

Technology as a Tool for Mass Certification

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Abstract

In this study, we challenge the notion that technology, when applied in the private sector of Brazilian academic education, serves as an instrument of democratization. To explore this, we delve into the case of the startup Ampli, which offers college programs through a mobile application. The easy access it provides to students may signify democratization within the sector. However, as we aim to demonstrate in this study, drawing from the insights of Karl Marx, this technology facilitates the substitution of the teaching workforce with recorded class resources, which the company acquires and transforms into a means of production. The same class can be replicated for all students who enroll in the institution, seeking to enhance their primary commodity—the labor force—to make it more valuable to capitalists. This model promotes a simplified and expedited academic qualification process, condensing the production timeline of the educational commodity and expanding the pool of certified workers available in the labor market. Owing to the relatively low complexity of this formative process, the workforce generated through mass certification tends to augment the reserve army of labor, exerting downward pressure on wages. Consequently, we contend that technology is being harnessed not to democratize access to higher education but to expedite capital turnover and reduce production costs.

Keywords: *technology; democratization; financialization; startups*

Introduction

In the capitalist mode of production, workers are exploited by selling their labor power since they are deprived of the means of production through the private property, concentration of wealth, restricted access to rights such as education and health and, not least, by the alienation of the results obtained from the production of human labor (Marx, 1976). When hired by a capitalist, this workforce can be utilized in various sectors and functions, ranging from manual labor in a shoe factory to administrative positions in large multinational companies. It is important to emphasize that the differences in wages between different workers, especially those earning higher incomes, are the result of differences in the qualifications of those competing for job opportunities in the market, although it is not possible to ignore that there are other factors, such as race, gender, disability, that interfere in this competition for survival.

Education is pivotal in enabling employers to hire skilled workers and act as a preliminary filter in the selection process. Qualified employees aim to market their labor at higher rates, thus enhancing their ability to compete in the job market and improve their quality of life. Access to higher education is considered the pinnacle of qualification, making it a goal for those seeking to enhance the value of their labor and, consequently, earn higher wages.

Unsurprisingly, the democratization of access to education has been a subject of debate and a prominent agenda for several political groups vying for political power. In Brazil, there was a significant state-driven initiative to increase enrollment in private higher education to promote more comprehensive access to tertiary education. Specific government programs, such as FIES and PROUNI¹, functioned as mechanisms for transferring public funds to the private

sector. These programs led to the concentration and centralization of capital in the Brazilian private education sector, as they facilitated student access through improved financing options. The state either provided tax incentives to educational institutions or assumed the risks of non-payment, ensuring the stability of companies, thereby making it a secure investment for profit extraction. Numerous companies emerged and thrived during this period, seizing the opportunity to establish a strong presence in the market.

Within this context, Kroton, a Brazilian company that has existed since the 1960s, solidified its growth and went public on the stock market in 2007. It even became the private education company with the highest number of enrollments worldwide by 2014. Today, the company is known as Cogna. It operates as a holding company, which is publicly traded and controls various other companies, many of which are also listed on the stock market and are accountable to its shareholders. In this new structure, the company continues to pursue its stated goal of democratizing education, aligning with the slogan advocated by the PTⁱⁱ government. Active at various levels and within different educational sectors, the company continually innovates its production processes and expands its market reach.

One of the company's recent developments is the creation of the startup Ampli, a type of higher education institution accessible through a mobile app. The Ampli asserts that students can study anywhere and anytime using the application on their mobile devices, such as during public transportation, through recorded classes on the company's platform. This model can provide education at very affordable prices and offer accelerated certification, which is attractive to capitalists due to the ample labor supply and workers seeking to sell their labor at higher rates to secure a more dignified livelihood.

However, we argue that the primary function of the technology employed in this process is not to democratize education, as it may initially appear, but rather to reduce capital turnover time and lower the company's production costs.

Consequently, Cogna aims to reach an audience that would otherwise be inaccessible (low-income workers with limited available time) while simultaneously creating a model that streamlines the production process and mitigates the tendency of the profit rate to decline.

Technology assumes a central role in this process by facilitating the seemingly continuous reproduction of a commodity previously produced and consumed in real-time: the class itself, now replicated in recorded video format. Technology endeavors to make the educational process more cost-effective and faster for students, creating a substantial labor force supply in the market, which pleases employers. However, as the subsequent discussion will illustrate, this approach can adversely affect workers.

To support this thesis, we will briefly describe Ampli, our subject of study, and its parent company, Cogna. Following this, we will delve into our theoretical framework, primarily drawing on the ideas of Karl Marx, to comprehend how our subject fits into the broader process of financialization of capitalism.

Finally, we will analyze the productive process of the startup Ampli, aiming to grasp how the company has harnessed technology as a tool to maximize profit.

The Object and Its Matrix: Ampli and Cogna

Originating as a preparatory course for university entrance examinations in Belo Horizonte in 1966, the first Pitágoras school emerged in 1972. In 2000, the first Pitágoras College was established (Cogna, 2020). The Pitágoras group underwent a transformative journey when, in 2007, it went public on the Brazilian stock market under the name Kroton Educacional. This move allowed

for the expansion of its production processes and scope of operations. In 2009, Kroton received financial backing from one of the world's most significant *private equity*ⁱⁱⁱ funds, Advent International, which subsequently shared control of the company with its founding partners. Throughout the 2010s, the group embarked on several acquisitions, the most notable being the merger with Anhanguera in 2014, positioning Kroton as the world's largest company in market value and enrollments.

In 2019, the company underwent a restructuring of its business structure, giving rise to the Cogna Educação holding, which comprises four primary branches and a venture capital fund, the Cogna Venture. Each unit serves a distinct function: Platos, which provides management services for higher education; Saber, responsible for language courses, elementary schools affiliated with Kroton, the operation of Red Balloon, and services aligned with the PNLD^{iv} (National Textbook Program); Vasta/SOMOS, offering management services and educational materials for partner schools; and, of course, Kroton itself, which focuses on delivering on-site and distance education at the tertiary level. As per Cogna's mission statement (2020, p. 75), Kroton is committed to "democratizing access to higher education at an affordable cost and nurturing citizens and professionals prepared for the job market."

Therefore, it is unsurprising that in the same year of its restructuring, Cogna introduced a new brand: Ampli. Ampli is a company maintained by Anhanguera, a subsidiary of Kroton, offering undergraduate, graduate, and technical programs and open courses delivered through digital media, ranging from computers to smartphone apps. The accessibility of these courses via mobile phones can potentially expand Kroton's reach from approximately 1,700 to 5,000 cities across Brazil (Sakate, 2021). The company partnered with the TIM mobile telephony network for several years, but this collaboration ended in

2023 (Lopes, 2023). TIM's customers could access various promotions and coupons that made accessing programs and courses even more cost-effective, in addition to being able to access them through TIM's data network.

The enrollment process is conducted exclusively online, with all necessary documentation submitted digitally. Classes commence the week after enrollment in the chosen program, and these programs typically have shorter durations, ranging from 18 to 36 months, depending on the program and area of study. Due to the digital nature of the process, there are no scheduled breaks, ensuring the formative process remains as expeditious as possible. Class dynamics also differ from the conventional format: Students focus on one course within the program at a time, each with varying deadlines. For instance, 20-hour courses must be completed within one week, while 80-hour courses allow a 30-day timeframe for completion. The system releases subsequent subjects on predetermined dates, always one at a time. Even if a student finishes a course before the deadline, the next one is only made available at the designated time, adhering to the course's workload. In their questions section (Ampli, on-line), the company suggests that advancing through courses is impossible due to Ministry of Education (MEC) guidelines, underscoring their desire to expedite the educational process further.

The classes, which are pre-recorded, are accessible to students as soon as the courses become available, along with the support materials. This means an interaction between the student and a recorded class replaces the traditional student-teacher relationship. The company places a premium on the independence and autonomy of the student, who can study at their convenience during free time or while commuting to work via public transportation. On its website, the company claims to have over 324,474 students enrolled, with the formative process being predominantly self-guided.

Work, Technology, and Capitalism

Like all aspects of human life, education is influenced by the prevailing mode of production, which in our context is capitalism. At the core of capitalism lies the concept of a commodity, an item that, as Marx (1976, p. 25) defines it, "satisfies human needs of whatever kind through its qualities. The nature of these needs, whether they arise from the stomach or the imagination, makes no difference." A commodity has two dimensions: exchange-value and use-value. Use-value refers to its usefulness, while exchange-value enables the exchange of one commodity for another.

For a commodity to be exchanged, it must have utility for someone other than the seller. The comparison of two different use values leads to the creation of exchange values, which represent the equivalent proportion between their values. To compare different commodities, there must be something familiar between them that can be measured and is reflected in the equivalent exchange value: human labor. Exchange value, in this sense, "cannot be anything other than the mode of expression, the 'form of appearance,' of a content distinguishable from it" (Marx, 1976, p. 127).

When commodities are exchanged, their embodied labor is perceived as abstract human labor, a form of energy expenditure. When individuals work to produce a commodity, they add value to it, representing a mass of labor that is essentially abstract human labor in general. The amount of labor in a commodity is determined by the average socially necessary labor time required for its production rather than the specific time invested in producing each commodity.

Money serves as a universal equivalent in this system. As a commodity, money embodies a certain quantity of abstract human labor in its material form, and its use-value is its role as a universal equivalent, a medium for the exchange of

value. As a universal equivalent, money can be exchanged for any commodity if it represents the required value. Money introduces a significant advancement in trade, eliminating the necessity for direct face-to-face transactions between producers and allowing for intermediation.

With money, we can depict the fundamental cycle of commodity circulation as C - M - C. In this cycle, a producer possesses a commodity (C), decides to sell it, exchanges it for a sum of money (M), and then uses that money to buy the commodity they need (C). Let us consider a trader looking to resell a commodity. The cycle takes a different form: they start with money (M), acquire the commodity (C), and then exchange it for more money (M), forming the M - C - M cycle.

However, money must be transformed into capital. This transformation occurs within the M - C - M circulation but is not limited to this phase alone. Unlike the C - M - C cycle, which is driven by the fulfillment of needs, the M - C - M cycle, as it begins with money and returns to it, is primarily focused on the exchange value itself. The essence of this cycle lies in the quantitative difference between its extremes: the merchant withdraws more money from circulation than they initially invested. The complete cycle can be represented as M - C - M', where M' is M + ▲M, with ▲M being the additional increment called surplus value. The original amount of value invested "not only remains intact during its circulation but also increases in magnitude, accumulates surplus value, and thus converts into capital" (Marx, 1976, p. 252).

Capital, therefore, is the value that can generate more value, and its owner becomes a capitalist. The ultimate objective of the capitalist is to constantly accrue surplus value, which originates from a specific commodity: labor power. Under capitalism, workers who lack ownership of the means of production sell

their labor power as a commodity. Capitalists purchase and utilize this commodity to extract surplus value.

The introduction of machines further transforms labor relations. Machines, also commodities, possess value. During the production of commodities, a portion of this value is transferred to the commodities produced. The aim is to maximize a machine's production output and operational lifespan. As the means of production become more sophisticated, a significant portion of the value inherent in commodities originates from the labor stored within the machines. Consequently, capital can be divided into two parts concerning production: constant capital (the means of production), which maintains its value throughout the production process, and variable capital (the workers), capable of generating more value than their initial cost (Marx, 1976).

By compensating the worker, who represents a commodity, for the value of their labor power, the capitalist gains control over this commodity throughout the entire workday, in addition to all the commodities produced during that time. However, the value generated exceeds the amount spent on acquiring labor power. If a capitalist pays a worker a specific wage for a certain number of hours, the worker produces a quantity of commodities equal to that wage. This represents necessary labor time, during which the capitalist merely recoups the initial expenditure on labor power. The process does not end there; the worker continues to produce beyond this point, representing surplus labor time, during which additional value is created, exceeding the payment made by the capitalist. This surplus value is the capitalist's ultimate goal – constantly increasing surplus value by constantly circulating commodities (Marx, 1976).

With the introduction of more advanced machinery, capitalists can increase production while reducing the number of hours paid to workers, all to achieve

this objective. The worker continues to labor for the same time and at the same wage but produces more, leading to relative surplus value. Additionally, if the capitalist extends the working hours, aiming to produce more while keeping the wage constant, absolute surplus value is generated. Extraordinary surplus value is another concept that arises when a capitalist introduces an innovative, highly efficient production method. This creates more value and commodities than the average social labor while maintaining the same wages.

The relentless pursuit of expanding surplus labor, consistently achieving surplus value, and capital valorization gives rise to inherent contradictions within capitalism, such as the tendency for the profit rate to fall. To comprehend this law, it is essential to understand how capital composition is determined. It is "determined by the relation between the mass of the means of production employed on the one hand and the mass of labor necessary for their employment on the other" (Marx, 1976, p. 762).

This relationship between constant capital (C) and variable capital (V) is represented as C/V because it signifies an organic and proportional relationship between constant and variable capital values. The rate of surplus value, on the other hand, represents the proportion between the value produced in necessary labor time and that derived from surplus labor time, calculated as surplus labor divided by necessary labor or, more succinctly, surplus value divided by variable capital: S/V . This rate provides an "exact expression for the degree of exploitation of labor-power by capital or of the worker by the capitalist" (Marx, 1976, p. 326).

Lastly, there is the profit rate, symbolized as surplus value (S) relative to the sum of expenditure on constant capital (C) and variable capital (V), expressed as $S/(C+V)$. Assuming that workers earn 100 in wages and generate 200 in total

value, yielding 100 in extra value, the rate of surplus value would be $100/100 = 100\%$. However, as Marx (no date) elucidates, this rate can result in various profit rates depending on the level of constant capital employed. Let us explore some examples:

- For $C = 100$: $100 / (100 + 100) = 50\%$;
- For $C = 200$: $100 / (200 + 100) = 33.3\%$;
- For $C = 300$: $100 / (300 + 100) = 25\%$;
- For $C = 400$: $100 / (400 + 100) = 20\%$.

The underlying concept is that as the composition of capital shifts across different production sectors, with the constant capital continually growing, there will be a gradual decline in the general rate of profit (Marx, no date). Marx (no date) demonstrates that as the capitalist mode of production progresses, there is a relative decrease in variable capital compared to constant capital. This shift happens because the development of productive forces leads to the increased production of commodities, which become cheaper, all within the same amount of time. In other words, as the productive forces advance, constant capital expands, and product prices decrease, creating a tendency for the profit rate to fall. In this process, technology plays a pivotal role.

In this context, we adopt the definition of technology put forward by Pinto (2005), who emphasizes that the human ability to design is fundamental for creating techniques. In this view, technology comprises a collection of techniques used to resolve conflicts with nature. The machine is the most prominent embodiment of technology, which necessitates a comprehensive set of techniques for its development and amplifies human activities through its utilization.

However, technology is not exempt from the influences of class struggle and historical movements. This becomes evident when considering modern machinery's use to augment the surplus value acquired by capitalists. Machines tend to induce unemployment when incorporated into factories, disrupting the organic composition of capital by increasing the relative proportion of constant capital compared to variable capital. It is important to note that the machine itself is not the cause of unemployment; instead, it is the sociability within which it operates, namely capitalism. The conditions inherent in capitalism propel the perpetual quest for technological innovation, altering the process of value production and the organic composition of capital. This shift ultimately leads to the tendency of the profit rate to decline and the displacement of the workforce, contributing to widespread unemployment.

Technological advancements under capitalism are subject to the dictates of this mode of production. Pursuing extraordinary value persists as more capitalists access advanced technology, resulting in competition for new techniques and machines. These

innovations that improve efficiency and coordination, or speed up the time of rotation in production and circulation, produce larger amounts of surplus-value for capital. The need to expand production to accommodate the endless accumulation of capital creates a strong incentive to expand the market for existing goods by lowering the price of production or creating entirely new product lines and industrial sectors (such as electronics in recent decades) (Harvey, 2018, p. 114).

Given this scenario, prominent capitalists are compelled to seek new technologies relentlessly, as failing to do so can lead to a loss of capital. In this competitive environment, not adopting cutting-edge technology is not an option, as those with superior technology or organizational forms enjoy extra profits in

the form of relative surplus value, as they produce at lower individual production costs, selling at the social average. On the contrary,

those who have a superior technology or organizational form in their production have extra profits (relative surplus-value), as they produce at a lower individual cost of production and sell for the social average. Conversely, those using inferior technology or organizational form make smaller profits or even losses, and either go bankrupt or are forced to adopt new methods (Harvey, 2018, p. 112).

The renowned English author also highlights how technology has evolved into a distinct business, necessitating the discovery of new markets and attracting investments. This environment fosters the idea of technology as a solution to all problems as if it were a serendipitous blessing or a creation of benevolent and enterprising individuals. To Harvey (2018, p. 126), when technology transforms into an autonomous business, it no longer primarily responds to specific needs but actively creates new wants, needs, and desires. This applies to producers, who experience these through productive consumption, and consumers daily.

In the first scenario, technology extends beyond the realm of production and infiltrates the worker's everyday life, affecting both leisure and work. In the second case, technological innovations boost productivity and become commodities in their own right, demanding consumer markets. Having clarified these points, we can transition to the second part of our framework: the financialization of education.

Education and Financialization in Brazil

This section begins by considering that a portion of capital transforms from money into commodities with the simultaneity of different operations conducted by various capitalists. At the same time, another part shifts from the commodity

form to the money form. As a result, money constantly changes hands, constituting the technical operations of payment, collection, and accounting. The work carried out to execute these operations is a cost of circulation and does not produce surplus value, making it advantageous to abbreviate these technical movements.

These movements become the responsibility of private capital that handles only appropriate operations. This is where the figure of the money merchant emerges, tasked with these activities and operating with the mass of money belonging to the capital of industrialists and merchants. Their profit is derived from the surplus value they obtain (Marx, 1999). It can be asserted that "the money trade becomes fully developed, even in its early stages, as soon as its ordinary functions are supplemented by lending and borrowing and by credit" (Marx, 1999, p. 364). The modern practice of lending for profit results from a use value of money highly valued by capitalism: functioning as capital that accrues value.

The credit extended to industrial and merchant capitalists serves as an accelerator of capital circulation phases, particularly in the M-C stage, primarily in acquiring means of production. Its role is evident: expediting circulation shortens the general process of capital reproduction. The fundamental concept of its operation in capitalism relies on two figures: the lender, who provides capital for use in production, and the borrower, who receives it and benefits from its use-value as capital, eventually returning the original sum plus interest derived from the surplus value generated in production. Whether the borrower employs the received money as capital is of little significance; they are legally obligated to return the original sum to the lender with added interest at the end of the specified period, making the M-M' figure the lender's primary concern.

This is where the concept of interest-bearing capital (IBC) comes into play, originating from the production of commodities. It presupposes the existence of a certain amount of money advanced for the purchase of commodities (C), consisting of means of production (MP) and labor-power (LP). Production (P) takes place, yielding commodities with added surplus value (S'), which are sold and transformed back into money (M'). In brief, we have $M-C - P... C' - M'$. The shorter the capital turnover time, the quicker the surplus value is realized (Brettas, 2020). IBC is the entity that gains value in this abbreviated M-M' process, where the lender provides a loan returned by the borrower with added value. From the lender's perspective, money begets more money, as the mediation process of production is hidden from them, as it falls under the borrower's responsibility.

With the substantial growth of the financial sector, the notion that money generates more money without intermediaries contributed to the proliferation of Fictitious Capital (FC), which only represents actual capital. However, various forms of fictitious capital guarantee future income, often stemming from real capital, as Brettas (2020) emphasized. Examples include company shares, which entitle their holders to a share of profits. Notably, the most crucial aspect concerning fictitious capital, as described by Brettas (2020, p. 54), is that "the turnover of papers indicates the transfer of resources from the real accumulation process to the financial sphere. This involves the transfer of wealth from the hands of industrial capitalists to financial capitalists." Publicly traded companies on the stock market witness changes in their production dynamics as they need to satisfy shareholders. This compels the production and circulation of capital to accelerate to ensure swift compensation and minimize production costs to maximize the utilization of invested capital for profit.

Therefore, drawing from the comprehensive review conducted by Galzerano (2016), we can suggest that the financialization of education is defined by the entry of large corporations and business groups, typically publicly traded on the stock market and controlled by investment funds, banks, or private boards. This entry gained momentum in Brazil during extensive privatization, particularly from the 1990s onward. Presently, private higher education institutions dominate in terms of enrollment numbers to the extent that "the vast majority of higher-level workforce education is guided by the methods, techniques, and educational principles of these capitals, which are responsible for graduating 75% of these workers" (Seki, 2021, pp. 50-51).

The financialization of higher education significantly impacts educators, whose roles are increasingly delegated to outsourced employees or even to new technologies. It is unsurprising, given that professors, students, and university staff have become mere components of capital valorization. Thus, there is a growing need to reduce costs to maximize profits. Consequently, hiring less academically qualified professors and dismissing older, more experienced faculty members is not uncommon (Seki, 2021).

The state plays a pivotal role in mediating the interests of these corporate conglomerates, as evidenced by the creation of programs like FIES and PROUNI. These programs were justified under the banner of democratizing higher education and facilitated the transfer of public funds to the private sector. Education oligopolies saw an opportunity to tap into substantial portions of public funds in this environment, contributing to their expansion in the private higher education market.

In general, the entry of investment funds into higher education can be traced back to 1996, primarily through *private equity* and *venture capital*^N. This

significantly contributed to the current landscape of high capital concentration in higher education under the control of IBCs and fictitious capital. An illustrative example is the partnership between the Pitágoras group and the Apollo group, a major player in American education present in multiple countries, through a joint venture^{vi} in 2001. At the time, Apollo was the largest private education group in the U.S. and was preparing to enter the Brazilian market through acquisitions. The proposal for the collaboration came from the leaders of the Pitágoras group, and its success "not only thwarted foreign competition, which could have had dramatic effects on their ventures but also incorporated Apollo into Pitágoras to direct the competition feared against their adversaries" (Seki, 2020, p. 199).

The Brazilian group adopted the methodology and educational system of the foreign group, including their use of technology, such as electronic programs for enrollment management, collections, and personnel administration. This convergence led to the transformation of the Pitágoras group into the enormous Kroton (which subsequently became Cogna), hailed for years as a paragon of efficient management. It maintained low payroll costs, increased the student-to-teacher ratio, and integrated techniques for organizing market operations, effectively positioning "the schools belonging to the group within the coordinates of capitalist operations typical of other economic sectors. Kroton successfully turned Higher Education into an almost factory-like process" (Seki, 2020, pp. 201-202).

Seki (2020) also underscores a crucial factor in understanding Cogna's actions, especially the creation of Ampli: the market value of an educational company is influenced by the number of students enrolled in a given period. Therefore, attracting and retaining students is critical when assessing the value of a company that is to be sold. Companies take careful measures to manage

different brands strategically to cater to diverse markets, from the affluent to the less privileged, all aimed at attracting and retaining as many students as possible.

We will revisit this point shortly. For now, it is worth noting that, as the author also emphasizes in his text, distance learning is a highly cost-effective asset compared to face-to-face teaching despite not necessarily requiring a lower initial investment. Once the technological infrastructure is established, the produced content can be disseminated on a large scale, often involving fewer teachers, whom tutors or monitors substitute with the devaluation of teaching work and the elimination of its intellectual dimension, the profitability of education surges. The financial sphere continues to exert dominance in the realm of education, as exemplified in our discussion of Ampli in the following section.

Technology as a Pillar of Profitability

Previously, we mentioned that Kroton's IPO took place in 2007. According to Marx (1999), the creation of joint-stock companies played a significant role in expanding companies and their production on a scale impossible for isolated capitals. Assuming a social mode of production as its foundation and presupposing the social concentration of means of production and labor power, capital takes on the form of social capital owned by directly associated individuals. By opening its capital, the then-named Kroton paved the way for expanding its productive capacity. Today, Cogna continues progressing in its production expansion, as reflected in its ongoing reorganization.

It is worth noting that the consolidation of Brazilian financial capital is relatively recent compared to European countries; it only occurred in the 2000s, with substantial state involvement (Brettas, 2020). The IPO of Cogna (then

known as Kroton) coincided with this period, and much of its growth can be attributed to the subsequent actions of FIES, particularly between 2010 and 2014, along with other programs like PROUNI. These initiatives also contributed to the transfer of public funds to private entities. Furthermore, the entire legislative framework, which we cannot delve into in detail in this article, was crafted to facilitate the operation of private companies in the education sector. Thus, it is crucial to highlight the Brazilian state's active role in forming this significant conglomerate.

Therefore, Cogna is a company that has grown in alignment with the financialization of the Brazilian economy. As part of this logic, capital turnover needs to be accelerated to attain profit quickly. The M-C-M' process should occur as swiftly as possible to maintain the appearance represented by the M-M' process. As described by Fontes (2008), keeping capital in the form of money for as long as possible is essential. To achieve this, technology plays a pivotal role, speeding up production time and capital turnover and facilitating the realization of the value of merchandise. This is evident in the case of Ampli, where technology streamlines the qualification/certification of workers who purchase the company's offerings. These commodities are made more accessible through online sales and competitive pricing.

Here, we consider technology as Pinto (2005) described: the set of techniques prevalent in a given society. Cogna claims to harness cutting-edge technology to deliver the highest-quality education. However, it is essential to recognize that the technology in question, whether used internally by the company or sold to third parties, is not primarily geared toward improving educational quality but instead toward enhancing the productive efficiency of private educational institutions. As Pinto (2005) also points out, technology lacks inherent

intentionality; its social use and alignment with the prevailing model of social interaction give it a specific purpose.

In this context, technology is generally introduced into education to increase company profits within the framework of financialization rather than the ostensibly promoted goal of enhancing education quality. The metrics and definitions of educational quality are subjects of ongoing debate, which we will not delve into in this article. This does not negate the possibility that certain elements and dynamics introduced into the classroom can enhance or improve learning. However, if and when that occurs, it is more of a desirable side effect than the primary objective.

The drive to maintain cutting-edge technology within the company is pursued through the startup model. Startups are characterized by their innovative use of new technologies, as is the case with Ampli. These companies assume the function traditionally handled by a company's development department: discovering and inventing new techniques to enhance production, always in pursuit of relative surplus value. Technology plays a crucial role here by boosting the productivity of each worker, enabling the production of more commodities with fewer workers in the most exemplary cases.

The quest for constant innovation also has another motivation: the pursuit of extraordinary surplus value. According to Harvey (2018), the quest for extraordinary surplus value is an ongoing capitalist imperative—those who fail to adopt the most modern production techniques risk being surpassed or even driven to bankruptcy. Thus, the constant pursuit of innovation, exemplified by companies like Cogna, is not a peculiarity of this specific private entity or an act of genius on the part of its agents but rather an inherent condition of the mode of production it operates—capitalism.

As we have observed, the increase in constant capital relative to variable capital leads to a tendency for the general rate of profit to decline. There are counter-trends to this law, implemented to counteract it: increased exploitation of labor, wages held below their value, reduced costs of constant capital elements, the formation of relative surplus labor due to advances in productive forces, and increased share capital. Thus, Cogna's presence in the stock market is one of these counter-trends to the falling profit rate. The IPO does not apply solely to Cogna but extends to its subsidiaries. Consequently, all of them secure funds to finance their projects, including acquiring state-of-the-art technology through purchasing startups. The convergence of these factors—the integration of technology into the production process and entry into the stock market—gives rise to other potential changes within the company that also serve as counter-trends to the falling profit rate.

Among these changes are transformations in working relationships, particularly those of teachers. Within the educational process, teachers are the ones who create value if we consider classes as commodities sold by private educational institutions. As we have seen in Marx (2017), the introduction of labor technology can enhance the production of value by workers. The same teacher can instruct numerous students simultaneously in an online classroom. Alternatively, they may record a video lecture, a commodity produced only once but accessible to multiple students at different times for as long as it is available in the university's systems. The teacher is paid only once, yet the commodity they produce is sold multiple times. This is particularly evident in the case of Ampli, as we will examine later.

Once again, the contradiction created by machinery in the capitalist production system comes to the fore. According to Pinto (2005), technological advancements generally relieve humans from arduous physical labor, allowing

intellectual work to take precedence. However, the social relations shaped by the capitalist mode of production prioritize the creation and valorization of value over meeting human needs. Consequently, increased technology often results in a decrease in available jobs. With the growing organic composition of capital, an increase in constant capital, and a decrease in variable capital, a reserve labor force is created. Workers left without job prospects will seek other means to sell their labor, while those who retain their jobs fear the threat of unemployment and work even harder.

With this understanding, we can discern two additional counter-trends to the falling profit rate: suppressing wages below their value and creating a reserve labor force. It is a common occurrence in our daily reality to see employers offering low salaries that job seekers are forced to accept, given the scarcity of available positions and the large pool of unemployed workers willing to accept low wages to make ends meet at the end of the month.

With a line of unemployed individuals waiting for opportunities, workers holding jobs must give their utmost to their employers, even when their salaries are low. They must be diligent, creative, proactive, and always available for overtime, additional projects, schedule changes, and similar demands. These and other trends are evident, especially at Ampli, as we will explore further.

Ampli – Technology in the Service of Capital

It is implied that the company, like any other under capitalism, seeks to expedite its production process and reduce the turnover time of its goods, making it easier to realize its value. Let us consider the educational institution as a factory; whether it is for higher education or not does not matter much in this abstraction. The commodity produced here is labor power, which can be simple or complex. Thus, it is safe to assume that the labor power formed through

higher education is more complex and suitable for specific activities requiring specialized training.

Therefore, higher education serves a dual purpose: it benefits employers needing more qualified employees. It aids the worker seeking specific qualifications or certifications to pursue higher-paying jobs in theory. Ampli offers accelerated training for these qualified and certified workers, meeting the needs of both parties. The logic is simple: the faster a student becomes certified as a professional in a particular field, the sooner they can seek employment to use their labor power, which they sought to improve by enrolling in university. This quick certification allows them to enter the job market and maintain a pool of available labor for capitalists.

With these general highlights in mind, specific key points warrant emphasis. The first relates to the time factor in production. Education plays a fundamental role in shaping labor power. Its costs contribute to the total value of this commodity and vary depending on the complexity and duration of the training (Motta; Andrade, 2020). A model like Ampli, which offers faster and more cost-effective qualifications, reduces the cost of education and, consequently, the total value of the commodity. As a result of their less complex and more accelerated training, this labor can be compensated with lower wages. The compression of workers' wages is also feasible due to the high number of certified workers without necessarily causing an economic upturn.

This mass certification can lead to the formation of a substantial reserve army of labor, even for highly skilled positions. Faster qualification of a larger workforce, unburdened by most of the obstacles of traditional higher education, increases the labor supply in the market without necessarily corresponding to a proportional increase in job opportunities. The number of available positions in

the job market depends on the dynamism of the national economy, which, for several years, has shown limited signs of improvement in Brazil. The country grapples with deindustrialization and job loss in a climate of dependent capitalism. Nevertheless, higher education continues to be viewed as a means to secure higher wages than jobs requiring less training. Consequently, with high demand and a continuous supply of certified workers, capitalists can offer progressively lower wages as more people are willing (or compelled) to accept them.

The significant reserve army of labor also pressures already employed workers, who witness their job security diminishing as numerous other workers stand ready to replace them. Thus, they may accept increasingly unfavorable working conditions to secure their livelihood. Consequently, it becomes evident that the accelerated qualification and certification of workers is of interest to Cogna and capitalists in general.

Another aspect concerns classes and the role of teachers. Classes are recorded and can be accessed via web browsers or applications through computers and smartphones. Notably, the recorded content is produced only once and can be sold repeatedly for as long as the company desires. Each time a student enrolls pays their monthly fee, and attends classes, the value of this commodity, a recorded class, is realized anew. This shift from a teacher lecturing in person to a video fundamentally alters the nature of this production process. The teacher, once an essential presence in the institution's daily life, now shifts roles to become more of a supplier, producing a commodity that, when sold to the company, becomes a means of production. The company determines the longevity of this means of production; it can be renewed at the beginning of each academic term or used for years, except in cases where changes in relevant legislation or regulations necessitate an unplanned update.

It is essential to recognize that this shift, if adopted on a large scale, has implications for the sector's profitability, as we can observe when recalling the tenets of Marx's theory. Once considered variable capital and a producer of surplus value, the teacher transforms into a means of production, constant capital, thereby altering the organic composition of capital. Additionally, professionals might find themselves transitioning from full-time teachers to freelancers who primarily produce materials for classes and assessments while the classes become automated.

This educational model also contributes to reducing the costs of physical facilities, as the need for them is minimized by establishing centers where students periodically take exams. The constraints of a physical classroom are virtually eliminated; a digital model can accommodate many more students without the limitations imposed by physical space. Considering Seki's (2020) insights on the value of an institution tied to the number of enrolled students, startups like Ampli hold great potential. The number of enrolled students is not as restricted as in traditional universities, and this flexibility allows it to grow continuously.

Moreover, the use of technology and the shift to digital formats also quicken the turnover time of commodities. With accelerated qualifications, employees are certified more rapidly, allowing them to enter the job market sooner. Coupled with cost-effectiveness, the company is more appealing to individuals seeking this qualification. As there are no physical limits to the number of students, the company can enroll as many students as possible, thus realizing the value of its commodity. Given that classes begin weekly in practice, new students can be recruited every week instead of only at the beginning of each semester. Consequently, the value of the commodity can be realized weekly, representing a substantial acceleration in the turnover process.

With expedited turnover and the potential for an unlimited number of students, in conjunction with minimal investments in physical facilities, shareholders can swiftly recoup their investments, further shifting capital from the productive sphere to the financial sphere. This is a pivotal point for Cogna as a publicly traded company on the stock market, and it is also moving toward opening up the capital of its subsidiaries. Hence, the model adopted by Ampli presents itself as a natural progression, even a necessity, in the context of financialization, as it better aligns with its requirements.

Another aspect to consider is the quality of education. While we will not delve into a conceptual debate on this topic, it is clear that Brazilian public universities, and even private ones following more traditional models, can still offer a higher-quality education than the Ampli model. Therefore, they produce more highly qualified workers who are better positioned in the job market. However, it is essential to note that public universities, especially federal ones, have been subject to dismantling and disinvestment in recent years, which is likely to undermine the quality of education offered in the long term. Private universities, on the other hand, are increasingly embracing online education, with many of their on-site courses incorporating numerous digital components. Even in public universities, there are internal and external political pressures for greater flexibility in the teaching model, including the adoption of digital models.

Considering all these factors, it remains possible that these universities, particularly public ones, still educate workers with more refined qualifications compared to companies like Ampli. This is consistent with Brazil's prevailing capitalist system; select job opportunities demand more specialized and highly qualified workers. For instance, foreign oil companies recruit the most highly qualified labor, as do various Brazilian companies from different sectors that

offer higher wages than the average and seek the best-qualified individuals. For those qualified by Ampli, which could be seen as fast food in higher education, jobs with lower wages and inferior working conditions often await them, especially when these jobs are in high supply.

Finally, Ampli caters to a different audience than traditional universities: individuals with lower purchasing power or a less robust educational background who have limited prospects of affording pricier private universities or securing spots in public universities. Cogna's startup, designed to serve this demographic, offers greater accessibility to desired training thanks to its straightforward registration process and affordable prices. Workers with few opportunities or low expectations for higher education now have a viable option for obtaining their desired qualifications. Seki (2020) pointed out that it targets a specific market segment that the company previously underserved: low-income workers.

Conclusion

Based on the discussions presented in this study, it becomes evident that Cogna's concept of democratization can be divided into two aspects: the superficial facade and the underlying essence. The facade pertains to the visible aspects that the company promotes: Ampli's model offers lower prices and greater accessibility to education, particularly for low-income workers. However, the essence reveals that this democratization is fundamentally driven by incorporating cutting-edge technology into the company's production process to minimize capital turnover time and ensure maximum profitability. Consequently, while access to higher education has become more convenient, it only sometimes translates into guaranteed employment in the job market, given the swift and low-quality nature of the qualification process.

Thus, the accessibility to higher education, on the surface, is presented as a byproduct of profit-seeking rather than a motivation to expand opportunities in higher education institutions. This accessibility, while benefiting workers to some extent, is relatively minimal from an individual perspective due to the poor quality of the educational process and practically negligible from a collective perspective, as mass certification contributes to wage suppression by intensifying competition for available positions and potentially increasing the reserve army of labor, which counters the tendency of the profit rate to decline.

In this process, technology becomes pivotal, enabling the expansion of the consumer market available to the company. Workers can adapt pedagogical processes to their schedules and locations, allowing them to study whenever and wherever they choose. This rapid and inferior qualification is based on state-of-the-art technologies that reduce the need for physical class spaces and make class schedules more flexible. Previously integral to the production process, teachers become almost redundant, only required for video recording. The teacher shifts from a constant producer of a commodity (lecturing in-person) to a supplier, producing a commodity (video content) that can be sold repeatedly, effectively becoming a new means of producing education. This transformation represents a shift from labor to technology, increasing the company's capital.

However, it is crucial to emphasize that the issue is not technology per se, as it would be oversimplifying to claim that technological support for classes cannot bring educational benefits. The capitalist utilization of technology renders it a mere instrument for accelerating production processes at the expense of both the teaching profession and educational quality. Its primary role is to eliminate the need for specific class times and places, transforming education into a more consumable product. In addition, it reduces the company's reliance on physical facilities, allowing it to maintain more capital in the form of money, moving it

to the financial sphere. This financial realm is the primary beneficiary of technology's use in expediting capital turnover, ensuring swift compensation for shareholders. Thus, what may appear as the democratization of education is, in reality, a relentless pursuit of profit at all costs.

Notes

ⁱ Government programs aimed at facilitating students' entry into private higher education. FIES did so by financing monthly fees, with a guarantee offered by the government in case of default; PROUNI grants partial or full scholarships through government tax incentives.

ⁱⁱ The Worker's Party, the biggest Brazilian party in the left field of politics. In Portuguese: Partido dos Trabalhadores (PT).

ⁱⁱⁱ Investment made directly in companies, without the need to buy shares on the stock exchange.

^{iv} Programa Nacional do Livro e do Material Didático (National Book and Teaching Material Program). Government program which buys and distributes teaching material for public schools.

^v Specific capital used for risky investments, such as start-ups and unconsolidated companies in the market.

^{vi} Union between two companies, usually for a limited time, which aims at mutual benefit without loss of autonomy of each agent involved.

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