



# Reclaiming Construction: Labour, Pedagogy, and Postcolonial Critique in Architectural Education

## Abstract

This paper explores the colonial legacy embedded in the division of labour between architects and construction workers, a separation that has functioned as both a product and a tool of capitalist and colonial spatial regimes. Focusing on the Brazilian context and drawing on the theoretical contributions of Sérgio Ferro and Paulo Freire, the research examines how this separation is reproduced within architectural education systems designed to provide standardised professionals — conceived as “outputs”— for manpower-oriented development agendas. These systems often privilege abstract, Eurocentric forms of knowledge while marginalizing situated embodied labour — a hierarchy rooted in the utilitarian logics of human capital planning.

By tracing the historical construction of this epistemic and political hierarchy, the paper foregrounds the violence inherent in pedagogies that exclude so-called “non-functional” or “non-scientific” knowledge, particularly those of construction workers. In response and inspired by Freire’s dialogical approach to education as a practice of freedom, the study proposes experimental, cooperative pedagogical practices that recentre construction labour at the heart of architectural formation. These include learning experiences that foster horizontal exchanges between architecture students and construction workers conducted directly on building sites, where knowledge is collectively produced rather than transferred unidirectionally.

The use of low-carbon, traditional materials such as earth and wood — often dismissed in modern curricula as backward or inefficient — is reclaimed to challenge the exploitative premises of manpower-oriented education.

## Keywords

Architectural Education, Production Studies, Construction Work, Critical Pedagogy

Addressing these exclusions, the paper argues for reorienting architectural education away from the logics of productivity and towards models grounded in justice, sustainability, and cultural rootedness. In doing so, it recovers sidelined postcolonial pedagogies and labour practices that offer emancipatory alternatives in the face of contemporary educational and ecological crises.

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## Introduction

Architectural education history is inseparable from the history of labour. Yet, throughout the “modern era”, architecture has been defined less by the act of building than by the act of conceiving. The architect—positioned as a figure of intellect and authorship—became detached from manual and collective dimension of construction. This resonates with the Marxian understanding of labour as the foundation of material life, and with Manacorda’s critique of the alienation of learning.<sup>1</sup>

This separation—material, social, and epistemological—was consolidated through colonial and capitalist processes that hierarchised knowledge, establishing architecture as a discipline of command rather than collaboration. In colonial-modern contexts, this divide persists, reproducing hierarchies of empire within the Global South. Schools often privilege representational and managerial skills modelled on Eurocentric curricula that equate modernity with abstraction. Meanwhile, construction labour—embodied, situated, and frequently racialised—remains peripheral. This reflects Aníbal Quijano’s “coloniality of power” and the need for decolonial epistemologies, as articulated by Walter D. Mignolo and Catherine Walsh to delink from Eurocentric foundations.<sup>2</sup>

Rethinking pedagogy, therefore, requires approaching it as a question of power. Post-Second World War, architectural education in the Global South was reoriented toward manpower planning for state-led development. This technocratic rationality reduced the architect to an “output” of human capital designed for market productivity rather than emancipation.<sup>3</sup>

This instrumental education prioritised technical adaptation over critical reflection, a background against which Sérgio Ferro and Paulo Freire emerge to re-establish the link between labour, knowledge, and praxis.

Focusing on Brazil, this paper analyses how the

separation between drawing and building functions as a mechanism of epistemic domination, marginalising vernacular and workers’ expertise. Sérgio Ferro’s critique is central to this discussion. He demonstrates that architectural history, when seen “from below,” reveals itself as a history of adaptations to successive modes of labour exploitation under capital. The architectural drawing, in this view, is not a neutral representation but a tool of control—a weapon that organises and disciplines work from a distance.<sup>4</sup> In parallel, Paulo Freire’s critical pedagogy conceives education as a practice of freedom.<sup>5</sup> When read alongside Ferro, Freire invites a shift from teaching *about* construction to learning *through* it—transforming the building site into a space of reflection and collective agency.

Developed within the research project Translating Ferro / Transforming Knowledges (TF/TK),<sup>6</sup> this work recontextualise Ferro’s critical pedagogy and presents a set of pedagogical experiments at the University of São Paulo (Brazil). In the *Canteiro-Escola* (School Building Sites) experiences, students and workers build together, sharing knowledge and materials. The aim is not the perfection of the final object but the transformation of the relationships sustaining its making.<sup>7</sup>

The argument moves from the theoretical foundations of labour and coloniality to an analysis of manpower education and the *Canteiro-Escola* experiments. Reclaiming construction is essential to decolonising education; the act of building must be restored as a site of knowledge and social transformation. As Ferro reminds us, to design is already to intervene in the organisation of labour. Reclaiming construction, then, is an invitation to rebuild architecture and education upon foundations of equality, cooperation, and care.

## 1. Labour, Knowledge, and Colonial Modernity

This research draws from the critical tradition examining how architecture may contribute to the social division of labour and capitalist/colonial hierarchies. From a Marxian perspective, labour

1. Karl Marx, *Capital: A Critique of Political Economy* (Penguin, 1990 [1867]), 1; Mario Alighiero Manacorda, *Marx e a pedagogia moderna*, trans. Newton Ramos-de-Oliveira (Alínea, 2017).
2. Aníbal Quijano, “Coloniality of Power, Eurocentrism, and Latin America,” *Nepantla: Views from South* 1, no. 3 (2000): 533–580; Walter D. Mignolo and Catherine Walsh, *On Decoloniality: Concepts, Analytics, Praxis* (Duke University Press, 2018).
3. Theodore W. Schultz, *Investment in Human Capital: The Role of Education and of Research* (Free Press, 1971); Phillip W. Jones, *World Bank Financing of Education: Lending, Learning, and Development* (Routledge, 1992).

4. Sérgio Ferro, *Design and the Building Site, and Complementary Essays*, ed. Silke Kapp and Mariana Moura, trans. Ellen Heyward and Ana Naomi de Sousa (MACK, 2025); Sérgio Ferro, *Arquitetura e trabalho livre* (Cosac Naify, 2006).
5. Paulo Freire, *Pedagogy of the Oppressed*, trans. Myra Bergman Ramos (Penguin, 1996 [1970]).
6. “Translating Ferro / Transforming Knowledges (TF/TK),” Institute of Architecture and Urbanism, University of São Paulo, accessed 5 November 2025, <https://tftk.iau.usp.br>.
7. Akemi Ino et al., eds., *Portfólio acadêmico 1: atuação nas áreas rurais: ensino, pesquisa, extensão e formação complementar em arquitetura e construção*, 2nd ed. (IAU/USP, 2021).

can be viewed as a historical process through which relations of domination are produced. Under capitalism, Marx suggests the worker's activity tends to become alienated: the product confronts the worker as an external object, and creative capacities are often tethered to the imperatives of capital.<sup>8</sup> This alienation arguably affects technical and intellectual labour; architecture, as a discipline, has historically mirrored and reinforced this division, concealing the exploitation of building labour beneath aesthetic and managerial discourse.

Within architecture, this critique finds a significant proponent in Sérgio Ferro. The subsumption of labour is particularly visible in modern construction. The architect's role gradually shifted toward abstraction and oversight. Ferro identifies the separation between *desenho* (design) and *canteiro* (construction site) as the ideological foundation of alienated work.<sup>9</sup> The drawing emerged as a locus of authority while the building site was relegated to execution, potentially naturalising hierarchy and distance—between conception and production, mind and hand.

In architecture, this alienation may be seen in the architect as a planner whose authority depends on the abstraction of labour. As Pedro Fiori Arantes argues, this is both aesthetic and political, producing a “false autonomy” that conceals dependence on exploited manual work.<sup>10</sup> Building on this, Peggy Deamer shows how architectural autonomy can mask the architect's own condition as a worker.<sup>11</sup> Kenneth Frampton's critique of the “instrumentalisation” points to technocratic pressures that risk detaching design from its material base.<sup>12</sup>

The ideological construction of this separation has colonial resonances. Walter Mignolo explains what he calls the colonial difference: a hierarchical distinction that tends to privilege European abstraction over embodied knowings.<sup>13</sup> This logic often mirrored the racialised division of labour that structured colonial economies. Knowledge was largely claimed by the

coloniser, while colonised populations were positioned as bodies for work. Architectural education inherited this hierarchy, usually favouring abstraction over embodiment.

The consequences persist as modernist curricula were exported to the Global South, extending colonial hierarchies into architectural education. Knowledge flowed from the “centre” to the “periphery,” while local traditions, materials, and constructive practices were marginalised or reframed through Western standards. Kathleen James-Chakraborty notes that architectural education became a vehicle for disseminating modernist ideology globally, aligning pedagogy with managerial and developmentalist imperatives.<sup>14</sup> This reinforced what Arturo Escobar calls the “development imaginary,” binding modernisation, capitalism, and education into a narrative of progress.<sup>15</sup>

Addressing this trajectory suggests a decolonial lens. For Aníbal Quijano, coloniality refers to the persistence of domination within modernity.<sup>16</sup> In architecture, this manifests as the epistemic supremacy of Western knowledge, the universalisation of modernist aesthetics, and the marginalisation of non-Western modes of building. The colonial matrix of power operates not only through economic dependency but also through epistemic control—defining who can know, design, and build. Decolonising pedagogy therefore demands more than adding diverse voices, it requires dismantling the logic that separates knowing from making, intellect from labour.

In this sense, Walsh argues that coloniality is an ongoing structure organising knowledge, being, and power.<sup>17</sup> The university remains a site where hierarchies are reproduced, often privileging abstraction, productivity, and efficiency over embodied, collaborative, and ecological forms of knowledge. Challenging this means moving toward epistemic plurality — from education for development to education for emancipation.

This stance intersects with the field of Production Studies in Architecture, which repositions design within the social and political context of material production. By emphasising conditions such as relations of work, organisation of the site, and

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8. Marx, *Capital*, 1.

9. Sérgio Ferro, *O Canteiro e o Desenho* (Cosac Naify, 2010).

10. Pedro Fiori Arantes, *Arquitetura Nova: Sérgio Ferro, Flávio Império e Rodrigo Lefèvre, de Artigas aos mutirões* (Edusp, 2002).

11. Peggy Deamer, *The Architect as Worker: Immaterial Labor, the Creative Class, and the Politics of Design* (Bloomsbury, 2015).

12. Kenneth Frampton, *Labour, Work and Architecture: Collected Essays on Architecture and Design* (Phaidon Press, 2002).

13. Walter D. Mignolo, *The Darker Side of Western Modernity: Global Futures, Decolonial Options* (Duke University Press, 2011)

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14. Kathleen James-Chakraborty, *Architecture since 1400* (University of Minnesota Press, 2014).

15. Arturo Escobar, *Encountering Development: The Making and Unmaking of the Third World* (Princeton University Press, 1995).

16. Quijano, *Coloniality of Power, Eurocentrism, and Latin America*, 2000.

17. Catherine Walsh, *Interculturalidad, Estado, Sociedad: Luchas (de) coloniales de nuestra época* (Abya-Yala, 2009).

technologies of mediation this field examines the infrastructures of architectural making.<sup>18</sup> Within this framework, the *canteiro* becomes an analytical and pedagogical device: a space where knowledge, technique, and social relations intersect, and hierarchies can be critically examined.

Ultimately, the articulation between Marx, Ferro, and decolonial theory provides a basis for understanding colonial-capitalist logics in architectural education. This framework grounds the argument that reclaiming construction is both a political and epistemological act. To decolonise architectural pedagogy is to restore the unity of thought and action, to revalue collective work, and to confront the structural conditions that render labour invisible. In this sense, the struggle for emancipatory education is inseparable from the struggle to humanise work itself.

## 2. Education for Hu/manpower: The Colonial Genealogy of Architectural Pedagogy

The emergence of Manpower Planning after the Second World War arguably changed the relationship between education, labour, and development. Formulated within international agencies, it reframed schooling as an instrument for generating “human capital” to meet the needs of industrialising economies.<sup>19</sup> In this paradigm, education became a toll of economic planning and architectural education was likewise absorbed into this logic.

In Brazil, this utilitarian orientation aligned closely with the developmentalist agendas of the 1950s and 1960s. The construction site was increasingly sidelined in curricula favouring a hierarchy that privileged abstraction over material engagement. As Ferro argues, this separation is partly ideological: it naturalises class division, conceals the exploitation in the building process, and transforms architecture into a tool for managing labour from a distance.<sup>20</sup>

The notion of “human capital” reframed education as the optimisation of productive potential. This economisation of pedagogy helped the subordination

of manual craft. Within architectural education the capacity to draw replaced the capacity to build, and the architect’s hand was often encouraged to command rather than to make. Freire describes this model of instruction as a “banking” logic where knowledge is deposited into recipients.<sup>21</sup> Such model reproduces the colonial grammar of hierarchy: silences experiential knowledge, delegitimises collective labour, and erases the historical agency of workers whose practices have long sustained the built environment.

The post-war expansion of higher education promoted the export of Western curricula, reinforcing Eurocentric conceptions of technical rationality.<sup>22</sup> Architecture schools in Brazil adopted models grounded in functionalism while marginalising the social dimension of construction and the lived reality of labour in the building industry.<sup>23</sup> Progress became synonymous with industrialisation and mechanisation, which often displaced local techniques and traditional materials in favour of reinforced concrete and prefabrication. As Ferro argues, this not only transformed materiality but reorganised social relations: workers became appendages of machines, and knowledge was increasingly centralised in the architect’s drawing.<sup>24</sup>

Against this backdrop, radical pedagogical movements in Brazil from the late 1960s can be read as attempts to subvert education for manpower. Freire’s concept of *conscientização* (critical consciousness) redefines education as transformation, through which individuals and communities become aware of their position within systems of oppression and act collectively to change them.<sup>25</sup> Transposed to architectural, this demands the recovery of the *canteiro* as a space of mutual learning. Rather than managers of labour, this envisions architects as participants in a collective process. This shift echoes Ferro’s call for a “pedagogy of production” reorienting education toward social emancipation.<sup>26</sup>

Understanding the genealogy of hu/manpower helps identify how postcolonial societies inherited educational technologies of control. By revisiting these situated genealogies critically, we can begin to imagine forms of learning that affirm collective work

18. João Marcos de Almeida Lopes, “Pensamento em construção: Excurso sobre as possíveis maquinações metodológicas de Sérgio Ferro para orientar Estudos de Produção em Arquitetura, Projeto e Trabalho,” *Revista Pós* (2020).

19. Frederick Harbison and Charles A. Myers, *Education, Manpower, and Economic Growth: Strategies of Human Resource Development* (McGraw-Hill, 1964); Gary Becker, *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education* (University of Chicago Press, 1964).

20. Ferro, *Arquitetura e trabalho livre*; Ferro, *O canteiro e o desenho*.

21. Freire, *Pedagogy of the Oppressed*.

22. Martín Carnoy, *Education as Cultural Imperialism* (David McKay, 1974); James-Chakraborty, *Architecture Since 1400*.

23. Ana Maria Reis Goes Monteiro et al. eds. *A construção de um novo olhar sobre o ensino de arquitetura e urbanismo no Brasil: os 40 anos da Associação Brasileira de Ensino de Arquitetura e Urbanismo* (ABEA, 2013); Hugo Segawa, *Arquiteturas no Brasil: 1900–1990* (Edusp, 1998).

24. Ferro, *O canteiro e o desenho*.

25. Freire, *Pedagogy of the Oppressed*.

26. Ferro, *Design and the Building Site*.

and material intelligence— not as resources for capital accumulation, but as foundations for freedom.

### 3. Architectural Labour and the Postcolonial Condition

The modern history of architecture is inseparable from the reorganisation of labour under capitalism. As Karl Marx observed, the transformation of craftsmanship into wage labour entailed not only the alienation of the worker but also the fragmentation of the production process. The rise of the architect as a distinct figure was both a symptom and an instrument of this transformation. Whereas the pre-industrial master builder unified design and execution, the modern architect often embodies intellectual command, increasingly detaching from collective dimensions. This division—materialised in the drawing— continues to structure architectural practice today.<sup>27</sup>

#### 3.1 The Division of Labour as Epistemic Violence

In colonial contexts, the separation between conception and execution acquired explicitly racial and spatial forms. European architects were assigned roles of design and oversight, while Indigenous and racialised workers were confined to manual tasks. Abstract design was framed as universal and rational, while embodied construction was often viewed as local, inferior, and the expendable.

Ferro's analysis describes the architectural project as a "machine of control": a device that organises work from a distance.<sup>28</sup> The drawing organises, rationalises, and hierarchises. In this process not only economic autonomy is expropriated but also cognitive autonomy. In this sense, alienation may be understood as both material and epistemic.

Postcolonial education inherited these hierarchies. The marginalisation of the building site within academic curricula reproduces the same racialised and classed distinctions that structured colonial labour regimes. Students are trained to produce drawings, manage workforces, and engage with abstract representations, while the material conditions of labour remain peripheral or invisible.

#### 3.2 The Postcolonial University and the Reproduction of Hierarchies

The design studio institutionalisation in the twentieth century displaced forms of learning such as apprenticeship and work on site. In Brazil, education positioned the architect as a "planner of the future." Positioning the studio, detached from social realities of construction, as the symbolic centre of architectural

creation.<sup>29</sup>

Following the "banking" concept of education, students learn to command labour rather than to participate in it, internalising professional hierarchies as educational norms.<sup>30</sup> As Henry Giroux notes, this reproduces a "hidden curriculum", in which authority and inequality are naturalised through pedagogical form itself.<sup>31</sup>

Technological modernisation deepened these separations by embedding them in the material processes of construction. The widespread adoption of reinforced concrete tended to centralise control while prefabrication, standardisation, and managerial control reduced the relevance of craft knowledge.<sup>32</sup> In architecture, it translates into degradation of the art of building. The construction site becomes an extension of the office, governed by schedules, budgets, and risk management—while the worker's experience, intuition, and improvisation are suppressed.

Yet, it is within these sites that resistance emerges. Workers adapt, reinterpret, and subvert the prescriptions of design. Their knowledge persists as a counter-archive of architecture—one that records the gestures, improvisations, and solidarities erased from official histories. Recognising this archive requires a study from the site, not only of the site, re-centring the *canteiro* as an epistemic space where material, labour, and knowledge converge.

Overcoming these disconnections demands a re-politicisation of pedagogy itself. Following Freire, education can be grounded in praxis; following Ferro, it may expose the social relations of building. Together, these frame the building site as a pedagogical and political tool where inequalities become visible and contestable.

### 4. Reclaiming Construction: Situated Experiments in Critical Pedagogy

To reclaim construction as a site of learning is to challenge a core assumption of modern architectural education: the historical separation between design and making. As Sérgio Ferro argues, this divide is ideological rather than technical, producing a discipline distanced from labour and from the conflicts that constitute the production of the built environment. In Brazil and across Latin America, different pedagogical

27. Marx, *Capital*, 1.

28. Ferro, *O canteiro e o desenho*.

29. Carnoy, *Education as Cultural Imperialism*; Escobar, *Encountering Development*.

30. Freire, *Pedagogy of the Oppressed*.

31. Henry A. Giroux, *Theory and Resistance in Education: Towards a Pedagogy for the Opposition* (Bergin & Garvey, 1983).

32. Sérgio Ferro, "Concrete as Weapon," trans. Alice Fiuza and Silke Kapp, *Harvard Design Magazine* 46, Fall/Winter (2018).

experiments have sought to confront this condition by grounding learning in shared labour, material engagement and collective decision-making.<sup>33</sup> Drawing on dialogical pedagogy and critiques of architectural alienation, they reimagine the *canteiro* as a space of praxis rather than mere execution. At the same time, such initiatives unfold within institutional conditions that shape and often limit their scope.

#### 4.1 Experimental Building Sites in Brazil: A Situated Genealogy of Construction-Based Pedagogies

The *Canteiro-Escola* developed by the HABIS research group at IAU-USP forms part of a heterogeneous Latin American lineage of construction-centred pedagogies that emerged from the late 1960s onward. Across countries such as Chile, Mexico and Colombia, diverse initiatives sought to question Eurocentric curricula by emphasising vernacular knowledge, social collaboration and embodied experience, though most remained isolated and struggled to achieve a long-term curricular continuity.<sup>34</sup>

In Brazil, early university-based experiments include the *Plató* at PUC-Campinas (1978) and the *Canteiro Experimental* created at FAU-USP (1989), which institutionalised the building site as a pedagogical environment where students confronted materials directly, worked collectively and learned through making. The relevance of such initiatives was later acknowledged in the documents informing the National Curricular Guidelines for Architecture and Urbanism programmes, which recognised experimental construction sites integrated with teaching, research and extension activities. Despite this, construction-based pedagogies remain marginal within Brazilian architectural education: among more than 800 Architecture and Urbanism programmes currently in operation, experimental building sites are found in fewer than thirty courses.<sup>35</sup>



Figure 1. Unit 002 under construction (1997). HABIS Archive.



Figure 2. Unit 002 nowadays (2024). HABIS Archive.

33. Roberto Alfredo Pompéia, *Os laboratórios de habitação no ensino da arquitetura: uma contribuição ao processo de formação do arquiteto* (PhD diss., Faculdade de Arquitetura e Urbanismo, Universidade de São Paulo, 2006).

34. María Cristina Zapata, “Educación Arquitectónica y Realidad Latinoamericana,” *Revista de Arquitectura* (Bogotá), no. 3 (1984).

35. Reginaldo Luiz Nunes Ronconi, *Inserção do canteiro experimental nas Faculdades de Arquitetura e Urbanismo* (PhD diss., Faculdade de Arquitetura e Urbanismo, Universidade of São Paulo, 2002); Sofia Araújo Lima Bessa e Lisiane Ilha Librelotto, “A importância das práticas construtivas nos canteiros experimentais em cursos de arquitetura e urbanismo,” *PARC: Pesquisa em Arquitetura e Construção* 12 (2021).

Within this context — marked by recurrent experimentation but limited institutional continuity — HABIS stands out for the consistency and longevity of its trajectory within the Brazilian public university system. Between 1997 and 2000, the group built two full-scale prototypes — Units 001 and 002 — on the São Carlos campus (Figures 1 and 2). Conceived as social-housing demonstrators, they combined reforested eucalyptus frames with wattle and daub, rammed earth and straw-bale blocks. Functioning simultaneously as research laboratories, teaching environments and collective construction sites, these projects laid the groundwork for what would become, in 2008, the *Canteiro-Escola*: a programme organised around a dedicated space on campus and complemented by activities in rural settlements, community facilities and public schools. With more than seventeen editions, the



Figure 3. Sepé Tiaraju rural settlement house designed and built by teachers, undergrad students and settlers with mixed low carbon construction techniques (2010). HABIS Archive.

programme represents a sustained effort to transform construction-based experimentation into a recurrent pedagogical device rather than an exceptional exercise.<sup>36</sup>

#### 4.2 The Canteiro-Escola: Collective Labour and Material Praxis

The *Canteiro-Escola* operates as a pedagogical platform grounded in cooperation, embodied learning and vernacular material experimentation, while continuously negotiating its position within academic structures oriented toward abstraction and productivity. Unlike conventional design studios, students here are required to learn with their bodies: mixing soils, preparing bamboo joints, lifting timber frames or assembling components on site. Learning unfolds in real locations and through constructions intended for collective use rather than speculative or representational ends, such as community facilities, collective housing components, rural infrastructure and educational spaces (Figure 3 and 4).

This exposure seeks to destabilise studio-based abstraction by foregrounding the social relations, negotiations and technical constraints embedded in

every constructive act. At the same time, it introduces rhythms, uncertainties and dependencies that sit uneasily within academic routines. By prioritising situated construction, collective use and shared authorship, these experiences can be read as questioning the treatment of architectural education primarily as an investment in individual human capital, opening space to reconsider learning as a collective and socially situated practice, rather than solely as a



Figure 4. Bamboo geodesic assembled by teachers, architecture students, and kids in a peripheral public school in São Carlos (2022). HABIS Archive.

36. Akemi Ino et al., eds., *Portfólio acadêmico 2: atuação na área tecnológica da arquitetura e construção: materiais, sistemas, processos e produção em madeira, terra crua e bambu*. 1st ed. (IAU/USP, 2021).

mechanism of accumulation.

Material choice is central to this orientation. Following Ferro's argument that reinforced concrete operates as a "weapon" of capitalist rationalisation—centralising control, fragmenting tasks and neutralising the bargaining power once held by skilled workers<sup>37</sup>—HABIS deliberately engages with materials that redistribute agency: earth, bamboo, small-diameter timber, wattle and daub and other vernacular assemblies. These techniques require temporal sensitivity, collective pacing and close attention to matter. They invite forms of cooperation that cannot be achieved in hyper-specialised, subcontracted concrete workflows. As Silke Kapp argues, such encounters cultivate a "political intelligence of matter," in which materials become active participants in collective decision-making.<sup>38</sup>

Cooperation is therefore not an organisational detail but a pedagogical principle. Tasks are shared, tools circulate, and decisions emerge from testing, discussion and adjustment. Construction workers act as co-educators, demonstrating techniques, evaluating solutions, but also debating options and learning with students. This reciprocal dynamic seeks to challenge the hierarchical division between manual and intellectual labour, echoing Freire's insistence that knowledge emerges from dialogue rooted in lived experience.<sup>39</sup>

Experiences developed through extension activities and collaborative workshops in rural settlements such as *Pirituba II* and *Sepé Tiaraju* were decisive in shaping this methodological orientation, demonstrating forms of mutual learning that are difficult to reproduce within conventional classroom-based settings.

#### 4.3 Outcomes, Contradictions and the Pedagogy of Production

The *Canteiro-Escola* generates transformative learning experiences but also reveals tensions inherent to its institutional context. Unlike studio environments, construction depends on weather, logistics, material procurement and the availability of workers—factors that rarely align with academic calendars. University bureaucracy, risk-management procedures and budgetary constraints often restrict experimentation. While manual labour remains marginalised in academic culture, representational outputs continue to receive more institutional legitimacy than embodied processes. The presence of workers—central to the pedagogy—frequently relies on short-term funding or fragile arrangements, exposing the structural marginalisation

of working-class knowledge within the university.

These contradictions expose the persistence of the very separations the pedagogy seeks to dismantle. Yet, in confronting such frictions, students experience the political dimension of architectural production. Many describe profound shifts in their understanding of materials, labour and authorship, while workers gain visibility within an institution that has historically excluded them. From a curricular perspective, the *Canteiro-Escola* demonstrates that ecological transition cannot be reduced to technological innovation. Low-carbon construction depends on transforming the social relations of production, aligning with what Production Studies describes as a pedagogy of production: a form of learning grounded in the inseparability of thinking and making, conception and labour.

### 5. Discussion and Conclusion: From Manpower to Emancipation

The pedagogical experiments analysed indicate that architectural education cannot easily stay neutral regarding the historical division between conception and construction. Reclaiming construction implies questioning how architectural knowledge, labour, and value have been defined through capitalist and colonial rationalities. When reintroduced as a pedagogical arena, the *canteiro* makes these assumptions visible and create conditions to reframe labour as a locus of knowledge, negotiation and collective agency.

#### 5.1 From Hu/manpower to Praxis

Post-war manpower planning framed education as a mechanism for producing human capital. Architectural training shaped professionals to "command" production. In contrast, the pedagogical experiments discussed here do not abolish this framework but interrogate it by redefining labour as a field of knowledge rather than a purely quantifiable resource. Within the *Canteiro-Escola*, the labouring body becomes a locus of thought and experimentation, even while constrained by institutional arrangements. This shift resonates with a Freirean education as a practice of freedom, where *conscientização* emerges from engagement with the contradictions of design and production as they are lived. Students learn not only *how* things are built but *why* they are built in particular ways and *who* is affected by these decisions. Rather than resolving the legacy of education for manpower, reclaiming construction may open a space to critically expose its limits and to rehearse alternative relations between learning, labour and responsibility within architectural education.

#### 5.2 Labour, Knowledge and Resistance

By working alongside construction workers, students encounter hierarchies that structure architectural labour not as abstract concepts, but as lived relations

37. Ferro, *Concrete as weapon*, 2018.

38. Silke Kapp, *Teoria Crítica da Arquitetura* (N-1 Edições; Mom Edições, 2024).

39. Freire, *Pedagogy of the Oppressed*.

shaped by institutional regulations, material availability and contractual arrangements. This experience resonates with Giroux's critical pedagogy that links the personal to the political, while also revealing the constraints through which such learning is mediated.<sup>40</sup>

and forms of practice oriented toward collective responsibility and autonomy.

Teaching architecture from the standpoint of labour can thus be approached as a form of pedagogical resistance. In universities increasingly governed by neoliberal metrics, the act of slowing down to build, reflect and cooperate becomes subversive. Following Peter McLaren, such initiatives may be read as critical pedagogies as they expose the ideological function of architectural schooling.<sup>41</sup> These pedagogies are better understood not as accomplished acts of reparation, but as attempts to address and partially repair labour relations. By foregrounding collective work, vernacular techniques and dialogical learning, they reopen questions about labour and coloniality embedded in architectural education, without claiming to resolve contradictions.

### 5.3 Implications for Architectural Education

Rather than treating construction as an external or auxiliary component, these experiences suggest integrating site-based learning, cooperative work and material experimentation more centrally within professional formation. In this perspective, educational quality cannot be assessed solely through representational or formal mastery, but also through collaborative processes, ethical reflection, and engagement with the social realities of building.

Institutional limits must also be acknowledged. Universities remain embedded in capitalist structures of funding, accreditation and evaluation that are not reducible to economic imperatives alone, but which nonetheless shape priorities, temporalities and pedagogical possibilities. Sustaining critical pedagogies within these frameworks requires ongoing negotiation and collective commitment. Within these constraints, the experience of the *Canteiro-Escola* suggests that even small-scale, situated interventions can gradually shift the ethos of architectural education toward solidarity, ecological responsibility and social justice.

As Ferro reminds us, to design is always to intervene in the organisation of labour; and as Freire insists, freedom emerges through praxis—the unity of reflection and action. By reuniting architects and workers, thinking and making, these pedagogical experiments expose how architecture organises labour and value, contributing to different possibilities

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40. Giroux, *Theory and Resistance in Education*.

41. Peter McLaren, *Life in Schools: An Introduction to Critical Pedagogy in the Foundations of Education*, 3rd ed. (Longman, 1998).

