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Capital limits: the design and the manufacturing workplace

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Margens capitais: o desenho e o canteiro da manufatura

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Palavras-chave:	Absctract	Resumo
Architecture.	It approaches the relation in Sérgio Ferro's first production side by side	Aborda os vínculos da primeira produção de Sérgio Ferro, ao lado de
Construction Site.	with Flávio Império and Rodrigo Lefèvre and with the São Paulo modern	Flávio Império e Rodrigo Lefèvre com a corrente paulista da arquitetura
Ferro, Sérgio, 1938.	architecture scene in terms of its ideology and language scope before the	moderna no âmbito da ideologia e da linguagem, anterior ao golpe mi-
	1964 military coup and the radical criticism that they would later elabo-	litar de 1964 e à crítica radical que elaborariam na sequência, filiada à
Keywords:	rate. Witch it affiliated to the Brazilian Marxist intellectual interpretive	corrente interpretativa de intelectuais brasileiros marxistas, nos termos
Arquitetura.	approach, which was related to the duality between archaic and modern.	da dualidade entre arcaico e moderno. Ilumina o comprometimento de
Canteiro de obras.	It enlightens the commitment of their ideas to users and architects with a	suas ideias com usuários e produtores da arquitetura, com vistas a uma
Sérgio Ferro.	view for a solution for the housing construction with social concern. It is	solução para a construção de habitações de interesse social. Trata de
	about bourgeois residences designed by Ferro, characterized by cons-	duas residências burguesas projetadas por Ferro, cujos canteiros de
	truction sites served as heterogeneous manufacturing laboratories - Boris	obras serviram como laboratórios de manufatura heterogênea – casa
	Fausto's house, in São Paulo - and organic manufacture - Bernardo Isl-	Boris Fausto, em São Paulo – e manufatura orgânica – casa Bernardo
	ler's house, in Cotia – this one in a dome design.	Isller, em Cotia – essa última em abóboda.

Capital limits

Working in trio, duo or solo, since they had been students, Flávio Império, Rodrigo Lefèvre, and Sérgio Ferro were the authors, in the 1960s, of projects with concerns about the architecture sense, the worksite work organization, and about the construction systems rationalization. Immersed in multidisciplinary performances such as teaching, painting, criticism, and theater, in addition to architecture, the cooperative creation process that involved them is evident. As Sérgio Ferro told me in an interview (1995): "there were almost absolute osmosis and none jealousy among us" - and the ban on the appeal to the sensitive – "we had to argue, convince the other, or we did not do it. There was no violin, or when there was, it was on purpose, and then it was difficult to be cooperative: one proposed and the others embrace at the same time".

I consider the first four years of this partnership (1961-4) as the period for a common architectural idea based on the positive works designed experiences in a collective studio. Thus, crossed references are made and the cultural amalgam resulted remain alive from the covered period. More than finding definitive answers, the trio raised questions specifically related to the Brazilian's architecture, transforming their projects and works as a laboratory of technical and spatial possibilities, whose background was the public housing problem. In July of 1965, this production would be put together for the first time in the magazine Acrópole (n. 319) special issue.

Eduardo Corona's editorial "About popular housing" made the motto clear, followed by Vilanova Artigas' article, whose tittle message also states: "A false crisis". For the three architects, the atmosphere of the moment was about frustration due to the architecture's social meaning limitation "in a time of war". So Artigas intended to show that the country despite the military coup did not embrace the modernization wave, and also show that there was no crisis in functionalism architecture, but a national "overcoming period" based on Oscar Niemeyer self-criticism. This resulted in a new synthesis between technique and art, conciseness and purity overlapping the early excessive originality. He ended by quoting Paul Langevin: "thought is born from the action and, in a healthy spirit, returns to action." This was an invitation for a professional practice that minimized the latent desire for effective political action by young architects, beginning a heated debate.

In the same Journal, there are introductory texts written by Flávio Império, Rodrigo Lefèvre, and Sérgio Ferro for the notebook project: "Notes on architecture". Each one complained in their ways about the precarious labor market and the bourgeois architecture consumption, forcing the architect to work nearby fields such as painting and theater and also about the "concern in surveying and interpreting facts of our culture", a direct criticism about the political moment. The projects, covering four years of architectural production, are presented in a non-chronological and non-random order, creating a discourse. After an urban project and three other residences, we have the Boris Fausto's house (1963) as an epilogue, an index of the developmental impasse vision focused on the industrialization problem in Brazilian civil construction. And finally, two experiences in dome, opening trails: "Residence on the beach" - Simon Fausto's house (1961), a project by Flávio Império - followed by "Residence in Cotia" - Bernardo Issler's house (1963). The innovation was not only formal but about the technical nature: the dome reflected some of the Ferro, Imperio, and Lefèvre's architecture guiding concepts: almost perfect structure - working only with compression; improvement of working conditions at the worksite - protecting the worker from the sun and the rain; and material savings - brick being used for sealing and in the roof. Also, the use to the form adaptations would lead to possibilities of changing in the traditional house spaces.

In "Arquitetura Nova" (1967), Sérgio Ferro discusses the period between the 1940s and 1960s. When there were social possible development symptoms. These, true or not, served to stimulate an "optimistic anticipatory activity" translated by a "sober and direct architecture" and appropriate to our underdevelopment country. "Brasília¹ marked the height and the interruption of these hopes: we soon stopped our timid and illusory social advances and answering to the military curfew". The correct interpretation of the dubious sentence seems to be a key for the understanding of the three architects first collaboration. A possible interpretation is proposed by the literary critic Roberto Schwarz in his unusual essay *Cultura e Política*, 1964-69. In some drafts - in which Roberto Schwarz briefly comments on Ferro's article - it is about to understand that "the cultural process, which has been overflowing class limits and

¹Brasília is the federal capital of Brazil.

the mercantile criteria, was dammed in 64". According to his logic, as in that time theater scene, the "new architecture" would have become "a matter for own consumption", since the military coup had broken the sketchy contact among the artists and the exploited ones for whom the work was directed and oriented. Hence the architects lived the anticlimax of the bourgeois house²:

The political architecture perspective was washed; however, there was a remaining architect's intellectual training. Hence, they will torture the space, overloading houses with ideas and experiments for those newlywed friends who had some money and ask them to design a project. Out of its proper context, taking place in a limited sphere and as merchandise, architectural rationalism becomes a good taste show of - contradictory with its profound line - or a moralistic and uncomfortable symbol of the revolution that it did not take place.³

When considering the particularities of the architecture field, the idea of "interrupted design" does not seem to be supported. The modern Brazilian architecture social commitment had always been thin. That "brutalism" identified by Schwarz as a "moralistic symbol" was already in Artigas, as pointed by Pedro Arantes:

Puritan morality and rational control of wealth is the goal of the bourgeois modernization project. That is why, when Sérgio speaks about "committed aesthetics", we could add: it was particularly committed to transforming the bourgeois house and educating the elite. This is our "cause" (2002, p. 48).⁴

Moving on to another possible reading for that sentence; that Brasília construction made explicit the Brazilian modernization contradictions, being the apex and rupture of architecture's commitment to the country development. The downward curve here predates that on from the general culture in the four years between the city

inauguration and the military coup. The Pilot Plan realization and its contrast about the satellite towns highlighted the time conditions limitations and also highlight the political project contradictions and its impracticability in terms of its proposed goals. $_{5}$

In bifurcated reality, Brasilia was at the same time the affirmation of the unequal and combined and a symbol of the impossibility of overcoming this reality through peaceful or institutional ways, which would lead to the Jânio Quadros' election and the radical populism of João Goulart. João Goulart associated himself with the left-wing. The duality between the archaic and the modern was not exogenous to him, and the democratic interruption process in 1964 did not cancel the modernization process and the economic development that engenders it. Developmentalism, of course, without a renewing social project: while social inequalities grew, increasing income concentration, the military exacerbated technical-industrial development and the nationalist ideal of progress. Having designed together with Lefèvre two buildings in the new capital, Ferro on an interview said the following:

The political activist and professional training came almost together. Since the second year of FAU-USP, works were already under construction, especially in Brasília. The absurd contrast between the dominant professional discourse, in general, generous and compatible with the left-wing and frightening reality of the worksites could not be disregarded, except by bad faith. I followed the horror of the Brasília's worksites closely. Because of the ethical obligation, I was forced to review the certainties of the profession - and I continue to do it today (2002b, p. 141).⁶

Corroborating with this statement, I hypothesize that the limits were already at the root of the first Flávio Império, Rodrigo Lefèvre, and Sérgio Ferro joint projects, based on some awareness of the means of production in architecture, but it has not yet

²In the original: Cortada a perspectiva política da arquitetura, restava entretanto a formação intelectual que ela dera aos arquitetos, que iriam torturar o espaço, sobrecarregar de intenções e experimentos as casinhas que os amigos recém-casados, com algum dinheiro, às vezes lhes encomendavam. Fora de seu contexto adequado, realizando-se em esfera restrita e forma de mercadoria, o racionalismo arquitetônico transforma-se em ostentação de bom-gosto – incompatível com a sua direção profunda – ou em símbolo moralista e inconfortável da revolução que não houve

³Op. cit., p. 79.

⁴In the original: Moral puritana e controle do uso racional da riqueza, cujo fim é o projeto de modernização burguesa. É por isso que, quando Sérgio fala em "estética empenhada", nós poderíamos completar: ela esteve particularmente empenhada em transformar a casa burguesa e educar a elite. Esta a nossa "causa" (2002, p. 48).

⁵Paulo Bicca, in a critical essay, promotes an interesting parallel between Brasilia and the Tower of Babel to highlight "the irrationality of a generous project and the distance between intentions and results". Cf. BICCA, P. R. S. (1985). *Brasília: mitos e realidades*. In: PAVIANI, A.. (Org.). *Brasília, ideologia e realidade - Espaço urbano, em questão*. São Paulo: Projeto, p.100-33.

⁶In the original: Militância política e formação profissional vieram quase juntas. Desde o segundo ano de FAU-USP, já tinha obras em execução, particularmente em Brasília. O contraste absurdo entre o discurso profissional dominante, em geral aparentemente generoso e de esquerda, e a realidade assustadora dos canteiros de obra não podia ser desconsiderado a não ser por má-fé. Acompanhei de perto o horror dos canteiros de Brasília. Por obrigação ética, fui obrigado a rever as certezas enfunadas da profissão – e assim continuo ainda hoje (2002b, p. 141).

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formulated as a critic. Even linked to the national development process, with which the architects' group was commit, they already had a concern about the rationality about the doing process. According to Sérgio Ferro, still in the early 1960s, he and Rodrigo Lefèvre started working on a hypothesis of what architecture as manufacture would be like:

Capital distinguishes two types of different manufacturing: one called serial and the other called heterogeneous. In the serial production you do almost everything at the worksite: make one layer, and then do another, and then do another, and then do another; an adding process. In the end, the house is ready. In the heterogeneous production, parts are made in plants or warehouses and are brought and set at the worksite. Both are manufacturing. Pre-fabrication at the worksite is not an industry. The components industrialization has nothing to do with the construction site industrialization. They are quite different things. You can have the most sophisticated products on the worksite. And these more sophisticated products from the cutting edge industry will enter the dominant manufacture, the dominant structure (2002a, p. 18-9).⁷

Using this work for improve terms precision, the two forms of manufacturing identified by Karl Marx are heterogeneous and organic:

Manufacturing comes in two fundamental forms. Although they eventually combine, they are formed by two essentially different species and play entirely different roles in the further transformation of manufacturing in the large machinery-based industry. This double character results from the nature of the produced item. Either the item is formed by the simple mechanical set of independent partial products [heterogeneous manufacturing] or owes its finished form to a connected handling sequence operations [serial manufacturing].⁸ In this perspective, Ferro experienced in his initial house projects, both in 1963, the "two fundamental manufacture forms" that assess the most pertinent sets in the Brazilian production conditions. The first, the Boris Fausto house, reinforced cement concrete roof with internal characteristics determined by prefabricated panels, a heterogeneous manufacturing test. The second, Bernardo Issler house - a circular vault built using a precast concrete system, with the aid of wooden molds - an example of organic manufacturing.

The Boris Fausto house, built in the Butantã neighborhood, in São Paulo, presents a fluid space organized by four central columns in support with one meter high beams and six meters swing column, which supports a square roof slab structured in exposed concrete. The architectural program obeys the criteria of minimum space. Functional equipment executed in fiber cement boards⁹ gives the divisions among the rooms, in addition to large pivoting doors, all freely set from a fixed structure. Thus, the building can be open or closed almost entirely, ensuring continuousness between internal and external areas - the house is a garden closure - and the integration of the spaces for collective and private use. Space is subject to a social pedagogy in which living together designs the project, radically, Le Corbusier's concept of the "living machine" taken to the extreme. In industrial aesthetics: drains and concrete cylinders with boulders showing the rain flow, bathrooms lighting in high domes like chimneys, marine plywood niches draw out from the main slab - ventilated by breezes -, apparent pipes.

Proposed as a "test of incorporating technical progress", it ended up pointing out the impasses of the Brazilian construction industry in the early 1960s:

⁸In the original: A manufatura se apresenta sob duas formas fundamentais. Embora se combinem eventualmente, constituem duas espécies essencialmente diversas e desempenham papéis inteiramente distintos na transformação posterior da manufatura na grande indústria baseada na maquinaria. Esse duplo caráter decorre da natureza do artigo produzido. Ou o artigo se constitui pelo simples ajuntamento mecânico de produtos parciais independentes [manufatura heterogênea] ou deve sua forma acabada a uma sequência de operações e manipulações conexas [manufatura serial].

⁷In the original: O Capital distingue dois tipos de manufaturas diferentes: uma chamada serial e outra chamada heterogênea. Na serial você faz quase tudo no canteiro: faz uma camada, e depois faz outra, e depois faz outra. E aquilo vai somando, no fim, a casinha está pronta. E na heterogênea você traz peças que são feitas em usinas ou em depósitos, que são trazidas e montadas no canteiro. As duas são manufaturas. A pré-fabricação no canteiro não é indústria. A industrialização dos componentes não tem nada a ver com a industrialização do canteiro, são coisas bastante diferentes. Você pode ter produtos os mais sofisticados no canteiro. E esses produtos mais sofisticados de indústria de ponta entrarão na manufatura dominante, na estrutura dominante. (2002a, p. 18-9).

⁹Expression borrowed from Ana Paula Koury to designate furniture built during the work (beds, tables, countertops, benches, cabinets, etc.); circulation heating devices and others (stairs, landings, fireplaces, barbecue pit, etc.); and also some private environments (bathrooms, kitchens and bedrooms). Making objects intrinsic to the installation and spatial configuration of houses designed in order to optimize the use of space of these buildings

The main difficulties in our test were not about manual labor, which has adapted to the new techniques. Several manufacturing "defects" impair the whole proposal, forcing countless corrective expedients (the plates do not isolate due to material savings, which the theory would presume; the resin disappears due to the water action, forcing a not forecast clapboards use, etc.) (FERRO, 1965, p. 34).¹⁰

The Bernardo Issler's house located in Cotia (a city in São Paulo State), brings for the first time the large vaulted roof typology aiming the popular housing construction, later improved by Lefèvre in a group of houses designed in the 1970s. The previous house fluidity is maintained. This time, the functional equipment was built in brickwork. With even more restricted confined spaces have independent coverings in precast concrete joist slab and ceramic blocks like a vault trying not to touch the point of biggest inflection. Thus, there is no disadvantage to space total visual capture, also guaranteed by an internal gap. The Sérgio Ferro's presentation text of the residency in the Acrópole magazine had an undisguised tone:

The best technique, in some cases, is not always the most suitable. There are situations that constructive modernity is a secondary factor. While large-scale industrialization is not possible, the housing deficit requires the use of popular and traditional techniques. Its rationalization, unconcerned with fine finishing and refinements and associated with a correct interpretation of our needs. It favors not only the appearance of a sober and rustic architecture but also stimulates the living and contemporary creative activity that replaces, often based on in improvisation, the elaborate drawing of a drawing board (n. 319, p. 38).¹¹

A criticism of Niemeyer's work, in the "elaborate drawing of a drawing board", was implied in almost manifest. They made explicit the coordinates for work coming from the trio of architects, who would deliberately choose organic manufacturing. This manufacturing type is, according to Marx himself, the perfect form of this production model, as a paradigm for Brazilian civil construction.

No less important than the constructions is the ideology formulated by Sérgio Ferro, Rodrigo Lefèvre, and Flávio Império at the beginning of the 1960s, fully expressed in the text "Initial Proposal for a Debate: action possibilities¹²", written by Ferro and Lefèvre, published in 1963 by the Student Union of FAU-USP¹³, from who they were teachers since 1962, the year they graduated in the same college. A "poetics of economics" was traced there:

So it is from the minimal useful, the minimal constructive, and the minimal didactic necessary that we almost removed the new aesthetic foundation that we could have called the "poetics of the economy". An aesthetic of the indispensable, removing all the superfluous, and also the "economy" of tactics for creating the new language for us, entirely established based on our historical reality. ¹⁴.

From the conventional materials appropriation and current constructive forms, a new language would emerge, on the other cultural formulations trail of the period, a combination of ethics and aesthetics. In addition to the three architects painting and scenography singular production, their action platform had some parallel with the "aesthetics of hunger" by Glauber Rocha. And their action also had some parallel with the entire "*Cinema Novo*" production, which saw the lack of third world media as a way of critical expression to the international film industry model - and by extension to Brazilian developmentalism. But it is necessary to be careful: the complexity of this "poorness" that in architecture is greater than a brick on the hand and an idea in the head, considering the specificities of civil construction and manufacturing activity in the class struggle in a capitalist society context. What it was at stake was a different sense of technique from that signaled by the hegemonic national architecture that, despite great achievements, it was not able to reach the people.

A text wrote at the time of the Boris Fausto and Bernardo Issler's houses construction, and on the eve of the ill-fated coup, when there was still "confidence in the

¹⁰In the original: As principais dificuldades que surgiram no nosso ensaio, não foram as de mão-deobra que se adaptou facilmente às novas técnicas.Uma série de "defeitos" de fabricação prejudicou o conjunto da proposta, forçando inúmeros expedientes corretivos (as placas não isolam, pela economia de material, o que a teoria faria supor; o mástique que desaparece sob a ação da água, forçando o emprego de mata-juntas que não estavam previstas etc.).

¹¹In the original: A melhor técnica, em determinados casos, nem sempre é a mais adequada. Há mesmo situações em que a modernidade construtiva é fator secundário. Enquanto não for possível a industrialização em larga escala, o déficit habitacional exige o aproveitamento de técnicas populares e tradicionais. Sua racionalização, despreocupada com sutilezas formais e requintes de acabamento, associada a uma interpretação correta de nossas necessidades, favorece, não só o

surgimento de uma arquitetura sóbria e rude, mas também estimula a atividade criadora viva e contemporânea que substitui, muitas vezes com base no improviso, o rebuscado desenho de prancheta. (n. 319, p. 38)

¹²Original title: Proposta Inicial para um Debate: possibilidades de atuação.

¹³School of Architecture and Urbanism / São Paulo

¹⁴In the original: Assim é que do mínimo útil, do mínimo construtivo e do mínimo didático necessários tiramos, quase, as bases de uma nova estética que poderíamos chamar a "poética da economia", do absolutamente indispensável, da eliminação de todo o supérfluo, da "economia" de meios para formulação da nova linguagem, para nós, inteiramente estabelecida nas bases da nossa realidade histórica.

progress process in a progressive sense", in 1963. This text already questioned the relevance of the architect's work in terms of the "economic bases evolution of our society", a profession impregnated with mannerisms reflecting a "situation in the conflict":

Examining the history of the proposals we have chosen, the reasons why the proposals were created and developed do not always seem to be coherent with what we intend. We are forced to make a choice. Determining which forces have conditioned this choice is not possible all the time. The predictions carry more personal or situation trends than based on a supposed and sometimes ill-informed way. The doubt is constant in any option: the anguish originated is accentuated by the strange and even unknown intentions with the presented paths¹⁵.

Rodrigo Lefèvre and Sérgio Ferro put at stake the modern democratization premise as a natural consequence of progress. For those who were about to choose organic manufacturing as an adequate solution to Brazilian architecture - from strong criticism to architecture work relations elaborated later - they contradictorily propose a "poetics of economics", a supposedly new language with roots that rest, in fact, in the modern tradition of heterogeneous manufacturing, found in the field of architecture and industrial design since the Bauhaus of Gropius.

Going back even further in time, I take a chance on a paradox, following William Morris (1834-96) and John Ruskin (1819-1900) example, the first industry swore enemies and aestheticism defenders. Despite their intentions, they ended up opening the way to industrial aesthetics based on the equation between form and function that modern design would perform. So, the three architects reinforced the capitalist overview from what they pursue to be against it; study became the norm, cause a style, giving echo to the voice of "space mannerists". More than "Paulista school" critics, Flávio Império, Rodrigo Lefèvre, and Sérgio Ferro contributed to its conformation.

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¹⁵In the original: No exame da história das propostas que escolhemos, as diversas razões por que foram criadas e desenvolvidas nem sempre aparecem coerentes com o que pretendemos. Na escolha que somos forçados a fazer, a determinação de quais as forças que condicionaram nem sempre

é possível. As previsões carregam mais tendências pessoais ou da situação do que se baseiam num andamento suposto e, por vezes, pouco informado. A dúvida é constante em qualquer opção: a angústia originada se acentua pelas intenções estranhas e mesmo desconhecidas com que se apresentam os caminhos





Figure 01. Sérgio Ferro, Boris Fausto House. Plan drawings (and cuts) from *Acrópole* magazine publication n. 319, jul. 1965. In: KOURY, Ana Paula. *Grupo Arquitetura Nova*. São Paulo, Romano Guerra, 2003



Figure 02. Sérgio Ferro, Boris Fausto House. External view. Photo by Unknown Author. In: FERRO, Sérgio. *Futuro anterior*. São Paulo: Nobel, 1989



Figure 03. Sérgio Ferro, Boris Fausto House. External view. Photo by José Moscardi. In: *Acrópole*. São Paulo, ano 27, n. 319, jul. 1965



Figure 04. Sérgio Ferro, Boris Fausto House. External view. Phonto by José Moscardi. In: Acrópole. São Paulo, ano 27, n. 319, jul. 1965



Figure 05. Sérgio Ferro, Boris Fausto House. External view. Phonto by José Moscardi. In: *Acrópole*. São Paulo, ano 27, n. 319, jul. 1965



Figure 06. Sérgio Ferro, Bernardo Issler House. Plan drawings (and cuts) from Acrópole magazine publication. n. 319, jul. 1965. In: KOURY, Ana Paula. Grupo Arquitetura Nova. São Paulo, Romano Guerra, 2003

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Figure 07. Sérgio Ferro, Bernardo Issler House. External view. Photo by Unknown Author. Rodrigo Lefèvre's collection (Biblioteca FAU-USP Library)



Figure 09. Sérgio Ferro, Bernardo Issler House. External view. Photo by Unknown Author. Rodrigo Lefèvre's collection (FAU-USP Library)



Figure 08. Sérgio Ferro, Bernardo Issler House. External view. Photo by Unknown Author. Rodrigo Lefèvre's collection (Biblioteca FAU-USP Library)



Figure 10. Sérgio Ferro, Bernardo Issler House. External view. Photo by Unknown Author. Rodrigo Lefèvre's collection (FAU-USP Library)