

Why Hegemony Was Not Born in the Factory: Twentieth-Century Sciences of Labour from a Gramscian Angle

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Hegemony against the 'dictatorship of the proletariat'

My contribution to this volume employs a Gramscian perspective to discuss the emergence of a scientific field around labour in the twentieth century, with a further focus on its role in the project of socialist industrialisation in East-Central Europe. The starting point of this chapter is the obsessive drive for rationality and efficiency in production that has connected industrial sociologists, experimental psychologists, time and motion analysts, nutritionists, physiotherapists and educational experts across historical configurations since the end of the nineteenth century. I follow the threads that unite an otherwise fragmented story of several scientific fields in their fundamental entanglement with a form of industrial modernity centred around mass production, wage labour and capital accumulation.

This story cannot be understood without a closer look at the broader processes underpinning shifting ideas about the valuation of labour, both economically, and in a moral sense of 'establishing worth'.¹ A history of labour as a scientific object is at the same time a history of the transformation of work – understood as human mastery of nature, self-perfection or craft – into labour – taken as a category of political economy that both allows for and requires politics of quantification. It was in this latter sense that it captured Gramsci's imagination.

The scientific field articulated around labour in Europe and in the United States throughout the twentieth century had a profoundly contradictory character. On the one hand, sciences of labour were predicated explicitly upon the necessity to depoliticise the shopfloor and economic life as a whole. They were supposed to function as anti-politics machines, to extinguish working-class radicalism, and to respond to trade unions' discontent by replacing the language of class with a seemingly neutral scientific language of 'efficiency'. On the other hand, their field of action has always been deeply political and highly contested. Against the naïve narrative of a linear rationalisation of the production process, the making of labour into a scientific object has rather been the favourite battlefield for competing logics of capital accumulation, working-class interests, nation-building, bureaucratisation, gender emancipation, and racial and genetic improvement. All these logics shaped the ways in which the worker became an

¹ Boltanski and Thévenot 2006.

object of the scientific gaze and had a long-lasting impact on the two central traditions of thought that are the focus of this chapter: scientific management and the European science of work.² From this perspective, making people work more, faster and better without risking the political organisation of their disquiet was at the core of hegemonic struggles, both in capitalism and in state socialism.

When Gramsci wrote 'Americanism and Fordism', the profound transformations of the factory system in the United States were central in post-World War I leftist debates. In the *Quaderni*, Gramsci addressed two interrelated problems: first, the way in which new methods of organising the production process were structuring the social as a whole, including regulation of alcohol consumption, gender norms and sexuality; second, the way in which the restructuring of productive forces and relations could constitute necessary and sufficient historical conditions for revolutionary action.

Gramsci saw clearly that with the economic crises of the inter-war period, the bourgeoisie recognised the potential that Taylorism and Fordism held for a 'passive revolution'.³ Gramsci's widely used concept is taken here as a reference to those concrete historical configurations in which social relations that make the accumulation of capital possible are constituted, reproduced, and sometimes expanded within a dialectic of "revolution/restoration" in which the very possibility of revolution is simultaneously enacted and dispelled.⁴ Gramsci explicitly linked the advent of fascism to this acute awareness by the capitalist class that capitalism must be rearticulated from within. The question was whether these transformations in the realm of production could be instrumentalised for a different kind of revolutionary change. Following Marx, Gramsci envisioned the end point of communist revolutionary change as the historical possibility of an unmediated world, a world liberated from the tyranny of commodities, a world in which politics was rooted directly in production. He understood Fordism as a possible first step towards that world and saw American industrialism as the first historical embodiment of the possibility that hegemony would be rooted in the factory. This was precisely the possibility that Soviet economic planning and its scientific underpinning were going to bring to scale.

In socialist East-Central Europe, the adoption of the Soviet version of Taylorist methods for a hyper-rationalisation of the production process, the reliance of central planning on the Fordist model of social reproduction, and the constellation of scientific inquiries opened by their embrace were going to produce a specific science/politics nexus. These transformations would connect productive practices to patterns of redistribution and consumption, and would integrate them into specific processes of subjectification of a new type of worker.

² *Science du travail* in France and in Belgium, *Arbeitswissenschaft* in Germany, *scienze del lavoro* in Italy, or *ciencia de trabajo* in Spain.

³ Gramsci 1992 [1971].

⁴ See also Morton 2007.

In Gramscian terms, they were essential for the emergence of a new historic bloc, as they produced not only ways of making the workers perform more, faster and better, but also a practical concern with the instruments required for manufacturing their consent and a shifting interplay of social alliances.

Within this broader frame, my contribution to this volume focuses on the fate of labour as a scientific object in socialist Romania. While the exploration expands inward and outward both spatially and temporally in order to capture a broader historical process playing out in the twentieth century in Western Europe and in the Soviet Union, a more in-depth analysis is dedicated to the participation of the Romanian factories, technical offices and universities in the implementation of the first five-year plan (1951-1955). The transfer of the Stalinist rearticulation of production relations to post-war East-Central Europe was a moment of intense and violent transformation, which makes this snapshot in history particularly revealing for the relationship between science, production and politics. Moreover, it is a period in which the contradictions of the new societal project were laid bare, witnesses to the hegemonic crisis in which state socialism was born and in which it was going to function for decades to come.

In this chapter, I argue that socialist hegemony was constantly threatened by a crisis of authority that was rooted directly in production. Since socialist factories represented the productive core of the state, from being a problem of specific factory regimes, the impossibility of controlling labour became a directly political issue, one that reveals not only the factory managers' lack of authority, but also the fragility of the state itself. I further argue that this crisis of authority was central to additional developments in the field of scientific knowledge around work and productivity, which reverberated throughout the socialist period.⁵

It is telling that Gramsci starts his discussion about 'State and Civil Society' in the *Prison Notebooks* precisely with 'the crisis of the ruling class's hegemony'.⁶ It reflects his awareness that hegemony, as a process of routinising and institutionalising a set of mechanisms, tools and alliances for manufacturing consent in order to dominate a class society, is always a struggle. It is always fragile and problematic, pertaining to the practical realm as much as to the mechanisms through which dominant meanings are being established.

The basic assumption here is that the Soviet Union and the post-war socialist countries in East-Central Europe *were* class societies.⁷ The underlying class foundation of state socialism is often obscured in the literature by the fact that the nationalisation of the means of production and the collectivisation of land produced a radical change in property relations. One term of the capitalist political economy was eliminated, leaving the state to assume the role of creator

⁵ For a historical perspective on authority in industry, see Jacoby 1991 and Cohen 2013.

⁶ Gramsci 1992 [1971].

⁷ I developed this idea at length elsewhere. See Cucu forthcoming.

and manager of social production processes, with the explicit aim of ‘socialist accumulation’. While constituting new bonds between people and between people and things, the same historical shift shaped the relationship between labour and the state, which was going to include the field of forces emerging directly around mechanisms of surplus extraction.⁸ Thus, in this chapter, I am talking about socialist societies as class societies neither because inequalities persisted, nor because working-class ‘interests’ and ‘consciousness’ can be analytically isolated and empirically traced. They were class societies simply because the social continued to be structured by processes of capital accumulation in which the state apparatuses replaced the role held by the bourgeoisie in Western industrialization.

Understanding the notion of history upon which the Bolshevik project and its post-Second World War Eastern European transpositions were founded is crucial here. As earlier Marxist debates convincingly showed, the Bolshevik endeavour was centred around an ‘economistic view of production and a voluntaristic view of politics’⁹ and it represented the living embodiment of the theory of productive forces that dominated leftist debates after the Second International. Drawing on arguments rooted in a pernicious reading of Marx’s original texts, this theory connected the very possibility of revolutionary transformation to capitalist industrial modernisation, and produced a reductionist political imaginary, which was built around the artificial fracture between base and superstructure. Theoretically, this meant consigning the political to the activity of the state’s institutions and reducing production to planning and technological progress. In a mechanical manner, higher productivity was supposed to lead both to a visible improvement in workers’ living standards and to a profound transformation of their historical consciousness. The most important consequence for our discussion here was a revolutionary imaginary that professed a narrow understanding of ‘politics’ that implied an apolitical (or pre-political) shopfloor on which the Party could act. The logical consequence was that the discursive field of post-war East-Central Europe was dominated by a rather feeble understanding of what class *was*, and of what it was supposed to *do* in a particular historical configuration.

On the ground, though, this vision of history and its associated notion of ‘science’ conflicted with the ways in which people integrated the new constraints and opportunities of industrial employment in the everyday logic of their social reproduction.¹⁰ I am following here Raymond Williams’ reading of ‘hegemony’ as

⁸ My understanding of class is obviously rooted in a Thompsonian intellectual tradition, which has also infused the anthropology of labour and class during the last decades. Apart from E.P. Thompson’s still unmatched *The Making of the English Working Class*, see Kalb and Tak 2005, and the more recent Carrier and Kalb 2015.

⁹ Corrigan, Ramsey, and Sayer 1978, p. 43.

¹⁰ This reading of the socialist regimes goes first of all against an emic understanding of class in terms of an abstract struggle with a ‘class enemy’, which was fundamentally imagined as an

‘practical consciousness’, ‘a saturation of the whole process of living – not only of political and economic activity, but of the whole substance of lived identities and relationships, to such a depth that the pressures and limits of what can ultimately be seen as a specific economic, political, and cultural system seem to most of us the pressures and limits of simple experiences and common sense’.¹¹ It is fundamentally a classed experience, which produces a system of practices and expectations and obscures the visibility of both political and biographical alternatives. As this chapter will show, against what a ‘scientific organization of the production process’ or a scientific understanding of the worker’s body entailed, the obstacle to rooting socialist hegemony directly in production was precisely the intersection between the reproduction of workers’ livelihood and socialist accumulation.

By no means exhaustive, the following sections of this chapter represent an attempt to synthetically portray how these transformations were played out in the scientific realm, both in the capitalist world and in the Soviet context. The third section investigates the specific *Weltanschauung* underpinning the implementation of central economic planning in socialist Romania, focusing on the centrality of the factory in the scientific and explicitly political imaginary of the 1950s. The chapter concludes with an open-ended question related to the nature of labour as a scientific object and to the nature of socialist factories as scientific institutions.

Sciences of labour between expenditure of energy and industrial peace

The transformation of labour into a scientific object in the first part of the twentieth century was a complex process, which constantly tested the boundaries of scientific discourse. The gradual adoption of scientific management from the US factories or the acceptance of the laboratory-centred European science of work prescriptions were shaped by the major ideologies of the twentieth century, be they modernist-technocratic, liberal-humanist or religious-redemptive,¹² while the experimental conditions of the laboratory met dreams for human betterment, gender emancipation, social equality, nation-building and genetic purity.

Both scientific management and the European science of work were key in the emergence of a productive-political-cultural bloc. First, under the broad umbrella of ‘efficiency’ and ‘rationality’, the drive for capital accumulation was increasingly linked to the necessity of reorganising production at larger scales and at higher levels of complexity. This reorganisation further required reliable

empty signifier that could then refer to various social categories according to the momentary practicalities of the *raison d'état* or to the more fragmented interests of specific actors.

¹¹ Williams 1977, p. 110.

¹² See Guillén 1994.

means of calculating and anticipating the productive outcomes. Second, science was called to offer solutions to the crisis of industrial peace that became generalised after the First World War. As such, scientific management and the science of work were born in the midst of the debates around labour rights and were supposed to offer support against working-class radicalism.

Although networks of knowledge, practices and scientists belonging to these two schools of thought often engaged in a productive dialogue, the two strands in the study of labour had different aims, operated with different models of personhood, used different methods and instruments, unfolded their inquiries in different environments, and carried very different political implications. Nevertheless, accompanying the transformation of work as a moral issue into labour as a category of political economy, both scientific management and the European science of work came with the promise of finding a purely technical solution to what Michelle Perrot has called the 'crisis of factory discipline' around the First World War.¹³

In Europe, the very possibility of thinking about labour from a scientific perspective goes back to the nineteenth century and to the ways in which the working body came to be understood as a union of matter and motion, a human motor, a creator of energy. Work itself came to be conceptualised as the transformation of this energy into matter.¹⁴ By 1900, laboratories devoted to experimental sciences focusing on the study of the 'human motor' had been established in Paris, Brussels, Turin, Berlin, Leipzig, all over the United States and in Japan. Since the transformation of energy into work was the core of this new scientific field, its topics of interest included bodily functions, corporal dynamics, and the speed and accuracy of muscles' movements.¹⁵ Specialists in prosthetics massively joined the science of labour after the First World War, when wounded men returning from the front needed to be reintegrated into the labour market.

Drawing on the idea of the efficient expenditure of energy, scientists provided biological considerations in the public debates around the work of women and children, professional illnesses, or risks and hazards on the shopfloor, all of them central to the emergence of insurance systems in Europe.

¹³ Perrot 1979.

¹⁴ For an in-depth exploration of the relationship between the European science of work, scientific management, and the evolution of labour relations in Europe the reader can consult the wonderful books of Rabinbach 1992, and Kaplan and Koepp 1986.

¹⁵ As a quick survey of two major journals, *Journal of Labor Research* (Japan) and *Labor Studies Journal* (United States) shows, the topics most covered in the inter-war period and in the immediate post-Second World War years were: nutrition and food consumption habits; work performance in relation to bodily functions, fatigue, night vision, aging or shift work; personality profiles of sailors, pilots or farmers; biological considerations on the legislation regarding the work of women and children; professional illnesses; risks and hazards on the shopfloor; the relationship between object design and work performance; time budgets; and workers' living conditions.

In these debates, the medicalised perspective on workers' bodies encountered a complex discursive field, where moralising sermons about work as a Christian virtue met inspiring public speeches about work as a form of citizenship and as a national duty. Physics and biology were brought forward as better instruments to understand the new reality behind wages, working hours, work norms and productivity figures. Studies of fatigue slowly replaced the religious pamphlets about workers' 'idleness' and 'resistance to work'. A new discipline – psychotechnics – tried to offer a scientific solution both to the issue of personnel selection *and* to various inefficiencies of the labour process through the generalised application of psychological testing in industry and trade. Notions like 'attention span', 'focus', 'intelligence', 'reaction speed', 'memory' or 'personality' became pervasive in the vocabulary of industrial relations.

The other major strand in the study of labour was scientific management. Initiated by Frederick Taylor in the United States, scientific management represented a family of organisational ideologies and techniques of analysing the labour process for maximising efficiency and productivity directly on the shopfloor.¹⁶ Taylorism involved a wide range of scientific disciplines, including engineering, industrial psychology, ergonomics and physiology. Its varieties – like the Bedaux System in Britain, Fayol's system in France or German industrial rationalisation – penetrated the walls of the American, French, Soviet or Japanese factories.¹⁷

The aim of scientific management was straightforward: the elimination of workers' wasteful movements and soldiering. It relied on the fragmentation of the labour process into discrete tasks, which could be timed in order to identify the inefficient uses of a worker's body. By strictly separating conception from execution and by transferring authority from foremen to managers and engineers, scientific management was disruptive for the old shopfloor hierarchies. Nevertheless, in the eyes of many capitalists and policy makers, the disruption was worth the risks. In Taylor's vision, the transition to the piece-rate system and the increase in wages that would follow the increase in productivity were seen as sufficient foundation for a generalised behavioural transformation of the working class.

The model of personhood with which Taylorism and its subsequent historical variations operated was a worker who was completely disembedded from his or her environment – in his famous terms, a 'gorilla' that the managers could train to always work more, faster and better. There was an assumption of flat, ahistorical rationality of all actors involved in the production process. It was the vision of a historic bloc in which social harmony would be the result of a willing cooperation between workers, managers and capitalists. It produced an

¹⁶ For a detailed account of the emergence of Taylorism as a dominant management ideology and as a system of producing knowledge about the labour process, the reader can consult Kanigel 1997 and Nelson 1992.

¹⁷ See Nelson 1991.

unquestioned understanding of shopfloor relations that to this day has rendered any questioning of capitalism problematic.

In its aims and intentions, Taylorism represented a tactic to push industrial modernisation forward but erase its class struggle component. Fordism functioned not as a simple extension of Taylorism to the level of everyday life but as a clear recognition of the fact that nothing happens solely on the shopfloor. The innovation of Fordism was to explicitly link the rationalisation of production to a model of social reproduction that involved cheaper products and higher wages, which would allow workers to achieve a rising level of consumption. An increasingly dominant model of corporate paternalism integrated visions about housing, education, regulation of sexuality, religion, and closely knit working-class communities, whose morality could be supervised and policed by the company's men. As Gramsci acutely observed, by intentionally creating a historic bloc around the idea of a capitalist rational social order, Fordism attempted neither more nor less than a 'passive revolution', which was supposed to produce not only cheaper goods but also a specific kind of subject.

Scientific management was subjected to harsh criticism by the unions and in Western European leftist circles for its tendency towards de-skilling, for the over-empowerment of management at the expense of the labourers, and most importantly for the fact that an increasing productivity would not be used to improve workers' living standards but the share of capital.¹⁸ Its 'scientific' character was also challenged either at the level of management ideology, or at the level of concrete industrial practices and relations.

At the beginning of the twentieth century, resistance against Taylorism was widespread. In the United States – Gramsci's case study – all major trade unions staunchly contested the introduction of Taylorism in the factories. In the United Kingdom, Charles Bedaux, an eccentric entrepreneur who was a member of the Taylor Society, founded one of the first consultancies for efficiency in industry and administration.¹⁹ Nevertheless, scientific management was strongly opposed by traditional-humanist elites on intellectual grounds as diverse as those of Christian ethics or Fabian socialism. State-led rationalisation of production, with the unions' reluctant consent, led to the adoption of scientific management in inter-war France. However, massive strikes against its implementation hit Renault in 1912-1913. Moreover, although it was strongly

¹⁸ The classic overview of the concrete consequences of scientific management upon factory organisation in the twentieth century is Braverman 1998 [1974]. Braverman's book became the standard reference for a whole generation of historians and sociologists who focused on how science and technology as ideological forces become at once part and parcel of capitalist hierarchies and their driving engines. This strand of scholarship convincingly showed how the reification of people that necessarily accompanies commodity production is practically realised within the work process itself.

¹⁹ Bedaux Britain would constitute the foundation of 'the big four' consultancy firms that dominated the European market until the late 1960s.

advocated by the French engineers, who adhered almost without reservations to its scientific ethos, it was rejected by many employers, who felt they would lose control in the workplace to the managers.

In Spain, the adoption of scientific management was not only delayed by backwardness, anti-modernist stances and lack of trained specialists, but also opposed by the unions and Catholic involvement in social reform. After the end of the Civil War, Taylorist ideas were pushed ahead by a top-down industrialisation policy and by the advancement of engineering as a fundamental pillar of Francoist corporatist vision.²⁰ Vertically integrated unions and specific regulations kept labour unrest at bay during the 1940s, but scientific management was coming under attack again in the 1950s and 1960s, when human relations organisational ideology emerged as a solution to the crisis of industrial relations. In Italy, Giovanni Agnelli, the head of FIAT, tried to use the idea of rationalisation as a foundation for a new social contract with the workers. His move was directed against the increasing militancy of Italian labour, which culminated in the occupation of the factories by the workers' councils in 1920.²¹ The necessity of co-opting subaltern classes in the politics of the ruling classes, which stands at the foundation of Gramsci's notion of 'hegemony', as well as at its limits, could hardly become more explicit than in Agnelli's attempt to introduce a co-operative system of management and in its immediate rejection by the workers.

In Germany, Taylorism was initially criticised as 'non-scientific', 'uncritical' or 'socialist', especially when it came with Fordist-inspired extensions in the realm of social reproduction. However, after the First World War, scientific management techniques had been adopted by virtually all major German industrial conglomerates – Bosch, AEG, Siemens, Auer Electric Company and Krupp. In several economic branches like the chemical, the electromechanical, the machine-building, the automotive and the iron and steel industries, scientific management rapidly became the dominant ideology and brought in its trail a new scientific vocabulary and measurement techniques. The consent of the unions to the sweeping German rationalisation movement was ensured only by sheltering them within a corporatist organisation of labour that was still centred on a hierarchical tradition of *Handwerk* and guaranteed the stability of industrial employment for most skilled workers.²²

²⁰ For a detailed account of the competition and mutual nourishing of the two management traditions – scientific management and human relations – in most of Europe and in the United States, the reader can consult Guillén's 1994 synthetic book. For an analysis of the relationship between the idea of 'national redemption' and engineering in the Francoist societal project see Camprubí 2014.

²¹ See Quintin Hoare and Geoffrey Nowell Smith's General Introduction to Gramsci's 1971 edition of the *Prison Notebooks*.

²² See Guillén 1994, p. 121. According to him, 'the proportion of skilled workers in total industrial employment remained roughly unaltered between 1900 and 1930 at 49 percent, in spite of the extensive implementation of scientific management and Fordism'.

In 'Americanism and Fordism', Gramsci revealed his own fascination with the potential of American industrialism but questioned the very possibility of resolving labour conflicts within capitalist productive relations. Consequently, what Gramsci was really interested in was the progressive revolutionary potential of the rationalisation of production. His analysis was not singular, but emerged as part of an intense contemporary debate on the left in the context of the Second International, a period when the October Revolution and the economic and social fractures following World War I were perceived as certain signs of the imminent collapse of the capitalist mode of production. With the concept of 'hegemony', Gramsci attempted to grasp the relationship between the shopfloor and the social fabric in which it was embedded, the possibility of making this relationship part of the revolutionary tactics and strategy, and what role it played in the classical Marxist conundrum of the suitability of revolutionary action in societies where capitalism had not sufficiently matured.²³

Most importantly for our discussion, the Soviet Union itself became a laboratory for experimenting with the historical possibility of state-directed capitalist development aimed at socialist construction and communism in the aftermath of the October Revolution. An analysis of 1920s' Soviet industry reveals it as the field of struggle between different visions of what labour should achieve, and how, in the context of socialist construction. The planned harmonisation between the scientific organisation of production, productivity and labour discipline was at the core of these struggles.²⁴

In the Soviet Union, the technical intelligentsia emerging through one of the most radical processes of social mobility in history was fundamentally linked to utopian visions of progress through technological advancement and hyper-rationalisation. The revolutionary process provided this technical intelligentsia with a 'generational location' in Mannheim's sense, which further produced a collective 'mode of thought and experience, and a characteristic type of historically relevant action'.²⁵ Starting with Taylor himself, scientific management practitioners everywhere were positioned in a particular way in the techno-scientific hierarchy. While the scientific field constituted around the European science of work brought together laboratory scientists – from nutritionists to physicists or psychologists – Taylorism promoted a different type of intellectual, whose practices and knowledge production instruments were

²³ The concept of 'hegemony' was first used in relation to the 'dictatorship of the proletariat' by Lenin and Plakhanov, long before Gramsci made it into an analytical concept for deciphering the specificity of bourgeois power. As part of the Bolshevik debates, it refers to the problematic alliance between the bourgeoisie and the proletariat against Tsarist absolutism and to the necessity that the proletariat become the hegemonic force in that particular struggle. Lenin 1977 [1966]; see also Anderson 1976.

²⁴ Shearer 1991.

²⁵ Mannheim 1952 [1923].

embedded in factory life. More often than not, they were 'self-made mechanical engineers impregnated by the so-called shopfloor culture'.²⁶ To this, Soviet engineering would add the experience of the war economy and planning, militarised factories and scarcity of resources. The generational dimension should not be underestimated when analysing the relationship between the adoption of scientific management and the emergent dominance of engineering.

The Bolshevik project was founded on the assumption that rationalisation of production could be extracted from its close relation with capitalism and placed in the hands of the state, ideally as the leader of a movement initiated by workers themselves. Once production is absorbed at the core of the state, the need to enforce factory discipline coincides with the need to ensure workers' consent to the Bolshevik rule. In other words, production becomes the site of struggle for hegemony par excellence.

The debates between different factions of the Bolshevik party crystallised into three broad intellectual positions. The most famous line of thinking has been associated with Aleksei Gastev and the founding of the Central Institute of Labour in Moscow (Tsentralnyi Institut Truda), which came to be known as the 'citadel of socialist Taylorism'. Gastev was the promoter of an extreme form of scientific management, which combined a religious admiration for Marx with an equal veneration for Henry Ford's practical ideas. Based on his cult of the machine age (to which he composed poems in his youth), Gastev advocated the setting of all work norms on the basis of chronometry and the complete standardisation of workers' movements. Economic centralisation was going to bring to scale Taylorist basic principles: the standardisation of both products and labour process, the fragmented analysis of job requirements, task simplification, speed-ups and various piecework schemes, including the differential pay rate that was central to European capitalist and socialist industrial development alike.

The ethos of scientific discovery dominated the systematic observation activities on the shopfloor. Time-and-motion studies became part of the normal life of major industrial units, with managers, engineers and scientists moving around the workers and equipment. The sight of their stopwatches, motion-picture cameras and slide rules pushed enthusiastic communists and experienced skilled workers to work faster and pay more attention to the use of their bodies, while at the same time, it made others slow down in order to keep work norms more manageable.

As a leftist reaction to Gastev's work, Platon Kerzhentsev founded the 'Time League', an organisation based on the idea of spontaneous self-discipline and on workers' enthusiasm for rationalising the production process by themselves. Placing the leadership of these initiatives under Komsomol, the

²⁶ Guillén 1994, p. 15.

Communist Party Youth,²⁷ Kerzhehtsev's intent was to undercut the emerging power of the new techno-scientific elite and open a space for the direct control of the shopfloor by the workers. In the wake of the 'Time League', countless teams of young labourers engaged in a systematic attempt to attain the impossible: an endless process of eliminating any wasteful movement or deficient use of raw materials.

But it was Stanislav Strumilin's line of thinking that would be embraced by Stalin in the implementation of the first Five-Year Plan. Strumilin was both against the 'enthusiasm' of the 'Time League' and against Gastev's Taylorism because they did not take into account the biological limitations of the 'human machine', its need for rest, leisure and replenishment. He argued that the 'rationalisation of leisure' was as important for productivity as the 'scientific organisation of labour'. His vision relied both on the European science of work and its emphasis on successful energy transformation, *and* on a more sociological line of thinking that paid equal attention to the reproduction of labour and can be traced back to Marx's concept of 'living labour'.

What was really important in Strumilin's understanding of the labour process was the fact that workers' 'speed', 'accuracy' or 'force' were not taken for granted as natural characteristics. Rather, they possessed a certain elasticity, so they could be learned, improved and expanded. On the basis of Strumilin's ideas, planning could be oriented towards *future* levels of productivity, without simply taking the present possibilities as a fixed reference point. Thus, the foundation of socialist planning became the institutionalisation of what Stephen Hanson calls 'planned heroism', the idea that rational linear time can ultimately be transcended altogether through *the same* practices that Taylorism entailed, only elevated to a new level by the workers themselves.²⁸ The five-year plan achieved in four years or the one-year plan achieved in 11 months became expressions of compressing time through a combination of draconian time discipline and workers' desire to subject themselves to this discipline, under the ontological assumption that the 'normal' standard of human capabilities is historically set and can be infinitely expanded towards the future.

Since, through redistribution, an increase in productivity would ultimately benefit society as a whole, the rationalisation of production could be understood as a neutral historical force, which could be harnessed for revolutionary aims. This was made clear by Lenin as early as 1919, when he showed his support for the adoption of an individual remuneration system, and strongly argued that it could be disconnected from capitalist rationales and used for revolutionary advancement. Nevertheless, there was a clear tension between the individual labourer, who was ultimately the final unit of planning, and the

²⁷ Psychotechnics, through its chief proponent, Issak Spilrein, had a problematic relation with both of them. It would be banned in the mid-1930s, during the period of the Stalinist Great Purges.

²⁸ Hanson 1997.

‘collective worker’ as the bearer of a new historical possibility. Planning was seen as the solution for this contradiction. It was going to bring the scientific organisation of work promoted by Gastev and Strumilin to scale, transforming the whole economy into the equivalent of a Fordist factory, with tasks clearly segmented between enterprises and industrial branches. The next section will focus on the Romanian sciences of labour and on how they were impacted by the implementation of planning after the Second World War.

From nation-building to hidden reserves of productivity

The rationalisation movement that swept the world of labour in the first part of the twentieth century was echoed by parallel developments in inter-war Romania. Like elsewhere, the sciences of labour were shaped by the same need to safeguard a fragile industrial peace by depoliticising the shopfloor, and by a similar tension concerning the location of this type of science: the laboratory or the shopfloor. They were pushed forward by two contradictory forces: on the one hand, a top-down industrialisation dominated by an ethos of ‘Romanianisation’; on the other hand, the increasing domination of foreign capital over the Romanian economy, channelled through the presence of multinational corporations on the Romanian territory.

The Romanian interbellum period was marked by the fragility of the new state and by its inability to articulate a coherent political project out of the fundamentally different trajectories of its main provinces.²⁹ In the 1920s, Greater Romania had to integrate several unevenly developed territories, industries and bureaucracies, and a population with an alarming proportion of ethnic minorities, who were more educated, more skilled and more ‘modern’ than the Romanian majority. This is why the labour question in Romania could never be separated from processes of nation-building and state formation. Thus, the idea of rationalising economic life in its entirety was a direct response to three entangled issues: the problematic incorporation of markets, industries and ethnic minorities that came with the territorial gains of the country in the aftermath of the First World War; the social and economic consequences of the Great Depression; and the increasing politicisation of the shopfloor as a reverberation of the October Revolution.

Before World War I, the Old Kingdom was a high immigration country where representatives of the Ministry of Labour complained that ‘things went so far with using foreign labourers that the popular language was changed and people used to say “German” instead of “mechanic”, “German woman” instead of “governess”, “Serbian” or “Bulgarian” instead of gardener, and “Hungarian”

²⁹ Livezeanu 1995; Case 2009.

instead of “servant””.³⁰ To prevent unemployment and to solve the problem of the allocation of labour in a more efficient manner, a law for the organisation of labour placement was issued in 1921, followed by the founding of the ‘Placement Offices’ in 1922. Again, the measure had to do as much with industrial employment as with the national problem and with the effort to form a Romanian workforce in the cities.

Besides the heated debates around the ‘Jewish problem’ – a broad field of debates concerning the Jewish population’s access to Romanian citizenship, the struggles of creating a Romanian industry were doubled by the dominance of the trades engaged in by the newly added Hungarian and German minorities in Transylvania and Bukovina. Although ethnic quotas for factory personnel and apprenticeships were slowly generalised in the provinces, factory owners managed to go around these legal provisions by employing many unskilled Romanian workers and keeping the skilled and better-paid positions for the Hungarians, Germans and Jewish ones. This solution only reinforced historically produced hierarchies and sharpened ethnic conflict by extending it into the industrial realm.³¹ Vocational education was also a rather limited success of the Romanianisation of the labour market. For a while, ethnic quotas did indeed encourage the Romanian peasants to send their children to town to learn a craft and kept state officials’ hopes for a ‘truly’ Romanian workforce alive. Nevertheless, before the Second World War, the figures for apprenticeship were still looking grim for the Romanian nationalists.

This wave of policies promoting the ‘Romanianness’ of the labour force accompanied the national liberal ideas of fiscal protectionism and ‘nostrification’ – the encouragement of industry founded by Romanian citizens – that constituted the backbone of the inter-war top-down industrialisation project.³² However, the politics of nostrification were weak in the face of the crippling consequences of the First World War and the hunger for foreign capital produced by the reconstruction effort and by the fluctuations of the national currency. American, British and French corporations penetrated and ended up dominating various economic sectors, from oil production to communication networks, railways and banking. Part of an export-oriented, peripheral economy, many emerging industrial branches came to rely on Western expertise. This expertise included the ethos of scientific management, as well as a strong preference for employing the US-led statistical advancements of the time.

Scientific management made its way into the Romanian factories just before the First World War,³³ when courses in industrial organisation were also

³⁰ Ministry of Labour 1940, p. 197.

³¹ In 1934, the state officials tried to counteract the managers’ actions, by imposing a new quota of 80% Romanians in every category of industrial and commercial employment, Tașcă 1940.

³² Turnock 1986.

³³ According to some sources, in a cotton weaving factory in Pitești, in the southern part of Romania.

introduced for the first time at the higher education level. After the war, it received a new impetus through the founding of the Romanian Institute for the Scientific Organisation of Labour by an interdisciplinary team of scientists – economists, sociologists and psychiatrists. The Institute published its own *Bulletin* and provided a space for systematic collaboration between scientists and transnational capital through the largest manufacturing and mining companies.

The members of the Romanian Institute for the Scientific Organisation of Labour were part of a national intellectual elite whose generational scientific ethos was to be fundamentally linked to the post-unification processes of nation-building and state formation. The aspirations of the cultured bourgeoisie were moulded within the crucible of a particular historical mission, the mission of realising the vision of Greater Romania as an organic harmonisation of market interests, central and local bureaucracies, and social well-being. Under the motto ‘national development without social conflicts’, the Romanian elites were in search of a scientific vision that could link nation-building to the labour question *and* match the necessities of the state administration to the educational system. Applied psychology – or psychotechnics – was the main answer to this search.

The principal aim of Romanian psychotechnics was a rational allocation of manpower and an effective solution to the issue of personnel selection. Several books focusing on the analysis of technical aptitudes and their relationship to personnel selection appeared in that period, among them Florian Ștefănescu-Goangă’s *Selecțiunea capacităților și orientarea profesională* (The selection of capacities and professional orientation) (1929), Liviu Rusu’s *Aptitudinea tehnică și inteligența practică* (Technical aptitudes and practical intelligence) (1931), and Nicolae Mărgineanu’s *Psihotehnica* (Psychotechnics) (1943). The end of the 1930s also saw the publication of several journals dedicated to applied psychology: *Jurnal de psihotehnică* (The psychotechnics journal) (1937) and *Revista de psihologie teoretică și aplicată* (The journal of theoretical and applied psychology) (1938).

The field of Romanian applied psychology was heavily influenced by the German rationalisation experience, which was seen as the most efficient way to fight backwardness and chronic underdevelopment. The founder of the first psychotechnical institutes in Cluj and in Bucharest – Florian Ștefănescu-Goangă – was educated in Leipzig under the guidance of Wilhelm Wundt, one of the founding fathers of psychology as a discipline, who also had a deep interest in physics, physiology and philosophy. Moreover, Ștefănescu-Goangă was a state secretary in the Ministry of Public Education, a status that allowed him to introduce the psychological charts in schools, to promote psychological testing in public administration, and to organise the first industrial psychological office at the Railways Company.³⁴

³⁴ Cîrjan 2014.

Personnel selection, training and testing were intrinsically linked to the idea of a general economic plan, with specifications regarding the regional division of labour and the needs of the bureaucracy. With the advent of fascistic movements and ideologies, this program would find its extreme expression in the emergence of a corporatist vision of the Romanian future, subjected to the rule of a single party that would engineer a way out of the backwardness assumed to be inherent to the structure of the inter-war capitalist world economy. The aim of this form of social engineering was an extreme efficiency, a total elimination of waste, and a complete domination of the country's resources by bureaucratic rationality.³⁵

For the state bureaucracy as well as for the emerging industry, a scientific understanding of the 'best way' to develop and to function on a daily basis became an important dimension of the Romanian version of a 'passive revolution'. The explicit need for the sciences of labour to function as a guarantor of industrial and social peace was met by a line of thinking associated with a particular type of intellectual biography, one that directly connected the Romanian laboratories and shopfloors to American universities through the Rockefeller Foundation fellowships. Consequently, a second generation of Romanian experimental psychologists would develop a harsh critique of Florian Ștefănescu-Goangă's school, attacking the possibility of translating the laboratory results of its studies into coherent shopfloor politics. They appealed to the American quantitative tradition, centred at the time on the statistical analyses of individual psychological aptitudes through the administration of paper-based tests.³⁶ For the state, paper-based tests were a cheap, easy-to-standardise material infrastructure that allowed better coordination between the educational system and the economy by 'providing a common system of reference' for every individual's educational and professional trajectory. They were explicitly seen as the expression of a 'natural' meritocratic order, and as an instrument for enabling social mobility as an alternative to radical political change, especially for the ethnic Romanians. Statistical techniques like correlation models and factor analysis carried with them the promise of easy generalisation, of independence from context, and of the discovery of those latent aptitude and personality traits that could account for complex psychological configurations and for a holistic understanding of 'the worker' as a scientific object.³⁷ Moreover, they could be associated with analyses of political

³⁵ The top-down, technocratic approach to industrial development and education culminated at the end of the 1930s with the proposal – never followed through – of a Romanian 'University of Labour', imagined as 'the brain' of a fully planned system of allocating labour to industry and offices according to measurable and quantifiable necessities of both the state and the market. Georgescu, Ion 1938, 'Universitatea muncii', *Jurnal Psihotehnic* 1: 1-13, quoted in Cîrjan 2014.

³⁶ Cîrjan 2014.

³⁷ The history of statistical techniques like correlation and regression notes their rootedness in genetic research associated with racial purity and biological improvement. Although correlation

attitudes in order to predict and prevent workers' radicalism.³⁸

The Romanian rationalisation debate conveyed a sense of historical urgency coupled with a clear Gerschenkronian awareness that in a backward country, both industrial development and a general efficientisation of economic life must come from above.³⁹ The obsession with the West was indissolubly linked to any notion of 'independence' the Romanian elites produced in the twentieth century, as gaining independence meant 'making itself intelligible and recognisable to the West'⁴⁰ and, of course, opening the gates to Western capital. This obsession further shaped the debate around the very nature of Romanian capitalism. The most important questions were: Who (read what class) was going to be the agent of change in Romania? and, Where was this change going to come from – from the West or from the Romanian elites themselves?

But in the aftermath of the Second World War, change came from the East. Under the supervision of Soviet counsellors and Red Army officers, the Romanian Workers' Party⁴¹ embarked on a convoluted effort to take over the economic and political life of the country.⁴² In 1947, the first exclusively communist government was installed. Its crucial tasks were the nationalisation of the means of production and of the financial system, the implementation of central economic planning, and the start of an intensive and rapid program of industrialisation. With the implementation of the first five-year plan in 1951, the Stalinist 'revolution' in the organisation of production was going to take over the shopfloor and the technical universities of Eastern and Central Europe. The intensification of work was seen as the only possible response to a systemic shortage of capital and raw materials, as well as to the backward technology of Romanian industry. Consequently, the vision of socialism as a scientific endeavour was linked to politics of productivity very similar to the capitalist ones, both in form and in content.

The scientific perspective on labour, production and productivity that shaped the beginnings of Romania's socialist industrialisation can be linked to the twentieth-century trajectories of Taylorism and of the European science of labour, both through their German and American inter-war intellectual connections, and through the sudden transfer of the Soviet interpretation of Taylorism into the Romanian factories. Time and motion studies became central to factory life. They were conducted by teams led by members of the technical club of the factory, economists, engineers and university professors, who were

is often seen as preceding regression in a logical order of learning statistics, Karl Pearson developed his correlation coefficient by finding a mathematical expression for Francis Galton's general regression idea as it appears in his research on heredity. See Stanton 2001.

³⁸ Cîrjan 2014.

³⁹ Gerschenkron 1962.

⁴⁰ Jowitt 1971, p. 21.

⁴¹ The name assumed by the Romanian Communist Party between 1948 and 1965.

⁴² The Red Army remained on the Romanian territory until 1958.

segmenting the production process into discrete tasks, registering the time cost per operation, and constructing detailed diagrams of workers' bodily movements. Technical offices were organised in every factory while quality, speed of production and economy of raw materials became the focus of many production meetings.

Unlike in the Soviet Union, during the first years of planning, scientific management was not part of the public discourse in Romania. Instead, the factories became acquainted with the 'Soviet methods of organising production' and the conference halls of the main industrial units often witnessed members of ARLUS⁴³ – The Romanian Association for the Strengthening of the Relationship with the Soviet Union – lecturing the Romanian workers, engineers and managers about the best way of conducting the labour process, from the layout of the workplace to detailed bodily movements. Socialist competitions, factory newspapers, and the anecdotes, caricatures and moralising stories strategically placed at the 'red corner' of the factory propagated a cult of labour heroism and a bashing of slackers as workers who lacked 'the advanced consciousness of the socialist proletariat'.

The combination of Taylor-inspired models of efficiency and labour heroism – that we can trace to Strumilin's ideas in the Soviet Union – was articulated through the fascinating notion of 'hidden reserves of productivity'. 'Hidden reserves of productivity' was an expression of the state officials' belief in the potentially infinite productive capacity of the factories. It directly connected workers' performance to factory productivity and to economic growth. While, in theory, the possibility of a planned economy required that all three of these be anticipated, this anticipation was based on the explicit assumption that the productive capacity of a factory was *unknown* at the time of planning. At the beginning of every five-year plan, every worker, every factory, and the economy as a whole held reserves of productivity that were hidden not only from the planners, but also from the workers and managers. Although by and large the parameters of production were set in advance, they were the direct result of the idea that the shopfloor bore a yet-undiscovered potential for increasing quantity, speed, quality or efficiency through a better organisation of the production process. When trying to find practical solutions to the problems raised by the execution of the plan, managers, engineers and workers alike were embarking on a process of discovering the real capacity of their factories, of their own bodies and of their own creativity. Thus, the increase in the plan figures was dependent on an endless expansion and improvement of workers' *current* practices.

The 'hidden reserves' of the industrial units represented precisely this possibility of infinite growth of human capabilities. The process of their discovery was central for the implementation of planning.⁴⁴ Ideally, it was

⁴³ Asociația Română pentru Strângerea Legăturilor cu Uniunea Sovietică.

⁴⁴ See also Cucu 2014.

supposed to function according to scientific methods and to produce scientifically sound results. Following in the footsteps of the Soviet experience, the model of personhood on which the science of labour was predicated and the disciplines that came to be able to claim 'scientificity' in the new context fundamentally shaped the language, the practices and the political imaginary around production.

The way in which the worker was constructed as a research object was different in socialism. Taylor's 'trained gorilla', for whom increased earnings would represent a sufficient incentive to work more, better and faster, was far from the ideal subject of socialist construction: a worker endowed with historical consciousness and political aspirations, willing to sacrifice his present well-being for a collective better future. At least, this was how the Party officials justified keeping workers' real wages low and continuously increasing their workload.

The ideal socialist worker was an innovator, a dynamic participant in the rationalisation of the production process. He was the embodiment of a historical figure that was actively undercutting factory hierarchies, the distance between conception and execution that Taylorism entailed, and the difference between workers' embodied knowledge and scientific pursuits. Thus, the socialist workers were not simply going to be observed and analysed by teams of scientists. They were to become increasingly self-reflexive, to investigate their workplace with an eye to standards, models and best practices, and to subject their own bodies to systematic scrutiny. With techniques of Soviet inspiration like 'self-photographing', timing of their own movements and critical analysis of their own routines, they were to appropriate the scientific gaze of the Taylorist managers for their self-exploitation.

The consequence of this model of personhood was that psychotechnics and applied psychology were immediately banned at the implementation stage under the assumption that individual psychological traits would simply become irrelevant with the building of a new society. All those qualities that inter-war psychologists had been seeking in order to create an ideal Romanian workforce – attention, focus, capacity to solve problems – were no longer considered natural characteristics of the individual, but rather the outcomes of workers' and managers' efforts to rationalise the production process, and the results of their advanced political consciousness.

The employment biography replaced psychological testing everywhere. It accompanied the unprecedented wave of social mobility that followed the change of the regime and the first wave of socialist industrialisation and recorded individuals' education, professional trajectory, army service during the war, previous and current political affiliations, any suspicious activity, marital status, date and place of birth, parents' social class with details about their economic situation, and the properties held in the city and in the countryside by the workers themselves. The employment biographies also contained contacts for references at every step of the employee's trajectory – the village, the school,

the army and the previous addresses – and were accompanied by characterisations, both from the previous employer and from someone from the factory where the worker wanted to get employed. Unlike the tests used by psychotechnics up until nationalisation, employment biographies dealt not with individuals but with a dynamic, embedded, witness-based model of personhood, which needed a different process of discovering the best fitted man for the job. Most importantly, it was a model that directly connected workers' biographies and professional trajectories with Romania's convoluted history around the Second World War.

All these trends lead to the observation that the 1950s' notion of 'hidden reserves of productivity' was articulated as a political concept, coined around the workers' willingness to always work more, faster and better. However, the politicisation of productivity and the expectation that the workers not only would consent to their exploitation but would also initiate it, intensify it and expand it through selfless acts of innovation, rationalisation and intensification of work was short-lived.

As the second section of this chapter showed, the evolution of labour sciences in the twentieth century was a direct response to a generalised lack of factory discipline that accompanied industrialisation processes everywhere.⁴⁵ Romania was no exception. Socialist industrialisation would proceed with a severe lack of capital and labour, with an out-of-control instability of the local workforce, and with an extremely poor control of workers' unpunctuality and absenteeism. As in the Soviet Union, labour shortages, especially of skilled labour, were endemic in the new socialist economy, and the factories needed to constantly appeal to a labour force commuting daily or seasonally from neighbouring villages. Taming the rowdiness of this rural labour force and making these workers more and more productive became the most important issue on the agenda of the new economic executives.⁴⁶ And they failed.

In shortage economies like the ones of East-Central Europe,⁴⁷ factory indiscipline led to systematic breaks in production, which had broader implications than in capitalism. These implications were directly political. First, the impossibility of ensuring a continuous productive flow meant that authority over the workers was also fragmented and sporadic. Second, workers' bodies could be employed in different activities and participate in different spaces which escaped state control. Third, in a society dominated by a simplistic adoption of the base/superstructure understanding of the world, the forces of production were unable to sustain the social edifice. And fourth, making workers not only consent but actively take part in their exploitation on the shopfloor proved to be an impossible challenge. In its relationship with Romanian labour,

⁴⁵ The classic reference for the use of working time within the broader discussion about factory discipline in the Soviet Union is Filtzer 1996. See also, Siegelbaum and Suny 1994.

⁴⁶ Cucu forthcoming.

⁴⁷ Kornai, 2007 [1992].

the socialist state itself emerged as a fragile state, a relation of production that incorporated the contradictions of functioning simultaneously as a creator and manager of social production processes and as a 'workers' state'. In Yves Cohen's words, 'the regime of industrial efficiency was a part of the political regime of state efficiency. In particular, managing industry meant managing the public sphere, as well as manufacturing goods'.⁴⁸

Consequently, after the end of the first five-year plan, the discovery of the 'hidden reserves' of the industrial units would return to its status as a highly scientific enterprise, taken out of the realm of workers' 'advanced consciousness' and firmly placed in the hands of managers and university professors. It would become an essential pillar in the rise of a Romanian 'rule of experts' and, once again, would entail a systematic depoliticisation of the shopfloor. Time and motion studies came to be conducted only by engineers and other members of the technical staff, while the distance between conception and execution was officially reinstated in Romanian factories. Self-photographing virtually vanished from the shopfloor. By the late 1950s, employment biographies had already disappeared from the factories, being replaced by simple mentions of workers' education and skills. Aptitude testing made a spectacular return in the socialist planning of the labour force, together with the notion of 'human capital'. It became central for the Romanian educational system at all levels, especially for technical education, state bureaucracy and the army.⁴⁹

Psychotechnics became again central to the state logic. The same promise of harmony between the allocation of employment and the educational system on the basis of meritocracy dominated the 1960s as it did the interbellum years. But the object of this scientific endeavour was different both from the statistical individual of the inter-war period, and from the post-war worker, with his 'suspect' biography and politicised network. Numerous studies of the workplace and professional monographs were the outcome of a new methodological approach: one that regarded the individual as embedded in her socio-professional context. Complex observations of individuals in their workplaces were conducted, including the investigation of the ways in which workers responded to various requests, to the intensification of work speed, or to specific changes in the layout of the shopfloor. Industrial sociology offices also emerged in the factories, focusing on the endemic fluctuation of the labour force and on the everyday life of the commuter, the central figure of Romania's socialist industrialisation.

Many of the inter-war specialists were 'recovered' by the regime and became central to the implementation of testing in schools and universities. They

⁴⁸ Cohen 2004.

⁴⁹ Applied psychology would be banned only until 1952, when the central laboratory of the Railways Company opened again, followed by six other regional laboratories, as part of the Company policlinics in the main cities of the country. By 1956, all prospective employees of the Railways Company were subjected to a psychological exam.

would join efforts for the holistic study of the 'industrial man', both at his workplace and at home. Under their leadership, in 1974, the Romanian Academy advanced a proposal for the founding of ten interdisciplinary laboratories, with specialists in anthropometry, personnel psychology, engineering psychology, sociology, pedagogy and ethnopsychology.

'Ștefan Gheorghiu' Academy, an institute for the political training of the Party elite founded in the 1950s, was also deeply transformed by this technocratic movement. In 1972, the first generation of 'leaders in production, trade and agriculture' graduated from this institution. The graduates were factory directors, engineers and accountants working in the socialist factories, whose dissertations tackled concrete problems in production in their own industrial branches. The 'Soviet methods of production' were no longer part of the training of this new generation of economic executives. Instead, Western managers, engineers, psychologists and economists were called to share their theoretical and practical experience with the organisation of production in capitalist factories in France, Germany or the United States.

The Romanian 1950s could be read as a particular form of industrialism, which promoted the plan as a synthesis of hyper-rationality with 'fantastic' elements⁵⁰ that made little sense from a narrow market-oriented rationality perspective. The technocratic movement that marked the 1960s would be the dying breath of the combination of labour heroism with Taylorist principles that was specific to the transposition of the Bolshevik project in East-Central Europe. It would also end the hope of rooting socialist hegemony in production through manufacturing consent directly on the shopfloor. This historical failure opens the space for an assessment of the location of science in the struggle for socialist hegemony, which I will turn to in the concluding remarks of this chapter.

Concluding remarks: Hegemony and the location of science

The twentieth century biography of labour as a scientific object reveals the problematic character of each of the three terms. Neither 'labour', nor 'object', nor 'science' had the same meaning across time and space. The emergence of a scientific perspective around labour has not been a linear story of 'rationalisation' but rather a narrative of competing logics that marked industrialisation processes and shaped the institutionalisation of particular fields of knowledge and action across the globe.

In this context, factories themselves can be understood as scientific institutions of a particular kind.⁵¹ They have no clear boundaries: the

⁵⁰ Nove 1989 [1969].

⁵¹ I am using 'institution' here in the sense of a relational space within which fields of ideas and practices go through a process of 'institutionalisation', which involves the routinization of certain ways of doing, as well as forms of appropriation (sometimes monopolisation) of knowledge and

relationship between production and life, as well as the relationship between production and politics have always been crucial in defining what a science of labour is, what it should do, what language it should use, what object it should focus upon, and how much of a 'science' it is after all. Fields of knowledge and action have crystallised around the shopfloor only to see their core logics, assumptions and methods come under attack by complex shopfloor politics and by workers' attempts to integrate the labour process in their own lives. The factory represented the contested terrain of various scientific imaginaries, which went from despising the messiness of the shopfloor to imbuing it with an exceptional transformative power, one that would simultaneously swallow productive time and historical time.

And finally, as a unit of socialist planning, the factory was ultimately regarded as a perpetual mystery, a box of wonders with unseen and unforeseeable capacities for growth and improvement. Ideally, it participated in the establishment of an uninterrupted flow of goods, persons, materials and knowledge, with the plan for the national economy functioning as a scaled analogy of the Fordist enterprise, one that is able to bring together the realms of production and consumption in a coherent whole.

The argument of my contribution to this volume was that in state socialism, the field of scientific knowledge around work and productivity was primarily structured by a systematic crisis of authority in industry, which was the direct result of being unable to exercise continuous control over workers' bodies. As stated in the introduction, the role of labour sciences in the socialist hegemonic struggles can hardly be understood without unpacking their relationship with the workers' own ways of integrating industrial employment in particular logics of social reproduction and without understanding the fragility of the socialist hegemony as a class issue.

The success of the plan to bring factories together and subject them to a rational sequence of decisions and actions depended first of all on the creation of a new type of worker, socialised in a certain way, who was able to form a deep relationship with the machine and could become almost an extension of a technical function. From this angle, the worker ceased to be a *datum* and what was left was the process of her perpetual becoming. Building proletarians would have proceeded in a dialectical way, with Taylor's 'trained gorilla' as a first dialectical moment, the embodiment of the Hegelian freedom of the void upon which the triumphant New Man would have been built as the negation of the negation. The next step, placed into the abstract temporal horizon of communism, would have entailed removing the mediation of all the intermediaries – class, the state, ideologies – and would have allowed hegemony to be born in the factory, where the social character of production would have finally come to be seen as it was: direct and immediate.

However, this sketch of the evolution of labour as a scientific object illuminates from below the fact that Gramsci's 'hegemony' is not simply a 'world-view' that is imposed in a top-down manner onto the subaltern classes, with the help of institutions and manipulative discursive fields. It is, rather, a fragile recognition of the moral leadership of a certain category in a given social order, the kind of leadership that is in turn required for maintaining a system of economic dominance.⁵² It is a practical and transformative force that rearticulates existing cultural tropes of the dominant as well as of the subaltern classes and holds the social together in such a way that at the limit, this economic dominance goes unquestioned. Thus, this chapter can also be read as an attempt to show how early socialist factories were not the wombs of a new hegemony but the sites of its daily contestation and sometimes even its clear negation. And the reason is indeed what Gramsci would have taught us: founding politics on the recognition of the immediately social character of production was an impossible target in a class society.

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⁵² See also Ramos 1982.

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