

# Brazilian Academic Capitalism and the Commodification of Raw Material Knowledge in the Crisis Scenario

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Résumé de l'article

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## *Brazilian Academic Capitalism and the Commodification of Raw Material Knowledge in the Crisis Scenario*

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### **Abstract**

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## Introduction

The logic of capitalist expansion transforms everything and everyone into commodities. Due to the creative capacity of capital, services are not beyond its reach. Its expansive logic, especially in its parasitic speculative phase, affects education. Marx comprises two types of commodities: labor power and other commodities, which can be conceived as a service, in addition to not needing to be exclusively physical/material, in fact, commodities can be immaterial. According to Tregenna (in Rikowski, 2017, p. 397), “commodities are not limited to physical commodities and, similarly, 'production' is not limited to the physical production of a tangible object”.

Understanding that capital seeks a perfect language for commodities to meet and adapt to the logic of sociability, culminating in its consumption, education is metamorphosed and adapted according to capitalist transformations. In this sense, education experiences a process of becoming capital.

With the crisis scenario that capital faced at various times in the 20th and 21st centuries, it became essential to search for other areas so that it would be feasible to extract profit. Higher education emerges, then, as a strategic sector for capital, as public/state funding is configured as a seductive source to be absorbed. According to Rikowski's research (2017), the global educational market in 2015 was worth \$4.9 trillion (USD). We add to this the investment of approximately \$2 billion in venture capital in education in 2014, which shows a growth in investment of around 45% in the period of the Great Depression from 2009 to 2014. This global education scenario, therefore, highlights the source of the interests of the business sectors, thus stimulating the commodification of higher education and its resulting privatization and commodification.

The business sectors that set eyes on higher education are industrial and service sectors. These sectors correspond to the interests of capital in general, industrial capital and fictitious capital. In addition, these sectors operate both in Private Institutions of Higher Education (PIHE) and in public Higher Education Institutions (HEI).

There are two forms of commodities that José Rodrigues highlighted in *Entrepreneurs and Higher Education* (2007), and which are valid in our conception: education-commodity and merchandise-education. Each of these forms of commodities in higher education are linked to the ways in which capital seeks to value itself, and each, in turn, is the face of the same coin, that is: “they are forms under which the commodities materializes in the countryside of human formation” (Rodrigues, 2007, p. 6). Ultimately, this configuration expresses the constitution of Brazilian academic capitalism.

The examination of Brazilian academic capitalism and the implications for the commodification of raw material knowledge from the conditionalities of the capital crisis scenario is a complex task to be faced by higher education researchers. The new scenario denotes a new way of exploring higher education as a market niche, as attention is focused on the privatization of public institutions through the participation of financing funds, cooling of public investments and the entrepreneurship of the production of knowledge à la New American University (Silva Júnior, 2017).

In these circumstances, the present research seeks to analyze the logic of Brazilian academic capitalism that conditions a process of commodifying the production of knowledge, as well as prioritizing the offer of training courses for liberal professionals. This process is

characterized as raw material knowledge contributing to the creation of a type of World Class University. Therefore, we sought to answer the following questions: What are the implications of the global capital crisis scenario for the constitution of Brazilian academic capitalism? Academic capitalism based on the New American University conditions a movement towards the constitution of a kind of global university standard in which the gravitational axis is based on managerial rationality and on the commodification of scientific production, in this sense, do entrepreneurial institutions articulate with this panorama? What are the configurations of Brazilian academic capitalism with the new metamorphoses of the global learning market?

### **The Crisis of Global Capital in Latin America and Reconfiguration of Higher Education for the Market**

The concept of crisis comes from the Greek *krisis* that points to some decision, sentence, separation. This conception of crisis can be traced to Hippocrates' conception of disease treatment, as it has the task of deciding which treatments are correct to ensure the well-being of patients' health. Certainly, physicians are assigned the role of making accurate diagnoses about diseases and illnesses, in addition to monitoring patients after medical intervention. Rikowski (2017, p. 4) considers that, for Hippocrates, the critical point of the illness is “a turning point in the strength of an illness: when it is clear that the patient is on the path of recovery, or facing death, or for less a serious debilitation”. The author adds that “invoking 'crisis' as a starting point for social explanation means that recovery needs to be accounted for when this occurs”.

For Holloway (1992, p. 154), the crisis point is the moment when recovery or death is at stake. He adds that the crisis as a turning point can be applied to historical and social studies, and that

[...] crisis is not just about “hard times”, but about turning points. It directs attention to discontinuities in the story, to breaking the path of development, breaks in a pattern of movement, variations in the intensity of time. The concept of crisis implies that history is not smooth or predictable, but full of shifts in direction and periods of heightened change.

The author understands the concept of crisis as an essential subsidy to assimilate social and historical metamorphoses. With regard to the Marxian conception and referring to the capitalist mode of production, we understand that crises are inherent to the contradictions of its modus operandi. Paulo Netto and Braz (2012) assert that crises are inescapable with capital. In fact, it is not something independent of capital, nor accidental, it is not a disease, nor an anomaly or exceptionality to be overcome under capitalism. In fact, crises are constitutive of capitalism, in other words, they are expressions arising from the contradictions inherent in its mode of production.

Paulo Netto and Braz (2012) understand that in the intervals between crises, the economic cycle systematized in four stages is put into operation: crisis, depression, recovery and boom. In summary, the authors observe that the crisis phase is indicated by an economic or political circumstance – corporate bankruptcy, fall of governments, financial scandal, etc. – implying a reduction in commercial operations, non-conversion of commodities into more money, reduction or paralysis of production, falling wages, widespread unemployment and popular impoverishment; later, depression denotes that, just like the previous stage, unemployment, wages, production continue in the same logic, the commodities, in turn, can be stored or dismantled, partially sold at

low prices, companies seek to save themselves with the appropriation of technology to maintain some level of production – even if the commodities remain at a low price – as well as seeking new markets and using raw materials along the way. When the feasibility of recovery is pointed out, stimuli are designed to boost production; with this, the recovery stage appears, understood as a panorama in which the companies that survived incorporate the bankrupt ones to boost their production; a commercial revival emerges, as well as the resumption of prices and the reduction of unemployment. Indeed, with the restoration of production to the levels that preceded the crisis, the last stage of the cycle follows, the boom, which indicates the growth of investment in companies by capitalists through competition, launching of goods. In this way, on an increasing scale in the market, productive growth takes over economic life, until a new crisis breaks out and the cycle starts again.

The structural crisis of capital (Mészáros, 2002) that erupted in the 1970s was marked by the oil crisis and the drop in the profit rate of the manufacturing sector. During this period, a stage of “[...] investment stagnation begins, with the persistent fall in the average rate of profit and devaluation of capital in the US economy, coordinator of the world trade and financial system [...]” (Grespan, 2009, p. 11). The structural crisis has reached a global reach in all sectors of production as well as in human life.

This crisis is faced with metamorphoses in the capitalist gears, which shift the strength of the productive sector to the financial institutions, thus ensuring the dematerialization of the monetary system and guaranteeing hegemony through finance. It is at the heart of these metamorphoses that “[...] geographic expansion and spatial reorganization constitute alternatives for overcoming the overaccumulation crisis, by enabling new profitable opportunities for capital [...]” (Almeida, 2006, p. 254). The subprime crisis that erupted in the United States of America in the real estate sector, in 2008, engendered a major blow to capitalist development, resulting in its expansion throughout the entire financial sector to the real economy. The reluctance to bail out the banks, the reduction in the standard of living of workers and the deepening of the public debt crisis had a negative impact on investments in the manufacturing sector.

In this sense, we emphasize that from the movement of capital crisis, multilateral agencies are able to set in motion their financial agenda to reach global scales. Regarding higher education, the World Bank (WB) stands out, since its structural adjustment agenda was imposed from the context of the 1982 Debt Crisis. They were at the epicenter of the crisis: Argentina, Brazil and Mexico. The WB demanded:

(...) courageous structural adjustment reforms, as a counterpart to guarantees and loans. In the Brazilian case, one of the decisive factors to explain the prominence of rentier capital in the power bloc was the debt renegotiation undertaken within the scope of the Brady Plan, concluded in 1994, which converted the debt bonds, which were nominal, into bearer bonds. Since then, the value of the security on the market, marked by the so-called “country risk”, would depend on the assessment of economic policies by the financial ones and by capital flows and inflows. In practice, governments became hostages to rentier capital, which was gradually able to increase its share of the country's economic surpluses. (Barreto & Leher, 2008, p. 430).

There was a transformation in the logic involving imports and exports, thus, primary and low-technology products, since they were basic manufactures from primary sources, went, in percentage terms, "from 58% in 1994 to 80.3% in 2003". (Barreto & Leher, 2008, p. 431).

From this context, the WB denoted several orientations for the reorganization of Higher Education in Latin American countries. Although the WB has highlighted the need for the State to pay greater attention to secondary education, with regard to higher education, this multilateral organization is oriented towards the proliferation of distance courses, placing greater emphasis on evaluation, guidelines for the standardization of curricula in which skills were highlighted, in addition to the attention given to technological innovation, in Information and Communication Technologies (ICTs). This context enabled a process of knowledge commodification, in addition to prioritizing strategic areas for the economy, defining, strictly speaking, Brazilian academic capitalism.

### *The academic capitalism as an expression of globalization trends for higher education*

The concept of academic capitalism emerges in the studies of Slaughter and Leslie (1997), within the framework of the reality of the North American university, pointing to the reorganization of the universities' routine activities and practices in search of profitability. Therefore, Slaughter and Rhoades (2010) believe that higher education institutions have become qualified to market their products. This process would be possible for the authors, through academic organization, as well as the individual practices of their professors.

With the United States of America positioning itself as hegemonic among nations in the 20th century, according to Silva Júnior (2017), its culture starts to be irradiated to other social formations resulting in the reduction of the sovereignty of these countries in addition to influencing them to molds of globalization. In the 21st century, therefore, despite the structural crisis of capital, the United States maintains its position.

For Slaughter and Leslie (1997), the term academic capitalism is used to expose the way in which public universities were adapting to neoliberal demands in treating higher education policy as economic policy. Still, Slaughter and Leslie (2001, p. 154) understand that, in this panorama, the faculty, in partnership with the professional team, must channel their "human capital stocks in competitive environments".

Consequently, the cited authors assert that academic capitalism deals with:

[...] market and market-like behavior by universities and colleges. Behaviors similar to those of the market refer to institutional and teaching competition for funds, whether grants and external contracts, donation funds, university-industry partnerships, institutional investment in companies derived from professors, student fees and tuition fees, or any other revenue-generating activity. What makes these activities market-like is that they involve competition for resources from external resource providers. If institutions and faculty are not successful, there will be no bureaucratic recourse; they do without. Market behaviors refer to for-profit activities by institutions, activities such as patents and subsequent royalty and licensing agreements, derivative companies, corporations of limited size (corporations that are related to universities in terms of personnel and goals, but are

legally as separate entities) and university-industry partnerships when these have a profit component. Market activity also encompasses more mundane operations, such as the sale of products and services from educational enterprises, for example, logos and sporting goods, profit sharing from food services and bookstores, and the like. (Slaughter & Leslie, 2001, p. 154).

The Theory of Academic Capitalism (TAC) has a double contribution: first, it allows us to understand the metamorphosis of higher education policies from a social assistance regime to a competitive private regime; in addition, it provides methodological elements that allow us to understand the (re)formulation of partnerships between universities and for-profit organizations. In this analytical itinerary, Metcalf (2007, in Sigahi, 2017, p. 56) emphasizes that “academic capitalism is one of the few concepts that connect higher education studies to the globalization of knowledge production”.

In this scenario, it is necessary to consider, also according to Sigahi (2017), that elements that configure the mercantile logic of the New American University are situated within the conceptual framework of the TAC, namely: a) New circuits of knowledge; b) New financing flows; c) Interstitial organizations; d) Intermediary organizations and; e) Expanded managerial capacity.

With the TAC, the concern is focused, in most of the analytical approach, on the production of knowledge, which leads us to the technological revolutions in which science gains centrality as a result of mass production and mass consumption, the assembly line, and the invention of flying transports with a weight greater than the air. For Silva Jr (2017, p. 120), “this real technological revolution, which quickly occurred, obscures the true number of revolutions that, in fact, took place, which significantly altered the scientific paradigm”.

Another technological mechanism that gains prominence, in this panorama, are the digital media that make possible the irradiation of political, cultural and educational conceptions that engender severe effects on sociability. Certainly, this logic refers to the aspects that made science a developing power and to the fact that whoever dominates it will hold a strategic position in global geopolitics. In this context, the university would not remain the same, given the centrality of science imposing itself on applied-based scientific research. It is worth considering that, even with the transformations that have taken place in the last 21 years of the 21st century, the university is molded to the logic of the centrality of science, as “disinterested and not applied knowledge in universities gives way to military, political and economic dimensions”. Therefore, it is in this panorama that the World Class University, in the Anglo-Saxon particularity, will be constituted and will bring with it the trends of the metamorphoses of the world of work, of technological revolutions and of the flexible accumulation of capital under its financialized hegemony.

In this sense, it is crucial to highlight that the logic of the TAC emphasizes the logic of the research university. In the central axis of TAC, it is clear that research universities, both public-state and private-mercantile, have contributed – through their discoveries and productions – to economic growth. Silva Júnior (2017) asserts that the guidelines of this process are indicated by the knowledge demanded by capital on a global scale.

The New American University is contextualized from the directions of the report of the National Academic Commission, established in the North American Congress.

America is driven by innovation – advanced ideas, new products and processes that contribute to creating new industries and jobs, contributing to the nation's health

and security, and promoting a high standard of living. In the last half of the last century, innovation itself was developed by researchers and professionals for their knowledge produced. The main source of resources in the United States are new knowledge and new masters, doctors and researchers trained in this context with advanced skills that continue the mission of research universities (new American university). (Crow & Dabars, 2015 in Silva Júnior, 2017, p. 123).

As a result of the Academic Division of Labor (ADL), high value-added processes and products have conditioned the operation of universities on a global scale. This context is centered on the logic of financialized predominance that makes possible advantages to the national states of the capitalist center. The concept of university, in the USA, deals with the "world-class university", in which its "dissemination is of fundamental and strategic interest to it, and it can do so through world institutions in view of the current global geopolitics that confers on this country privileged position" (Silva Júnior, 2017, p. 124). Thus, the type of knowledge that universities in this model produce is aimed at the globalized economy.

Since the 1970s, the New American University has been carrying out the protection of intellectual property through the Plant Variety Protection Act, using patents as a competitive instrument, under the economic perspective of capital, being a niche to be explored by capital that Brazilian universities only started to carry out this process in the 1990s. Thus, with the scientific production focused on the interests of the market, in addition to the use of patents, it is possible to assert, especially due to its policies, that the New American University does not seek any complementary contribution to its productions, therefore, the conception of patents oppose the nature of science as well as the public good.

In this way, we understand that the New American University, which underlies the TAC, uses as one of its main commercialization pillars the logic of patenting and commercialization of academic research. However, it is noteworthy that despite being the element with the greatest weight in the TAC, other elements constitute the logic of academic capitalism. In other words, elements that correspond to new investments, marketing and consumption behavior will constitute the structure of TAC, in particular the incorporation of the identity of consumers by the student body. Even though these elements constitute a complex scenario, the very logic of globalized capital required a new type of knowledge: the raw material knowledge in which it metamorphoses into products and services, as well as the logic of offering technological courses and bachelor's degrees to the detriment of humanities.

The notion of knowledge as a raw material directed towards the economy as well as the market is a part of

[...] results of science and its new paradigm. It is knowledge ready to be transformed into high-tech products, new production processes and services and is related to the possibility of immediate profits in the economic sphere. Here seems to be a good place to comment on what has been defined as technological innovation. When looking for the most general form of what could be understood as technological innovation, we can see that this is a process of change, invention and adaptation, which has existed since the dawn of humanity, and which would have as its objective the improvement of life and work of people and companies, adding more value to products in the shortest time possible. Certainly this definition is valid and



it would be impossible to compare it in this formulation. (Silva Júnior, 2017, p. 129).

This logic, within financialization, in which interest-bearing capital operates with ease, makes feasible – based on its loan process – the unfolding of academic research in which raw material knowledge is its core. Indeed, this economic-financial notion hovers over the activities of everyday university life, conditioning research to present raw material knowledge. The raw material knowledge, within the scope of the TAC, can be configured as the areas of biotechnology and information technology, since they are areas with greater insertion and protection by patents, holders of copyrights, in addition to their trademark registrations. Under these circumstances, as well as large industrial or service corporations, universities, through the production of raw material knowledge, began to seek to extract profits from this market niche.

The TAC, despite exposing contents that permeate the particularity of Brazilian higher education, cannot – at least in the way suggested by the authors – account for the dynamics of the entrepreneurship movement and, consequently, of forms of commodification of this level of education. When we look at the reality of Brazil, the logic of patents is still very incipient, despite its beginnings in the 1990s.

The research developed by Cativelli and Lucas (2016) exposes the scenario of Brazilian Public Universities (BPUs): of the 106 universities investigated, it was found that 29 universities had granted patents, which together produced 538 patents; looking at table 1, it is possible to evidence the asymmetry involving the regions. The Southeast is well ahead of other regions, as it holds 60.63% of patent applications, as well as 88.1% of patent concessions. The South region comes next with 20.13% of patents requested and 7.25% granted. Furthermore, we have the Midwest with 4.07% of requests and 2.23% of granted. Consequently, the Northeast appears with 13.43% of requests and 2.04% of concessions. Finally, comes the North region with 1.74% of patents requested and 0.38% granted.

**Table 1**

Number of patents requested and granted to Brazilian Public Universities by State

Brazilian states	BPUs	Number of patents requested	(% )	IP*	Patents Granted			
					UM*	C***	(=)	(%)
Acre	1	3	0,04	-	-	-	-	-
Amapá	2	-	-	-	-	-	-	-
Amazonas	2	14	0,2	-	-	-	-	-
Pará	5	104	1,47	2	-	-	2	0,38
Rondônia	1	-	-	-	-	-	-	-
Roraima	2	-	-	-	-	-	-	-
Tocantins	2	2	0,03	-	-	-	-	-
<b>North region</b>	<b>15</b>	<b>123</b>	<b>1,74</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0,38</b>
Alagoas	3	34	0,48	-	-	-	-	-

Brazilian states	BPUs	Number of patents requested	(%)	IP*	Patents Granted			(=)	(%)
					UM*	C***	*		
Bahia	8	169	2,38	1	-	-	1	0,18	
Ceará	6	135	1,9	-	-	-	-	-	
Maranhão	3	44	0,62	-	-	-	-	-	
Paraíba	3	106	1,49	1	-	-	1	0,18	
Pernambuco	4	192	2,71	3	-	-	3	0,57	
Piauí	2	58	0,82	-	-	-	-	-	
Rio Grande do Norte	3	105	1,48	1	-	-	1	0,18	
Sergipe	1	110	1,55	5	-	-	5	0,93	
<b>Northeast region</b>	<b>33</b>	<b>953</b>	<b>13,4</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>2,04</b>	
Distrito Federal	1	144	2,03	10	1	-	11	2,04	
Goiás	2	82	1,15	1	-	-	1	0,18	
Mato Grosso	2	34	0,48	-	-	-	-	-	
Mato Grosso do Sul	3	29	0,41	-	-	-	-	-	
<b>Midwest region</b>	<b>8</b>	<b>289</b>	<b>4,07</b>	<b>11</b>	<b>1</b>	<b>0</b>	<b>12</b>	<b>2,23</b>	
Espírito Santo	1	33	0,46	-	-	-	-	-	
Minas Gerais	13	1.264	17,8	65	17	1	83	15,43	
Rio de Janeiro	7	527	7,43	36	4	-	40	7,43	
São Paulo	8	2477	34,9	321	30	-	351	65,24	
<b>Southeast region</b>	<b>29</b>	<b>4301</b>	<b>60,6</b>	<b>422</b>	<b>51</b>	<b>1</b>	<b>474</b>	<b>88,1</b>	
Paraná	11	738	10,4	16	3	-	19	3,53	
Santa Catarina	3	165	2,32	6	-	-	6	1,12	
Rio Grande do Sul	7	525	7,4	12	2	-	14	2,6	
<b>South region</b>	<b>21</b>	<b>1428</b>	<b>20,1</b>	<b>34</b>	<b>5</b>	<b>0</b>	<b>39</b>	<b>7,25</b>	
<b>Grand total</b>	<b>106</b>	<b>7094</b>	<b>100</b>	<b>480</b>	<b>57</b>	<b>1</b>	<b>538</b>	<b>100</b>	

Source: Cativelli and Lucas (2016, p. 71).

Subtitle: IP\* Invention Patent; UM\*\* Utility Model; C\*\*\* Certificate of Addition.

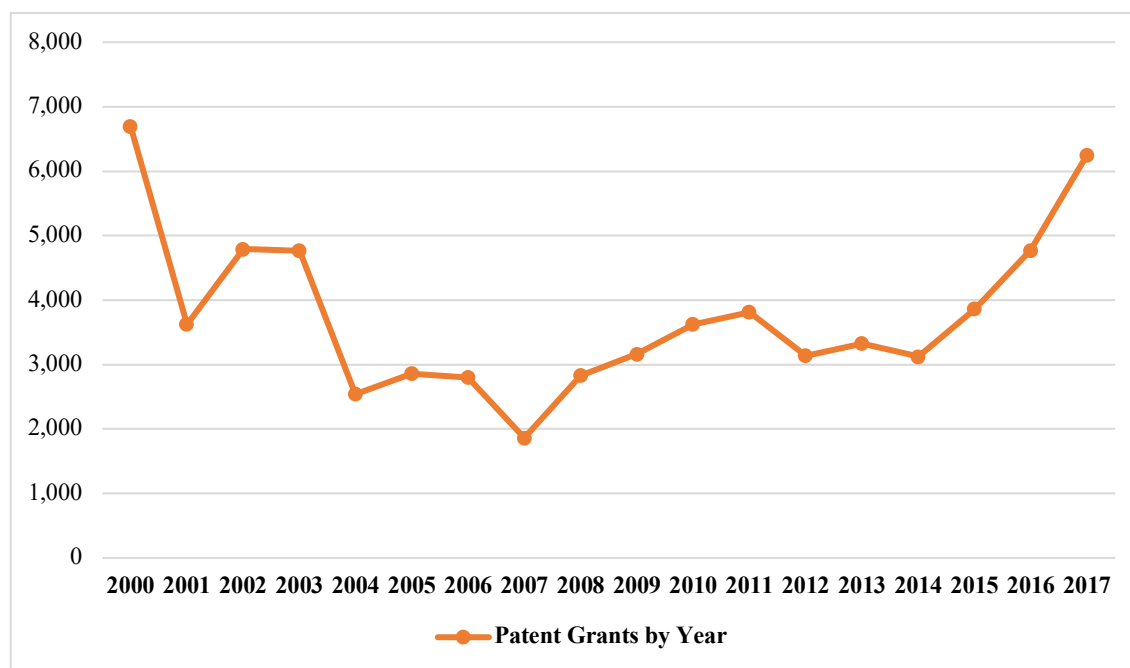
Of the 29 public universities that have had patent applications granted, the State University of Campinas (UNICAMP) and the University of São Paulo (USP) account for 57.2% of patent production. This shows that there is a disproportion within the system of Brazilian public universities. Table 2 shows the ranking of the BPUs that had the most patents granted.

**Table 2**  
Universities with granted patents

Order	Universities	Patents Granted	(%)
1 <sup>a</sup>	UNICAMP (SP)	170	31,6
2 <sup>a</sup>	USP (SP)	138	25,6
3 <sup>a</sup>	UFMG (MG)	52	9,7
4 <sup>a</sup>	UFRJ (RJ)	39	7,2
5 <sup>a</sup>	UFSCar (SP)	27	5
6 <sup>a</sup>	UFV (MG)	21	3,9
7 <sup>a</sup>	UNESP (SP)	13	2,4
8 <sup>a</sup>	UFRGS (RS)	12	2,2
9 <sup>a</sup>	UNB (DF)	11	2
	UFOB (MG)	6	1,1
10 <sup>a</sup>	UFSC (SC)	6	1,1
	UEM (PR)	5	0,9
11 <sup>a</sup>	UFS (SE)	5	0,9
	UTFPR (PR)	5	0,9
	UFPR (PR)	4	0,7
12 <sup>a</sup>	UFU (MG)	4	0,7
	UFPE (PE)	3	0,5
	UNIFESP (SP)	3	0,5
13 <sup>a</sup>	UNIOESTE (PR)	3	0,5
14 <sup>a</sup>	UFPA (PA)	2	0,4
	UEPG (PR)	1	0,2
	UESB (BA)	1	0,2
	UFG (GO)	1	0,2
	UFF (RJ)	1	0,2
	UGPB (PB)	1	0,2
15 <sup>a</sup>	UFPEL (RS)	1	0,2
	UFRN (RN)	1	0,2
	UFSM (RS)	1	0,2
	UNICENTRO (PR)	1	0,2
<b>Total</b>	<b>29 BPU<sub>s</sub></b>	<b>538</b>	<b>100</b>

Source: Cativelli and Lucas (2016, p. 72).

From the exposure of these data, it is clear that there is a glaring asymmetry between the BPUs in terms of the amounts of patent grants. This asymmetry is located in the Southeast region, which concentrates 88.1% of granted patents. According to the National Institute of Industrial Property (NIIP), Brazil had, in 2017, the highest number of patents granted in the last 17 years. Graph 1 shows the line of decline and growth of patent granting in Brazil, whether universities, companies or national innovators.



**Figure 1.** Granting of patents per year (2000 – 2017)  
Source: INPI (2018).

As an examination of Graph 1, we find that, since 2000, Brazil had been declining in the number of patents granted, oscillating between the intervals of years. However, in 2017, it returned to having a similar amount to 2000, which was 6,695 concessions of patents, and, in 2017, 6,250 were granted. Despite these numbers, this reality, it is worth noting, concurs with the notion of TAC based on the New American University. However, the Brazilian particularity leads to another logic, that is, the leading role of the private-commercial expansion of Private Institutions of Higher Education. Now, the logic of patents, in Brazil, does not hold a large accumulation of capital nor does it have a great impact on public HEIs. In fact, in the global scenario, Brazil, according to the World Intellectual Property Organization (WIPO, 2018, in Chad, 2018), had the worst performance compared to the 76 global offices responsible for registering patents and intellectual property.

Therefore, the TAC, despite its analytical relevance, as proposed by Slaughter and Leslie (1997; 2001) and Slaughter and Rhoades (2010), meets the North American particularity. However, due to the possibility of expanding the fields analytics of the TAC, academic capitalism expands in a particular way depending on the national reality. In this sense, in Brazil, the TAC is based on the logic of the PIHE performance and its direct articulation with financialization, considering that it is the logic of diversifying the maintenance sources that act in the State PIHE relationship, thus consolidating, a true educational entrepreneurship that is directly linked to academic capitalism as a result of the globalization of capital.

## **Brazilian Academic Capitalism and the Prioritization of Strategic Courses/Raw Material Knowledge for the Local Economy**

Brazilian academic capitalism experiences a private-commercial expansion with such intensity and complexity that it is crucial to undertake an analysis of the totality of the elements that constitute the market networks that enable the extraction of profits. Certainly, the way academic capitalism was organized in Brazil incorporated the guidelines of international organizations regarding the areas that should be treated as priorities. As a result of the local capitalist market, the so-called physical sciences and engineering - in addition to other areas of training that also fit into the profile of professional entrepreneurship - fit into the academic bachelor's degree, and the PIHE then give priority to the offer of this type of courses, whereas, for example, undergraduate courses are now subordinated to this logic of supply.

It is worth adding to this context of financial and commodity-education predominance the expansion of Higher Technology Courses (HTC), which was supplemented by the Law of Guidelines and Bases (Law No. 9,393/96) in addition to meeting market demands, as well as guidelines of international organizations (Sousa, 2016). The conception that guides professional and technological education seeks to propose an education model that is not limited only to the logic of professional qualification, but manages to obtain the skills necessary for the world of work. Now, raw material knowledge corresponds to the logic of technology and innovation.

Pursuant to the National Education Guidelines and Bases Law,

Art. 39. Professional and technological education, in the fulfillment of the objects of national education, is integrated to the different levels and modalities of education and to the dimensions of work, science and technology. § 1 The professional and technological education courses may be organized by technological axes, enabling the construction of different training itineraries, in compliance with the norms of the respective system and level of education. § 2 Professional and technological education will cover the following courses: I – initial and continuing education or professional qualification; II – high school technical professional education; III – undergraduate and graduate technological professional education. (Brazil, 1996).

The expansion of these courses is based on the neoliberal conception in which social and, therefore, educational policies are linked to marketing precepts. In this way, business groups advocate policies apologetic to the private-commercial sector, prioritizing targeting at the expense of universalist bases. In addition, in Brazil, HTCs, are characterized as short-term undergraduate courses, however, this is not a peculiar Brazilian phenomenon. In other national states, the logic of short courses that include professional and technological education is already being developed.

The scenario of undergraduate courses in Brazilian higher education has its particularities, depending on its academic degree. In this sense, it is necessary to perform a quantitative analysis of undergraduate courses, as it makes it possible to verify the rate of growth and reduction. For this purpose, table 3 examines the bachelor's, licentiate and technological courses both in the classroom and distance courses.

**Table 3**

The Number of Undergraduate Courses by Type of Teaching, according to Academic Degrees – Brazil – 2014-2016

Year	Academic Degree	Total	Teaching Mode	
			Presential	the Distance
2014	<b>Total</b>	32.878	31.513	1.365
	<b>Bachelor degree</b>	18.609	18.319	290
	<b>Licentiate</b>	7.856	7.261	595
	<b>Technological</b>	6.413	5.933	480
2015	<b>Total</b>	33.501	32.028	1.473
	<b>Bachelor degree</b>	19.254	18.938	316
	<b>Licentiate</b>	7.629	7.004	625
	<b>Technological</b>	6.618	6.086	532
2016	<b>Total</b>	34.366	32.704	1.662
	<b>Bachelor degree</b>	20.182	19.759	387
	<b>Licentiate</b>	7.356	6.693	663
	<b>Technological</b>	6.828	6.216	612

Source: INEP (2017; 2016).

It appears that, in the period under analysis, the bachelor's degree courses had an increase in their offer of 8.45%. Regarding the percentage of its offer compared to the offer of all courses, the offer of bachelor's degree courses corresponds to 57.61% of the total courses in Brazilian higher education. Of this amount, 98.29% deals with the face-to-face offer, while distance education represented only 1.71% of the bachelor's degree offer. Undergraduate degrees had a reduction of 6.36% in the offer of their courses. Of the overall total, they represent 22.67% of the offer of undergraduate courses, with 91.75% referring to the on-site offer, and 8.25% to distance learning. The HTCs, in turn, account for 19.71% of the offer of courses. The on-site modality represents 91.82% of its offer, with DE expressing 8.18% of the offer of technological courses.

In summary, it is clear that, among the undergraduate courses, according to the academic degree, only undergraduate courses had a reduction in their on-site offer (-7.82%), on the other hand, their offer in distance education had a relative growth of 11.43%. In general terms, the bachelor's and technological courses had exponential growth compared to the licensures. This scenario indicates the logic of the subordination of teacher training courses. We emphasize that this scenario portrays the entire Brazilian higher education system, that is, public HEIs and PIHE.

Despite this quantitative scenario of offering undergraduate courses, it is necessary, in addition, to analyze student enrollment rates so that more data can be obtained to corroborate the argument in question.

**Table 4**

Evolution of Undergraduate Enrollments by Type of Teaching, according to Academic Grade – Brazil – 2014-2016

Year	Academic Degree	Total	Teaching Mode	
			Presential	Distance
2014	<b>Total</b>	7.828.013	6.486.171	1.341.842
	<b>Bachelor degree</b>	5.309.414	4.892.907	416.507
	<b>Licentiate</b>	1.466.635	925.942	540.693
	<b>Technological</b>	1.029.767	645.125	384.642
2015	<b>Total</b>	8.027.297	6.633.545	1.393.752
	<b>Bachelor degree</b>	5.516.151	5.080.073	436.078
	<b>Licentiate</b>	1.471.930	906.930	565.000
	<b>Technological</b>	1.010.142	617.468	392.674
2016	<b>Total</b>	8.048.701	6.554.283	1.494.418
	<b>Bachelor degree</b>	5.549.736	5.083.946	465.790
	<b>Licentiate</b>	1.520.494	880.167	640.327
	<b>Technological</b>	946.229	557.928	388.301

Source: INEP (2017; 2016).

We chose to use the table model similar to the previous one, which dealt with the number of courses, so that the analytical explanation of the data followed the same script. Thus, as shown in table 4, student enrollments in bachelor's degree courses represent 68.67% of total enrollments. In the on-site modality, 92.05% of enrollments are concentrated, while in Distance Education (DE), the concentration is only 7.95% of enrollments. Licentiate courses represent 18.72% of enrollments. In face-to-face, there are 60.84% of enrollments, in DE, 39.16. Finally, technological courses represent 12.54% of enrollments, with 60.97% being enrolled in the on-site modality and 39.03% in the distance learning modality.

Still, enrollment in bachelor's degree courses grew, in the on-site modality, by 3.90%, and, in DE, by 11.83%. In undergraduate courses, there was a reduction in on-site enrollment (-4.94%), while in DE, there was an increase of 18.43%. Technological courses had a reduction of 13.52% in face-to-face enrollment and a small growth of 0.95% in enrollment in DE.

This scenario of reduction of on-site enrollments in licenciatura/teacher training courses corresponds to the movement of capital to emphasize hard areas. Furthermore, from the announcement of the dissemination of bachelor's degree courses, which, consequently, at PIHE, have high prices compared to courses in the humanities and social sciences. In effect, we thus highlight the logic of employability and the liberal professional based on the entrepreneurial rationality that these courses disseminate. Furthermore, the very dissemination of professional fields, bachelor's degree courses gain emphasis in comparison with other courses, especially as a result of entrepreneurs who need education- commodities.

In these circumstances, it was possible to verify that the number of student enrollments in higher education – according to academic degree – shows a growth of around 29.67%. However, when we started to analyze the enrollments for each academic degree, once again, the bachelor's degree courses soared ahead with an increase relative to 33.97% of enrollments, the HTC had a relative growth of 27.85%.

With the expansive movement of courses in the last seven years, it is fair to reiterate that this is not an isolated phenomenon, however, it is a broad and complex movement that is particular

to the mosaic of Brazilian academic capitalism. Based on the data analysis, it is possible to see that the interest in profit hovers over the need for a solid and critical education that has reality as its gravitational axis. Indeed, it seems to us that the logic of utilitarian knowledge suggested by international organizations is gaining importance, with the growing number of bachelor's and technological courses, both on-site and in DE.

The Humboldtian model<sup>1</sup> is seconded in the current scenario of the financial predominance of capital, its legitimacy is replaced by "market legitimacy, as the value of knowledge is measured by quantifiable criteria and impacts, according to the very logic of profit, instrumental utility and competitiveness business " (Afonso, 2015, pp. 275-276).

The priority areas for PIHE depend on a the type of knowledge, and the aforementioned author considers that

[...] when we ask ourselves what the nature of this other knowledge is, the answer is obvious: it is not any knowledge [...], even though it may be relevant knowledge. But it is also not about the scientific knowledge produced as a result of the exercise of academic freedom, the autonomy of the researcher and research centers, and which knows how to prove its relevance regardless of whether it is fundamental or applied, originating in exact or natural sciences, or in the social sciences and humanities. Rather, it is the scientific and technical knowledge that enables processes of comparative and competitive affirmation, and that allows its appropriation within an increasingly commercialized and profitable rationality. (Afonso, 2015, p. 277).

Certainly, it is a necessary knowledge for Brazilian academic capitalism and not knowledge that has an emancipatory purpose. The principles of the capitalist market, when inserted in higher education, have their rationality metamorphosed, and the *modus operandi* higher education is affected by these principles; and business models start to gain decisive weight, even conditioning the offer of courses that should be prioritized.

The scenario of the commodification of Brazilian higher education gains a new element with the launch, in July 2019, of the Entrepreneurial and Innovative Institutes and Universities Program (FUTURE-SE). This program seeks to establish partnerships between Federal Institutions of Higher Education (FIHE) and Social Organizations (SO), in addition to promoting fundraising in the market to strengthen the administrative and financial autonomy of the FIHE. The program is systematized in three axes: 1) management, governance and entrepreneurship; 2) research and innovation; and 3) internationalization. This panorama engenders implications for the structuring and enhancement of Brazilian academic capitalism, however, now wanting to mold the Brazilian FIHE to the framework of the World Class University, since the New American University is its main reference (De Paula, Costa, and Lima, 2020).

FUTURE-SE stipulates that overcoming the fragility of innovation, as well as patent registrations in Brazil, will be carried out through individual and private incentives to teachers and students, increasing private funding for research projects, as well as to boost Research & Development (R&D). Academic capitalism expands in a particular way depending on the national reality. In this sense, in Brazil, the most expressive form of academic capitalism occurs through

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<sup>1</sup> The Humboldtian model systematizes the German university organization in a way that reconciles teaching freedom with state intervention.



the logic of the performance of the PIHE and its direct articulation with fictitious capital. At the limit, academic capitalism is a sector constituted by functional forms of capital. The FUTURE-SE, strictly speaking, denotes paths for dismantling the FIHE and encouraging the commodification of scientific production.

### **The Metamorphosis Resulting from the Pandemic and Inconclusive Considerations**

The World Health Organization (WHO) issued a global disease alert on December 31, 2019. The disease was officially named by WHO as Covid-19 on February 11th. In March, the organization defined the outbreak of the disease as a pandemic. The nature and scale of the Covid-19 crisis is unprecedented in the 21st century. Its impacts are felt in all aspects of life. The education sector on a global scale was directly affected by the pandemic. For example, many national states have prevented the virus from spreading by closing educational institutions. Despite this scenario implying obstacles in university education, another aspect emerged from all this: the emergence of digital learning through remote learning and the consequent role of educational technology companies (EdTech).

The reconfiguration of training processes through technological packages during the pandemic period enabled new forms of private-mercantile expansion of academic capitalism, ~~in effect~~, resulting in the deepening and consolidation of an existing learning market, however, now complemented by Covid-19.

Since the 1990s, multilateral agencies such as the WB, the World Trade Organization (WTO) and UNESCO have proposed Distance Education (DE) to expand education in countries with dependent capitalism. Despite the rhetoric of anguish about the educational situation resulting from social isolation, defending the interests of educational companies and Information and Communication Technologies (ICTs) is the order of the day. The implementation of hybrid education, with synchronous classes, competency-based teaching, traditional study plans and memorization exercises to meet large-scale assessments (Giroux, 2018), highlights the need to pay special attention to online assessments, such as o proposal for the digital National Secondary Education Examination (NSEE).

The Colemarx document (2020, p. 13) points out that there is a global coalition involving business sectors and governments, and that this coalition is led by UNESCO and involves other multilateral agencies, in addition to business groups such as “Microsoft, Google, Facebook, Zoom, Moodle, Huawei, Tony Blair Institute for Global Change, Fundación Telefónica and others”. The most used resources in the educational landscape during the pandemics come from this coalition: “Google, Google classroom, Google suite, Google Hangout, Google Meet, Facebook, Microsoft one note, Microsoft, Google Drive / Microsoft Teams, Moodle, Zoom, YouTube”.

The centralized use of these resources expresses the interests of the education market, since the financialization of education is deepened by the purchase of packages from educational technology companies (EdTechs) by the public sector. According to Moeller (2020, p. 3), EdTechs have software aimed at developing skills and abilities in a given knowledge – in the past, emphasis was placed on basic education. However, with the global pandemic collapse, higher education becomes part of this scenario characterizes yet another niche of academic capitalism. In addition, these software designs enable “significant changes in the operation and management of education units” [? Is this a quotation? From Moeller 2020? Reference and page number needed], including

the “contracting of specific services or entire institutions” [Ditto]. This scenario was already operated in the US through Educational Management Organizations (EMOs) with the aim of developing and/or administering educational institutions. Examples of EMOs that best characterize this scenario are: Edison Learning Inc., which runs autonomous public schools, and Electronic Classroom of Tomorrow, which was created as an online school. In addition, there are EdTech’s, such as Pearson, which sell educational packages such as curricula, pedagogical programs, assessment services and professional development, although they are for-profit companies, they are financed by the public sector through financial operations (Koyama, 2010).

The British multinational Pearson seeks in the education sector to lead the next generation of teaching and learning, developing digital learning platforms, including artificial intelligence in education (AIED). It is testing new AIED technologies that it hopes will enable virtual tutors to deliver personalized learning to students, such as Siri or Alexa. Furthermore, in the published document Pearson 2025 emphasizes that the corporation's mission by 2025 is to promote “the benefits of technological developments and their combination with new types of teaching professionalism”. However, its corporate strategy is premised on creating disruptive changes to (a) the teaching profession, (b) the provision of curriculum and assessment, and (c) the role of schools, particularly public education. These interruptions do not follow a coherent set of educational principles, but capriciously serve the interests of the company's shareholders. (Sellar & Hogan, 2019, p. 1).

It is fair to point out that EdTechs constitute a multibillion-dollar corporate field, and corporate actors such as Google, Microsoft and Apple are at the epicenter. Moeller (2020, p. 6) states that “Google, Microsoft and Apple are fighting for dominance in the classroom. Everyone wants their devices to be in the hands of the next generation of consumers. “It's a valuable marketing niche to master”. Strictly speaking, the EdTechs sector, in 2019, reached the value of \$43 billion with approximately half of that amount in basic education.

In fact,

[...] there is a corporation whose whole business is education. This includes educational technology companies (EdTech) whose business is education, such as DreamBox, an online math software. There are also significant changes taking place in the operation and management of schools, which have led to the hiring of specific services or entire schools (Burch & Good, 2014; Fabricant & Fine, 2012; Koyama, 2010; Saltman, 2005). Scholars have demonstrated how this occurs in the United States through for-profit educational management organizations (EMOs) that develop and/or manage schools (Levin, 2001). Examples include EMOs like Edison Learning, Inc., which runs public licensed schools, and the Electronic Classroom of Tomorrow, which was a licensed online school, the largest in Ohio until it closed in 2018 after legal challenges with the Ohio Department of Education. Charter management organizations (CMOs), such as Summit Public Schools or KIPP Schools, similarly operate public school networks, but are distinguished by being non-profit entities rather than for-profit entities, although they often generate revenue and partner with for-profit institutions. In international contexts, there is also a proliferation of for-profit companies such as Bridge International Academies, Omega, Rising Academies and Affordable Private Education Centers operating low-rate for-profit schools in countries such as Kenya,

Liberia, Ghana, Nigeria, Uganda, Philippines and India, often through contracts with Ministries of Education. (Moeller, 2020, p. 9).

If we look at the movement of shares from April 15 to May 14, 2020 on the São Paulo Stock Exchange (BOVESPA), it is possible to observe the fall in shares of the two largest S/A holding companies in the education sector, Cogna Educacional (COGN3 -24.18%) and YDUQS (YDUQ3 -20.52%). However, three of the companies that provided educational resources to operate distance education in the pandemic period saw their shares appreciate. According to the NASDAQ index, the Zoom companies Video Communication (ZM 10.79%), Alphabet Inc. (GOOGL 7.92%) and Microsoft (MSFT 5.03%) express this capital appreciation.

In this sense, there is a scenario of continuity in the deepening of the financialization of education. However, shifting the emphasis from transactions, that is, they were previously concentrated on purchases and sales of institutions, as well as on professional training courses, however, they began to emphasize the purchase of technological instruments. This phenomenon results from serious implications for the formation of subjects, pedagogical work and access to and permanence in education. Teaching migrated from classrooms to videoconferencing applications. Indeed, Brazilian academic capitalism incorporates these metamorphoses that demonstrate, once again, its capacity to adapt to market transformations.

Finally, this article presented some elements that condition the modus operandi of Brazilian higher education from the phenomenon of globalization that takes place via the globalization of predominantly financial capital. The program of innovative and enterprising universities and institutes expresses the search to reconcile the Brazilian model of higher education with the North American one. However, several elements are not considered here since the dependent Brazilian scenario differs by leaps and bounds from the US reality. Idealizing a similar scenario without investment in public universities and in quality training will make it impossible to carry out research in public universities.

In addition, the entrepreneurship of knowledge production will imply the loss of the public role of scientific research, as well as the incorporation of the entrepreneurial role of the professor, as s/he will have to seek private resources to finance her/his research, as well as the sale of products resulting from them. However, for the effective development, with excellence of scientific research, structure, up-to-date software and basic materials are needed to guarantee the researcher's work. It is fair to emphasize that, on a global scale, the resources generated by the FIHE themselves have a complementary purpose. At present, the R&D activities, training, are maintained by the State, and even the universities that occupy the top of the international rankings depend on public resources to maintain themselves. In this sense, the discourse of the valuable "private investment" is contradictory; that is, public resources continue to be the main source of maintenance of higher education in a global school.

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