The Transmission of Le Corbusier's Ideas in Brazil and Elsewhere: In this section students will focus on the publication and reception of Le Corbusier's ideas around the world through writings, housing and design exhibitions, travel, and the creation of CIAM. In particular it will examine the architect's two trips to Brazil and his relationship with Lúcio Costa, Oscar Niemeyer, and other Brazilian designers.

Readings: - Kenneth Frampton, "Le Corbusier and Oscar Niemeyer: Influence and Counter Influence, 1929-1965" in *Latin American Architecture, 1929-1960* (2004), 35-49.

- Eric Mumford, "Congrès Internationaux de l'Architecture Moderne (CIAM)," in *Encyclopedia of Twentieth-Century Architecture* (2004).

- Zilah Quezado Deckker, "Vargas, Le Corbusier, and Reinforced Concrete," in *Brazil Built: The Architecture of the Modern Movement in Brazil* (2001), 7-22.

- Cavalcanti, "Architecture, Urbanism, and the Good Neighbor Policy: Brazil and the United States," in *Latin American Architecture, 1929-1960* (2004), 51-59.

- Le Corbusier, *Precisions on the Present State of Architecture and City Planning* (1929).

Discussion Topics: Address why Brazilian designers like Costa and Niemeyer were receptive to Le Corbusier's ideology, as well as what they were rejecting of Brazilian architecture and culture by looking to European modernism for design inspiration.

2. The Influence of Le Corbusier's Ideas on Modern Building Design in Brazil

1. The Ministry of Education and Health Building: This section addresses the history behind the creation of the Ministry of Education and Health Building in Rio, the first major concrete illustration that Le Corbusier's ideology had arrived in Brazil. Students will compare the finished design with schemes produced by Le Corbusier. They will also examine specific elements of the building's final design, in particular its realization of principles of the architect's design ideology, such as the focus on functionality and simple geometric forms, the use of a rational plan and siting, the presence of integration between interior and exterior spaces, and the inclusion of *pilotis*, roof-garden terraces, *brise-soleils*, and abstract art.

Readings: - Valerie Fraser, "Origins of the Ministério da Educação e Saúde (MES) Building," *Building the New World: Studies in the Modern Architecture of Latin America 1930-1960* (2000), 150-180.

- Zilah Quezado Deckker, "The Ministry of Education and Health Building," in *Brazil Built: The Architecture of the Modern Movement in Brazil* (2001), 25-53.

- "Office Building for Ministry of Education and Health, Rio de Janeiro, Brazil," *Architectural Forum* 78 (February 1943): 37-44.

- Elizabeth Davis Harris, *Le Corbusier and the Headquarters of the Brazilian Ministry of Education and Health* (1984).

- Valerie Fraser, "Cannibalizing Le Corbusier: the MES Gardens of Roberto Burle Marx," *Journal of the Society of Architectural Historians*, vol. 59 (June 2000): 180-193.

- Adnan Morshed, The Cultural Politics of Aerial Vision: Le Corbusier in Brazil (1929), *Journal of Architectural Education* 55 (May 2002): 201-210.

Discussion topics: Discuss the functionality of the design of the Ministry of Education and Health Building. Address the questions: What of the final design deviates from Le Corbusier's schemes? Does the building work as planned? Have there been major modifications made to the building over the years?

2. The Technological Design Aspects of the Ministry of Education and Health: In this section students examine technological aspects of the design for the Ministry of Education and Health, in particular its use of *brise soleil* and siting.

Readings: - José Manuel Almodóvar Melendo, *De la ventana horizontal al brise-soleil de Le Corbusier: análisis ambiental de la solución propuesta para el Ministério de Educação de Rio de Janeiro=From Ribbon Window to the Brise-Soleil of Le Corbusier: Environmental Analysis of the Proposed Solution for the M inistério da Educação de Rio de Janeiro* available at www.vitruvius.com.br/.../arq051/arq051_02_e.asp.

-J.M. Cabexa and J.M. Almodovar, *The Architect Roberto Rivero and Daylighting Research* (2003).

- J.M. Cabexa and J.M. Almodovar, *The Quest for Daylight: Evolution of Domes in South-American Baroque* (2001).

- William M. C. Lam, *Sunlight as Formgiver for Architecture* (1986).

- Michael Laar, "Brise Soleil – Classical Elements of Tropical Modernism," Paper given at the Seventh International IBPSA Conference, Rio de Janeiro, Brazil, August 13-15, 2001.

Design Project: The students will be asked to produce an analysis of *brise soleils* and explore the types of sunshades available on the market today from various manufacturers around the world.

3. The Impact of the Design for the Ministry of Education and Health on Brazilian Architecture: This section explores later buildings in Brazil that have built upon or just borrowed the aesthetics of design elements realized in the Ministry of Education and Health Building.

Readings: - Zilah Quezado Deckker, "A Whole New School," in *Brazil Built: The Architecture of the Modern Movement in Brazil* (2001), 64-86.

Assignment: Students will analyze one of the many buildings in Brazil, such as several of the local ABI (Associação Brasileira de Imprensa) headquarters, that exhibit design elements similar to those of the Ministry of Health and Education Building and present findings in either a poster or PowerPoint presentation.

Discussion topic: Explore how architects like Costa and Niemeyer were transforming European modernist forms into a "Brazilian Style".

3. The Influence of Le Corbusier's city planning designs on Brazil

1. Le Corbusier's Urban Designs: This section involves students examining the basic elements of Le Corbusier's unrealized urban designs (Ville Contemporaine and Plan Voisin) and Chandigarh, his design of a new regional capital in northern India.

Readings: - Le Corbusier, *Precisions: On the Present State of Architecture and City Planning* (1930).

- Francesco Passanti, "The Skyscrapers of the Ville Contemporaine," *Assemblage* no. 4 (October 1987): 52-65.

Discussion Topic: Explore the various sources for Le Corbusier's Ville Contemporaine and Plan Voisin designs and address whether these plans were practical for the time in which they were produced. Debate whether Le Corbusier wanted the projects to be realized or if they were created solely as design exercises. Also, discuss how the basic design for Chandigarh relates to his earlier urban schemes.

2. The Design of Brasília: This section introduces students to the history and basic design elements of Brasília.

Readings: - Farès el-Dahdah, "Introduction: The Superquadra and the Importance of Leisure," in *Case: Lucio Costa Brasília's Superquadra* (2005), 11-17.

- David E. Snyder, "Alternate Perspectives on Brasília," *Economic Geography* 40 (January 1964), pp. 34-45.

- James Holston, "Blueprint Utopia," in *The Modernist City: An Anthropological Critique of Brasília* (1989), 31-58.

Discussion Topics: Debate how Brasília reflects/rejects Le Corbusier's urban designs, in particular Chandigarh. Explore how the creation of Brasília related to the political situation of Brazil at the time it was built and examine the underlying agendas for its construction.

3. Brasília Today: In this section students will be asked to assess the success (or failure) of Brasília by examining how the city functions after fifty years of existence and how it has evolved over the past five decades.

Readings: - José Pessôa, "Protected by Law: The Superquadra's 'Historic' Modernity," in *Case: Lucio Costa Brasília's Superquadra* (2005), 11-17.

- Ribeiro and Sinoti, "A Post-Occupancy Assessment of the Neighborhood Unit," in *Case: Lucio Costa Brasília's Superquadra* (2005), 91-96.

- Farès el-Dahdah, "Conclusion: The Last Superquadra, S 207," in *Case: Lucio Costa Brasília's Superquadra* (2005), 97-105.

- J. Moerschel, "The Realities of Brasília,"
<http://www.maclester.edu/courses/geog61/jmoersch/reality.html>

Discussion Topic: Debate whether J. Moerschel gives an accurate assessment of Brasília today. Explore how living conditions in Brasília differ from living in other large cities in Brazil, like Rio de Janeiro and São Paulo.

4. Conclusion: Brazil Builds – Publicizing Brazilian Modernism to the World

1. Le Corbusier and the "Brazilian Style": In this section students will synthesize what they have learned about the influence of Le Corbusier on the modern architecture of Brazil and assess the impact of Brazil on Le Corbusier.

Readings: - Zilah Quezado Deckker, "Le Corbusier and the 'Brazilian Style'" and "Conclusion," in *Brazil Built: The Architecture of the Modern Movement in Brazil* (2001), 172-187, 207-208.

- Le Corbusier, *Precisions on the Present State of Architecture and City Planning* (1929), review.

Discussion Topic: How did Le Corbusier's two trips to Brazil influence his ideas on architecture? Was there just as much an influence going from Brazil to Europe as vice versa?

2. Brazil Builds: In this section the students will explore the recognition and promotion of Brazilian modern architecture beyond the country's borders through a major exhibition and related publication sponsored by the Museum of Modern Art in 1943.

Readings: - Zilah Quezado Deckker, "The Exhibition and the Book," in *Brazil Built: The Architecture of the Modern Movement in Brazil* (2001), 109-144.

- Philip Goodwin, *Brazil Builds: Architecture New and Old, 1652-1942*, (1943), 81-103, skim rest.

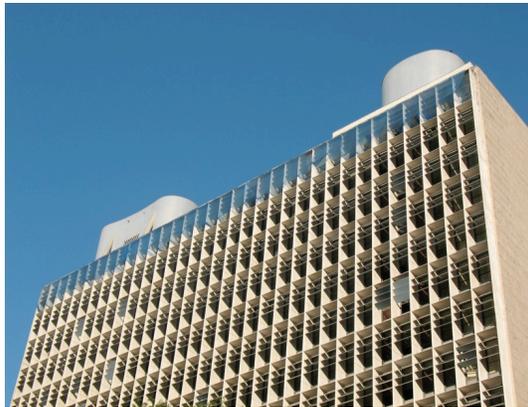
- Lisa D. Schrenk, "International Style Exhibition, New York (1932)" in *Encyclopedia of Twentieth-Century Architecture* (2004).

Discussion Topic: Explore the impact of the "Brazil Builds" show. Who was the intended audience for the show and related book? What was the influence of the exhibit on American and European architects? Compare the "Brazil Builds" show with MoMA's 1931 International Style Show exhibition.

Final Activity: Divide students into two groups and hold a debate on whether the adoption of modern European architecture was an appropriate solution for Brazil in the mid twentieth century.

Illustrations

Ministry of Education and Health Building, Rio
(Identification of each image follows illustrations)



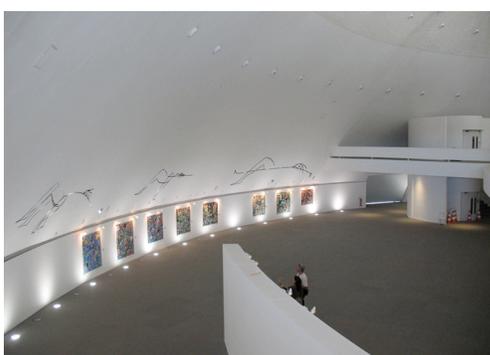
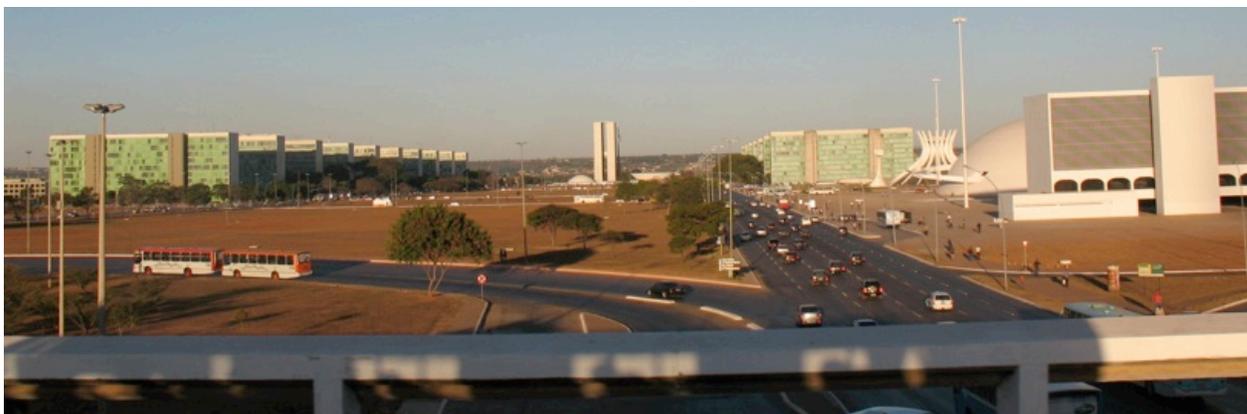
Illustrations

Brasília











Illustrations

Ministry of Education and Health

- Top Left – View of building from north
- Top Right – View of building from south
- Middle Left – *Brise-soleils* on north facade
- Middle Right – Detail of *brise-soleils*
- Bottom Left – Lower south wing with roof garden on top
- Bottom Right – *Pilotis* under main block of building

Brasília

Page 13:

- Top – *Esplanada dos Ministérios* (Monumental Axis) with Transportation Hub in foreground
- Second Row Left – Plan of Brasília
- Second Row Right – View of (*from left to right*) *Congresso Nacional*, Ministry Building, Cathedral
- Bottom – Model of Brasília

Page 14:

- Top – *Praça dos Três Poderes* (Plaza of the Three Powers)
- Second Row Left – Plaza with *Os Candangos* sculpture by Bruno Giorgi and *Congresso Nacional* in distance
- Second Row Right – *Supremo Tribunal Federal* (Supreme Court) with Justice by Alfredo Ceschiatti
- Third Row Left – *Praça dos Três Poderes* (Plaza of the Three Powers)
- Third Row Right – *Palácio do Planalto* (Presidential Palace) with *Os Candangos* sculpture
- Bottom – Row of Ministries from west

Page 15:

- Top – *Congresso Nacional*
- Second Row Left – *Palácio Itamarati* (Ministry of Foreign Affairs)
- Second Row Right – *Palácio da Justiça* (Ministry of Justice)
- Bottom Right – Ministry building from east
- Bottom Left – Ministry building from west with *brise-soleils*

Page 16:

Top– *Esplanada dos Ministérios* (Monumental Axis) from the *Rodoviária*

Second Row Left – *Catedral Metropolitana Nossa Senhora Aparecida* (Metropolitan Cathedral)

Second Row Right – *Catedral Metropolitana* interior

Third Row Left – *Museu Nacional* (National Museum)

Third Row Right – *Museu Nacional* interior

Bottom Left – *Museu Nacional* interior

Bottom Right – National Library

Page 17:

Top Left – *Teatro Nacional*

Top Right – Western end of Monumental Axis with a commercial sector in distance

Second Row Left – *Conjunto Nacional* (Shopping Mall) from east

Second Row Right – *Conjunto Nacional* (Shopping Mall) from west

Third Row Left – Model of residential sector showing layout of “Superquadrants”

Third Row Right – Residential block

Bottom Left – Favela outside of Brasília

Bottom Right – Favela outside of Brasília

*Lisa D. Schrenk holds the copyright to all illustrations included in this curriculum project. They may be used for educational purposes only unless specific permission has been granted by author.

Bibliography

- Adam, William Howard. *Roberto Burle Marx: The Unnatural Art of the Garden*. New York: Museum of Modern Art, 1991.
- Amaral, Aracy. "Stages in the Formation of Brazil's Cultural Profile." *The Journal of Decorative and Propaganda Arts*, Brazil Theme Issue 21 (1995): 8-25
- Andreoli, Elisabetta and Adrian Forty. *Brazil's Modern Architecture*. London: Phaidon Press, 2005.
- Bald, Sunil. "Brasília Reproduced as Backdrop = Brasília Reproducida Como Telon de Fondo." *Aula: Architecture and Urbanism in las Américas* no. 4 (2003): 18-25.
- Botey, Josep Ma. *Oscar Niemeyer. Obaras y Proyectos=Works and Projects*. Barcelona: Editorial Gustavo Gili, SA, 2005.
- Breschiani, Maria Stella Martins. "France-Brazil Between 1920 and 1950: Recognizing Oneself in the "Other" - Otherness as a Mirror of Similarity." *Journal / International Working-Party for Documentation and Conservation of Buildings, Sites and Neighbourhoods of the Modern Movement* no. 34 (March 2006): 52-57.
- Brillembourg, Carlos and Terrence Riley. *Latin American Architecture 1929-1960: Contemporary Reflections*. New York: Monacelli Press, 2004.
- Cabeza, J.M. and J.M. Almodovar. "The Architect Roberto Rivero and Daylighting Research." *Proceedings of the PLEA 2003 Conference. Passive and Low Energy Architecture 2003*. No. 20. Santiago de Chile: Waldo Bustamante G., Eugenio Collados B., 2003.
- _____. "The Quest for Daylight: Evolution of Domes in South-American Baroque." *Proceedings of the PLEA 2001 Conference. Passive and Low Energy Architecture* no. 18 (Florianópolis, Brasil: F. O. R. Pereira, R. Rütther, R. V. G. Souza, S. Afonso, J. A. B. da Cunha Neto, 2001): 161-168.
- Cavalcanti, Lauro. "Architecture, Urbanism, and the Good Neighbor Policy: Brazil and the United States" in *Latin American Architecture, 1929-1960*. New York: Monacelli Press, 2004, 51-59.
- Cavalcanti, Lauro and Jon M. Tolman. *When Brazil Was Modern*. Princeton, NJ: Princeton Architectural Press, 2003.
- Crouch, Dora P. and June G. Johnson. *Traditions in Architecture: Africa, America, Asia, and Oceania*. Oxford: Oxford University Press, 2000.
- Deckker, Thomas. "Two Projects in Brasília." *Architectural Design* 70:5 (October 2000): 102-105.
- Deckker, Zilah Quezado. *Brazil Built: The Architecture of the Modern Movement in Brazil*. New York: Spon Press, 2001.
- Domingos Roriz, Joachim. "Brasília: a National Project for Development and Integration." *Plan Canada* 40:3 (April 2000): 16-17.
- Duivesteijn, Adri. *The Hidden Assignment: At Home in the City*. Rotterdam: NAI Publishers, 1994.
- Dunnett, James Inglis. "Brasília's 40th Anniversary: Millennial DOCOMOMO Conference." *Journal / International Working-Party for Documentation and Conservation of Buildings, Sites and Neighbourhoods of the Modern Movement* no. 49 (March-April 2001): 112-115.
- El-Dahdah, Farès. *Case: Lúcio Costa Brasília's Superquadra*. New York: Prestel, 2005.
- Evenson, Norma. *Two Brazilian Capitals: Architecture and Urbanism in Rio de Janeiro and Brasília*. New Haven, CT: Yale University Press, 1973.
- Ficher, Sylvia. "Lúcio Costa (1902-1998): Modernism and Brazilian Tradition." *Journal / International Working-Party for Documentation and Conservation of Buildings, Sites and Neighbourhoods of the Modern Movement* 24:3 (August 2000) 18-27.
- Frampton, Kenneth. "Le Corbusier and Oscar Niemeyer: Influence and Counter Influence, 1929-1965" in *Latin American Architecture, 1929-1960* (New York: Monacelli Press, 2004), 35-49.
- Fraser, Valerie. "Art and Architecture of the Americas." *Arara* no. 2 (available at <http://www2.essex.ac.uk/arhistory/arara/issue_two/index.html>).

- _____. *Building the New World: Studies in the Modern Architecture of Latin America 1930-1960*. New York: Verso, 2000.
- Gomes, Geraldo. "Artistic Intentions in Iron Architecture." *The Journal of Decorative and Propaganda Arts*, Brazil Theme Issue 21 (1995): 86-107.
- Goodwin, P. L. *Brazil Builds: Architecture New and Old, 1652-1942*. New York: The Museum of Modern Art, 1943.
- Gorelik, Adrián. "Brasília 1956-2006." *Casabella* 71:753 (March 2007): 4-29.
- Hamerman, Conrad. "Roberto Burle Marx: The Last Interview." *The Journal of Decorative and Propaganda Arts*, Brazil Theme Issue 21 (1995): 156-179.
- Harris, Elizabeth Davis. *Le Corbusier: Riscos Brasileiros*. São Paulo: Nobel, 1987.
- _____. *Le Corbusier and the Headquarters of the Brazilian Ministry of Education and Health, 1936-1945*. Ph.D. Diss, Chicago: University of Chicago, 1984.
- Henket, Hubert-Jan. "Brasília Remembered: the 6th International DOCOMOMO Conference." *Journal / International Working-Party for Documentation and Conservation of Buildings, Sites and Neighbourhoods of the Modern Movement* no. 49 (March-April 2001): 112-115.
- Holford, William. "Brasília: A New Capital for Brazil." *Architectural Review* 122 (December 1957): 394-402.
- Holston, James. *The Modernist City: An Anthropological Critique of Brasília*. Chicago: University of Chicago Press, 1989.
- Junqueira de Camargo, Monica. "Brazilian Presence in the Historiography of Twentieth Century Architecture." *Journal / International Working-Party for Documentation and Conservation of Buildings, Sites and Neighbourhoods of the Modern Movement* no. 34 (March 2006): 66-71.
- Laar, Michael. "Brise Soleil – Classical Elements of Tropical Modernism." Paper given at the Seventh International IBPSA Conference, Rio de Janeiro, Brazil. August 13-15, 2001.
- Lam, William M. C. *Sunlight as Formgiver for Architecture*. New York: Van Nostrand Reinhold Company, 1986.
- Lara, Fernando. "One Step Back, Two Steps Forward: The Maneuvering of Brazilian Avant-Garde." *Journal of Architectural Education* 55:4 (May 2002): 211-219.
- Le Corbusier. *The City of Tomorrow* (1929). Cambridge, MA: MIT Press, 1971.
- _____. *Precisions on the Present State of Architecture and City Planning* (1929). Cambridge, MA: MIT Press, 1991.
- _____. *Vers une architecture=Towards a New Architecture* (1923). New York: Dover Publications, 1985.
- Lejeune, Jean-Francois. Ed. *Cruelty and Utopia: Cities and Landscapes of Latin America*. New York: Princeton Architectural Press, 2005.
- Lemos, Celina Borges. "The Modernization of Brazilian Urban Space as a Political Symbol of the Republic." *The Journal of Decorative and Propaganda Arts*, Brazil Theme Issue 21 (1995): 218-237.
- Levine, Robert M. and John J. Crocitti. *The Brazil Reader: History, Culture, Politics*. Durham, NC: Duke University Press, 1999.
- Lockhart, James and Stuart B. Schwartz. *Early Latin America: A History of Colonial Spanish America and Brazil*. New York: Cambridge University Press, 1983.
- McDonough, Tom. "Re-Visioning Brasília." *Art in America* 88:1 (January 2000): 108-111.
- Meade, Teresa. "Civilizing" Rio: Reform and Resistance in a Brazilian City, 1889-1930. University Park, Pa: Pennsylvania State University Press, 1997.
- Melendo, José Manuel Almodóvar. *De la ventana horizontal al brise-soleil de Le Corbusier: análisis ambiental de la solución propuesta para el Ministério de Educação de Rio de Janeiro (From Ribbon Window to the Brise-Soleil of Le Corbusier: Environmental Analysis of the Proposed*

- Solution for the Ministério da Educação de Rio de Janeiro* (available at www.vitruvius.com.br/.../arq051/arq051_02_e.asp).
- Montezuma, Roberto. *Architecture Brazil: 500 Years*. Recife: Universidade Federal de Pernambuco, 2002.
- Morshed, Adnan. "The Cultural Politics of Aerial Vision: Le Corbusier in Brazil." *Journal of Architectural Education* 55 (May 2002): 201–210.
- Mumford, Eric Paul. *The CIAM Discourse on Urbanism, 1928-1960*. Cambridge: MIT Press, 2000.
- Muntoni, Alessandra. "La Foresta Artificiale di Roberto Burle Marx = The Artificial Forest of Roberto Burle Marx." *Metamorfosi* no. 47 (October 2003): 52-59.
- Neutra, Richard. *Architecture of Social Concerns in Regions of Mild Climates*. São Paulo: Gerth Todtmann, 1948.
- Niemeyer, Oscar. *The Curves of Time: The Memoirs of Oscar Niemeyer*. London: Phaidon Press, 2000.
- _____. "Oscar Niemeyer Interview." *Space* no. 456 (November 2005): 278-297.
- "Office Building for Ministry of Education and Health, Rio de Janeiro, Brazil." *Architectural Forum*, 78 (February 1943): 37-44.
- Page, Joseph A. *The Brazilians*. Boston: Addison-Wesley, 1995.
- Papadaki, Stamo. *Oscar Niemeyer*. New York, George Braziller, Inc., 1960.
- _____. *Oscar Niemeyer: Works in Progress*. New York, Reinhold Publishing Corporation, 1956.
- _____. *The Work of Oscar Niemeyer*. New York, Reinhold Publishing Corporation, 1950.
- Passanti, Francesco. "The Skyscrapers of the Ville Contemporaine." *Assemblage* No. 4 (Oct., 1987): 52-65.
- Pessôa, José. "Protected by Law: The Superquadra's 'Historic' Modernity" in *Case: Lúcio Costa Brasília's Superquadra*. New York: Prestel, 2005, 11-17.
- Rappaport, Nina. "Brasília at 40." *Oculus* 63:3 (November 2000): 11.
- Ribeiro, Sandra Bernardes and Marta Litwinczik Sinoti. "A Post-Occupancy Assessment of the Neighborhood Unit" in *Case: Lúcio Costa Brasília's Superquadra*. New York: Prestel, 2005, 91-96.
- Ryan, Raymund. "Fear and Seduction in Brasília." *Irish Architect* no. 163 (January 2001): 52-53.
- Salvaing, Matthieu. *Oscar Niemeyer*. New York: Assouline, 2002.
- Segawa, Hugo and Falbel, Anat. "Transatlantic Impressions: Revealing Brazilian Modernity." *Journal / International Working-Party for Documentation and Conservation of Buildings, Sites and Neighbourhoods of the Modern Movement* no. 34 (March 2006): 50-51.
- Segre, Roberto. "Le Corbusier's Contradictory Projects for the MES in Rio de Janeiro (1936)." *Journal / International Working-Party for Documentation and Conservation of Buildings, Sites and Neighbourhoods of the Modern Movement* no. 34 (March 2006): 78-83.
- Sennott, R. Stephen. ed. *Encyclopedia of Twentieth-Century Architecture*. New York: Fitzroy Dearborn, 2004.
- Sisson, Rachel. "Rio de Janeiro, 1875 - 1945: The Shaping of a New Urban Order." *The Journal of Decorative and Propaganda Arts*, Brazil Theme Issue 21 (1995): 138-155.
- Skidmore, Thomas. *Brazil. Five Centuries of Change*. New York: Oxford University Press, 1999.
- Snyder, David E. "Alternate Perspectives on Brasília." *Economic Geography* 40:1 (January 1964): 34-45.
- Sorvig, Kim. "Burle Marx's Complex Modernism: Musings From a Recent Visit to Brazil." *Landscape Architecture* 95:2 (February 2005): 150-152.
- Teixeira, Carlos M. "La vraie Nature de Brasília = The True Nature of Brasília." *Architecture d'aujourd'hui*, no. 359 (July-August 2005): 100-105.
- Trasi, Nicoletta. "Oscar Niemeyer Today." *Arca* no. 190 (March 2004): 2-5.

- Trelcat, Sophie. "Brazil Builds," le Retour = Brazil Builds, the Return." *Architecture d'aujourd'hui*, no. 359 (July-August 2005): 40-45.
- Tsiomis, Yannis. "Paris-Rio roundtrip: Le Corbusier's Landscape Architecture project." *Journal / International Working-Party for Documentation and Conservation of Buildings, Sites and Neighbourhoods of the Modern Movement* no. 34 (March 2006): 72-77.
- Underwood, David Kendrick. *Oscar Niemeyer and Brazilian Free-Form Modernism*. New York: George Braziller, 1994.
- Williams, Daryle. *Culture Wars in Brazil: The First Vargas Regime, 1930-1945*. Durham: Duke University Press, 2001.

Acknowledgements

I would like to thank Luiz Valcov Loureiro and the other employees of Fulbright Brazil, including Regina Vasquez, Rejania Araujo, Rita Moriconi, Mariana Costa, and Mariana Migliari, as well as the all of the presenters. In sharing their love for and knowledge of their country, they made the trip to Brazil an amazing life-altering experience. I would also like to thank Natalie Arsenault and everyone else involved in our pre-trip program at the University of Texas at Austin. They helped us to realize how fortunate we were to be selected as participants in this Fulbright-Hays experience. I would also like to thank all fifteen other educators on the trip. Each and everyone enriched my experience by allowing me to see Brazil through their eyes. I finally want to thank Steven Weis for unselfishly supporting me in this and all of my other academic endeavors.