"From Each according to Their Ability, to Each according to Their Need": Calorie Money and Technical Norms in Mid-Twentieth-Century Hungary

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The plight of the bourgeoisie in capitalist societies is to depend on the proletariat's physical capacities to labor, and labor productively. As the Hungarian saying goes, "The lord doesn't eat if the peasant doesn't shit." In the mid-twentieth century, the question of just how much the proletariat actually needed to eat to work effectively became a question of both scientific inquiry and public policy. The new field of nutrition science debated the relative importance of proteins, carbohydrates, and fats in a healthy diet and conducted surveys of regional and class-specific dietary habits to gauge consumption patterns. Economists argued over the validity of price indices used to estimate the average weekly food budget for working families, while labor unions mobilized in contract negotiations to raise workers' living standards. Meanwhile, work scientists and scientific management advocates devoted themselves to determining the physical and psychological conditions conducive to improving efficiency and productivity. In short, the health and strength of workers were subject to extensive scrutiny and public wrangling. It was biopolitics in high gear.

In Hungary during the interwar period, carefully calculated wages were understood to be the key to guaranteeing a productive workforce.

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Public health officials shared with their colleagues in work science a concern that wages be based on scientific assessments of the physiological and mental requirements of each and every job. Charts listing caloric requirements distinguished between the needs of different age cohorts and gender identities, but also stipulated the caloric needs of specific jobs. Tasks were assessed in terms of the proper handling of tools and posture at work. Studies of perspiration and oxygen intake during a task were also conducted, all in the service of greater efficiency and productivity. This is a familiar story from the histories of public health, nutritional science, and scientific management in countries across the globe in the mid-twentieth century. A less familiar story is the one I recount here, in which the measurement of energy expenditure in work is crucial to government policy. Over the course of a decade in Hungary, two wage systems were designed specifically targeting the use of labor power. The first, calorie money, was a short-term solution to keep workers properly nourished and hard at work in a capitalist economy in the midst of inflationary chaos. Initiated in February 1946, the policy of compensating workers with food in addition to their monetary wage lasted until mid-June, when it was recognized as a failure. The second example, technical norms, was a long-term project initiated by the socialist state to design norms based on workers' physical capacity in order to extract the greatest amount of effort most efficiently. Begun in 1950, the policy lasted well into the 1960s, although the cautiously calculated norms were honored more in the breach than in the observance.

The purpose of this exercise is twofold. The first is to situate the early socialist project in Hungary within a longer history of rationalization and scientific management in the first half of the twentieth century. Contrary to conventional wisdom, the transition from capitalism to socialism in the late 1940s was a gradual process, not a radical departure. Crucial features of the planning apparatus that had characterized the Hungarian economy since the 1930s were maintained and then expanded in socialism (Bojkó 1997; Lampland 2011). So, too, the design of wage systems by the new socialist state relied heavily on techniques to promote productivity long advocated by work scientists schooled in capitalism. Second, pairing an analysis of calorie money under capitalism with a study of technical norms in early socialism illustrates another continuity, this one conceptual. While we think of the term *labor power* as one of Karl Marx's analytic tools, in Hungary it is understood in very literal terms. More than simply rationing food in an emergency, calorie money was designed to

fuel the labor power that workers needed to perform their job. When measuring productivity, then, Hungarians would include metrics of energy exertion over time. This differs from standard practice in the United States and Great Britain, where productivity was judged solely on output/temporal unit. In other words, when work scientists assessed productivity on both sides of the Atlantic, they measured different features based on distinct understandings of what constitutes work.

Labor Power

One of the challenges of analyzing the history of socialist economies lies in distinguishing the analytic strengths offered in Marx's political economy from the Marxist-Leninist repertoire of historical materialism crafted by communist parties in Eastern Europe and the Soviet Union. Numerous scholars have wrestled with this problem. A somewhat different problematic arises when one considers the etymology of analytic categories Marx himself developed. I refer here to the notion of labor power, and its cultural valence in central Europe. Marx's use of the term *labor power* drew on a specific German conceptualization of what it means to work, an idea that has ramifications for how wages were designed in Germany and, I would argue, in Hungary.

Marx's debt to David Ricardo's labor theory of value is well known. A less familiar influence on Marx's thinking about labor power can be traced to groundbreaking studies in engineering and thermodynamics during his lifetime. Anson Rabinbach (1992, 79) quotes from Marx's notebooks to *Capital*, demonstrating his familiarity with the theory of machines characteristic of the French engineering tradition, as represented in the work of Pellegrino Rossi, a political economist "who used in the late 1830s and early 1840s the engineering term '*puissance du travail*' [capacity for labor] propagated by Navier, Coriolis, and Poncelet, and other pioneers of hydraulics and mechanics." Hermann Helmholtz, who first proposed the theory of the conservation of energy in 1847, was also well read in writings of French and British engineers. Helmholtz drew inspiration from Nicolas Léonard Sadi Carnot's work, citing "the Carnot-Clapeyron formulation of the *perpetuum mobile* principle to prove that the principle of conservation of *vis viva* [living force], familiar in mechanics, must hold for all natural systems (now necessarily systems of matter and force)" (Brain and Wise 1994, 55). In other words, energy was understood no longer as a substance but as a potential, a "capacity for

labor." Rabinbach chronicles a shift in Marx's thinking about labor that mirrors this shift in scientific understandings. "Until 1857, Marx took as his model of nature the *metabolic exchange of substances and forces*, which reflected both the pantheism and the 'metaphysical' materialism of his generation. . . . After 1859 Marx gradually redefined labor from a metabolic exchange of substances between man and nature to a conversion of forces" (Rabinbach 1992, 77).

The significance of this shift becomes clear when considered in relation to Richard Biernacki's valuable exploration of Marx's notion of labor power in *The Fabrication of Labor* (1995). In this fascinating comparative analysis of labor practices in the production of wool cloth in British and German factories of the latter half of the nineteenth century, Biernacki demonstrates that cultural differences between the two communities account for divergent practices of producing wool, such as the means of compensating workers, punishing strikers, and designing factories. It is a powerful argument for the constitutive role of culture in social history. One striking difference between the two groups of textile workers was how work was defined or, more specifically, how workers' contribution to the product was measured. In Britain, workers were compensated for the amount of yardage they produced in a shift; German workers were compensated for the actual movements of weaving itself—how often they shuttled the loom back and forth in the course of a day. This formulation bore a striking similarity to the way laboring was conceived in Hungary. As in Germany, work (*dolog*) was defined in Hungary by the activities enacted, not by the goods produced, as in England. (I elaborate this idea in Lampland 1995.)

Biernacki explains these differences on the basis of divergent social histories of production. In simplistic terms, betraying Biernacki's complex and subtle analysis, one could say that in England, the history of marketing textiles long predated the rise of wool (and cotton) manufacturing, so defining labor in terms of its product sold in the public square, that is, its material instantiation, made sense. In contrast, in Germany, among several other factors, Biernacki singles out feudal agricultural estates as the model for factory production, in clear contrast to the world of craft guilds in towns and cities. Feudal obligations, abolished in 1807 in Germany but continuing de facto until midcentury, left a strong imprint on labor relations, contractual forms of servitude that were absent in England and most of western Europe by this time (Brenner 1976). Hungary shared this legacy, abolishing feudal servile duties only in 1848.

The longevity of serfdom in central Europe might be a singular feature of this region's social experience. But Biernacki takes this insight into the cultural specificity of capitalist practices further. He argues that Marx adopted the concept of work Germans used in his analysis of British capitalism, to great effect.

> Marx himself believed that his greatest contribution to economic analysis lay in his elucidation of the sale of that singular asset he called *Arbeitskraft*, "labor power." The locution indicated that workers transferred not just "labor" to their employer, but the use of their labor capacity. . . . Marx's expression *Arbeitskraft,* it turns out, was adopted from colloquial German speech, although its equivalent in English, *labor power*, sounds stilted and bookish even to the academician's ear. In Germany the term functioned in the language of the streets as a description of wage labor long before Marx penned it in an economic treatise. (Biernacki 1995, 42)

Biernacki strengthens this argument by tracing Marx's use of the term *labor* and *labor power* in the early drafts of the *Grundrisse* and *Capital*, offering evidence that Marx did not adopt the notion of *Arbeitskraft* from liberal German economists who had already been using it in this period. In fact, an early version of his notion was *Arbeitsvermögen* (labor capacity) (Biernacki 1995, 283). It bears mentioning that the category of *Arbeitskraft*, or labor power (*munkaerő*), was also in wide use in mid-nineteenth-century Hungary. Complaints about a dearth of labor power were common in the decades after the abolition of serfdom, voiced by aristocrats and wealthy landowners whose former serfs refused to work for them. László Korizmics, a prominent critic in the debates after the abolition of serfdom, made this point explicitly in the late 1860s.

> "As to . . . conditions . . . on the Great Plain, in our opinion, it would surely be good for larger estates, even if they have the financial means to buy equipment, to think twice before setting up their farms to be managed by them alone. The major reason for this is that although it is difficult, one can still get labor power for land; on the other hand, for money one cannot get labor power in many cases for any price whatsoever, especially in the amount that immense estates would require." (quoted in Vörös 1976, 68; see also Kenessey 1868; Kautz 1877)

This conceptualization of labor power persisted, evident in German labor physiology and in time and motion studies well into the twentieth

century. In his analysis of the research conducted at the Kaiser Wilhelm Institute for Labour Physiology, Dietrich Milles identifies an important difference between the views of productivity advocated by Edgar Atzler in Germany and Frederick Taylor in the United States.[1] Atzler was of the opinion that gains in productivity had to be assessed in terms of energy consumption and fatigue, a crucial element that he believed was absent in Taylor's insistence on maximum efficiency. In the 1920s, "nutrition thus gained a key position in the basic concepts of German labour physiology and especially in its distinction from Taylorism. The analysis of energy consumption became the focus of this new orientation" (Milles 1995, 87). Max Rubner, another seminal figure in German physiology and nutrition at the turn of the twentieth century, shared this focus with Atzler. Paul Weindling's assessment of Rubner's presumably limited contribution to nutritional science post–World War I reveals a continued focus on labor power in Germany. "British and American nutritional scientists were markedly more innovative than the Germans who, like the physiologist Max Rubner, remained fixated on calories and the expenditure of energy" (Weindling 1995, 319). As I show in the discussion of technical norms, measuring the expenditure of energy will be crucial to designing norms in Hungary.

Calorie Money

As World War II drew to a close, Hungary's economy hit a tailspin.[2] The economy was burdened by heavy war reparations and the toll of maintaining Soviet army forces occupying the country. Pleas to the Allied Command in November 1945 for a short-term hiatus in paying reparations were rebuffed, forcing officials to find whatever means necessary to keep industrial production going (Botos 2006, 186). Food was scarce. A study conducted in 1946 reported a drastic drop in the nutritional health of the

1. An unfortunate consequence of the US focus on much of the study of scientific management is that Taylorism has been accorded a far more significant role in the history of labor physiology and work science than is warranted. As Rabinbach (1992) has made very clear, work science in France and Germany in the latter half of the nineteenth century was a thriving research field on its own, independent of Taylor's projects in factory management.

2. While the explosion of the post–World War I German inflationary spiral is well known, it cannot match the skyrocketing prices in Hungary after World War II. Rudolf Nötel (1986, 538) compares the two inflationary episodes in terms of the exchange rate of the dollar: "4.2 billion (10^{12}) marks in Germany post–World War I versus 5 quintillion (10^{30}) paper Pengős" in post–World War II Hungary.

population; the caloric value of food being consumed had decreased by nearly 37 percent in comparison to 1938 (Mártha 1946, 18). This prompted the government to consider ways to provide the industrial labor force with extra rations, calorie money being the eventual solution.[3]

Prior to the war, the assessment of caloric intake and workers' well-being was not the exclusive domain of public health officials. Economists and sociologists were just as apt as their colleagues in medicine and nutritional studies to cite data on caloric intake in debates over living standards.[4] In 1925 the Economic Research Institute's first publication on living standards—expressed as prices of items in the weekly food basket—stipulated specific nutritional requirements.[5] "Daily intake should be 15–16% protein, 17% fats, the rest carbohydrates. . . . The amount of protein must be included, no matter what, while fats and carbohydrates may replace each other if necessary" (*Magyar Statiztikai Szemle* 1925, 194). While Hungarian specialists in nutrition science had kept current with innovations in the field in the 1910s and 1920s, they had conducted few empirical studies of actual eating habits in Hungary. This changed in the latter half of the 1930s, when more and more studies were conducted, especially in rural communities (Biró 1937; Mészáros 1936, 1939). In one study researchers discovered that children's diets lacked crucial nutrients, despite what had been judged a decent daily regimen (e.g., Mészáros and Sajó 1937; Sós 1942).

Nutritional studies regularly included data on the caloric requirements of various occupations. In the League of Nations 1936 report on nutritional standards, 2,400 calories was considered the baseline for adult men and women "living an ordinary everyday life in a temperate climate and not engaged in manual work" (Technical Commission 1936, 13). A further

3. I have come across only two other examples of a monetary instrument being defined in terms of caloric needs. In his analysis of the calorie as a foreign policy tool, Nick Cullaher (2007, 352) mentions a proposal made by the governor of Michigan in 1920, suggesting that "the postwar system of international trade employ the calorie as a universal currency. A secure, expanding commerce, he explained, rested more solidly on units of sustenance than on the 'imaginary' value of metal." The other example concerned wages. "When Lord Shaw, presiding over a British commission of inquiry on the minimum wage, proposed a sliding scale based on calorie allowances, labor unions drew the line" (354).

4. During the interwar period, advocates on both sides of the debate over land reform found evidence to support their position based on the caloric intake of poor peasants and migrant workers (see Lampland 2016, 35–40).

5. See Dana Simmons's (2015) exploration of nutrition, science, and politics in France and Stapleford 2009 for a comprehensive account of economists' debates over living standards in the United States.

four categories were distinguished (light work, moderate work, hard work, very hard work), for which additional calorie intake per hour was indicated. In his analysis of wartime nutrition, Sós offered a more detailed chart on the relative caloric daily requirements for each occupation. Reapers, ditch diggers, and smelters topped the list by requiring 5,400 calories, while office workers were positioned at the bottom of the chart, requiring only 2,200 calories a day; gardeners, barbers, stone masons, tailors, and opticians were arrayed along this scale (Sós 1943, 5; cf. Milles 1995, 89, for a similar table compiled by the British Food [War] Committee of the Royal Society). Whether indeed workers actually earned enough to feed their families according to these standards was an entirely different question.

In October 1945 the Hungarian Economic Research Institute issued a report comparing the level of public provisioning of food in Budapest to that in other European countries.[6] At the time public authorities could guarantee each inhabitant of Budapest only 556 calories in rations. Not surprisingly, the citizens of Allied countries fared far better: in France the normal consumer received 1,100 calories, in Denmark 1,470, in Luxembourg 1,840, and in Belgium 1,450. It was painful to report, however, that the situation in Budapest was even worse than in Germany, where in the British sector the normal consumer was issued 1,470 calories for a ration card, in the American sector 900 calories, and in Berlin 1,500 calories were guaranteed. The only country that approached Budapest's level was Italy, with 870 calories. Hungarians were able to supplement their rations by buying food on the black market, though access to goods was limited by the family's purse strings.

Getting enough to eat was complicated by a hyperinflationary spiral that lasted a year, beginning slowly in August 1945.[7] As inflation grew in January 1946, and the availability of sufficient foodstuffs continued to be a problem, the Supreme Economic Council spent precious time discussing ways to ensure that food made it to the laboring citizens of Budapest.[8] Rejecting the earlier practice of keeping food stores centralized, the coun-

6. Magyar Gazdaságkutató Intézet iratai, MOL P1611, 32. d., II. sorozat, 386 sorszám.

7. Siklos provides the following estimates of the velocity of circulation between August 1945 and June 1946 (July 1945 = 1). In the fall, velocity stayed in the single digits. In February 1946, it jumped to 16, then 83.7 in March, 130.4 in April, 192 in May, and 315.2 in June (Siklos 1989, 138).

8. The Supreme Economic Council (Gazdasági Főtanács) was the government agency charged with overseeing the economy and coordinating those priorities with the efforts to rebuild the economy after the war. It was established in November 1945 and lasted until it was replaced in November 1949 by the Planning Office and the Council of the People's Economy of the new socialist state.

cil decided that it would delegate some of the responsibility of distributing food to factories, having them arrange transportation and dispersal among their own workers. Some members of the council in particular were insistent that the National Association of Manufacturers (Gyáriparosok Országos Szövetsége, or GYOSZ) should bear some responsibility for public provisioning, not least because factory owners were profiting handsomely from the industrial boom.[9] At the end of January, the Supreme Economic Council announced a new regulation on food provisioning, effective February 1. Contract negotiations between GYOSZ, union officials, the Ministry of Industry, and the Ministry of Public Provisioning stipulated that every worker would have a monetary wage augmented by foodstuffs. Workers in jobs more physically demanding than average would be provided 19,900 calories a week, those in less strenuous jobs, 17,320. Workers were also provided foodstuffs for family members (equaling 8,560 calories). The following foods were to be included: bread, baking flour, beans, peas, eggs, farmer's cheese, potatoes, cabbage, onions, jam, oil, and peppers. If for some reason these specific goods were not available, it would be the factory's responsibility to replace them with other goods of comparable caloric value. If, on the other hand, the employer was not able to secure sufficient supplies, then he would be required to provide the worker with the monetary equivalent of those calories, a value to be determined from week to week by the Supreme Economic Council. Newspapers prominently displayed the monetary value of the calorie on the front page.[10]

At the time that calorie money was introduced, payment in-kind was the dominant means of remunerating workers in the agricultural sector. One might assume, therefore, that calorie money was a comparable form of payment in-kind. I contend otherwise. Remuneration in-kind in agriculture followed the logic of sharecropping, that is, one acquired a portion of the goods one produced. Virtually two thirds of the agrarian labor force had little to no land prior to the land reform in 1945, so people needed to earn their yearly keep by working for others.[11] Migrant workers contracted to harvest wheat were paid one tenth or one eleventh of the yield. Those con-

9. Gazdasági Főtanács, MOL XIX-A-10. II/1. 9. doboz; jkv jan.15.1946.

10. The term *calorie money* is a misnomer. No banknotes were issued stamped with caloric value or pictures of food. The term was a shorthand for the policy augmenting monetary wages adopted by the government.

11. To give a sense of proportions, 75 percent of farms in the country were smaller than 2.85 hectares and occupied only 10 percent of arable land, while 0.15 percent of farms occupied 38 percent of the land (Kerék 1939, 300).

tracted to tend row crops—corn, sugar beets, potatoes—were paid in-kind as well, although a portion of their payment came in grains instead of the crops they worked. Manorial servants, families who lived permanently on manorial estates, were subject to a yearly contract (*kommenció*), which on average consisted of sixteen quintals of wheat (including rye and barley), a kilo of bacon, a measure of salt, and a small cash payment. If they were lucky, they were issued a pair of boots every other year. They were also allotted a small plot of land for garden vegetables, were free to gather wood in the nearby forest, and in some cases were allowed to raise one pig (or even a calf). Only day laborers were paid cash. The logic of sharecropping also characterized in-kind payments in industry, such as the coal allotment given to miners who often exchanged it for other goods (Pittaway 2012, 57–59). In contrast, workers issued calorie money were not given sheets of steel or machine parts to trade for food. Furthermore, the policy of calorie money was a scientifically tested system based on carefully calibrated nutritional values designed to suit the energy needs of specific occupations. Food would be provided as long as the inflation lasted, but no longer, since at that point monetary wages would be sufficient.

Disagreements about the way that calorie compensation was designed vexed members of the Supreme Economic Council, figuring prominently in its weekly meetings throughout February. For example, should per capita bread rations be included in the calorie provisions or distributed separately with a proportionate reduction in calories per week? Factory owners contested the caloric value officials attributed to workers' lunches, claiming the value was far too low. Factory owners also thought it unfair to have to pay workers for the time when the factory was forced to interrupt production for lack of supplies, while workers thought they should be paid for their time at the job. One member reported that workers with large families were being let go to avoid having to supply the entire family with food. Throughout the deliberations, the Supreme Economic Council had to contend with the delicate balance of management-labor relations while trying to figure out whether calorie compensation was itself contributing to the continuing inflationary spiral.

The availability of foodstuffs varied greatly from factory to factory. Some companies had set up transportation links during the war to ensure that their workers had enough food to keep production going, so they could comply with the new regulations. Many factory owners simply ignored them. Of course, the availability of foods, especially grains, were

affected by the need to feed the Soviet occupying force,[12] as well as having to send a proportion of wheat to the Soviet Union as reparations.[13]

Even though the monetary value of the calorie was constantly being increased, a gap in compensation developed between those being paid the monetary value of their caloric supplements and those who actually received food. Within two weeks of the new policy, workers were already voicing their dissatisfaction. In the city of Makó in the far southeast corner of the country, workers marshaled their own evidence, detailed in a petition sent to the central offices of the Social Democratic Party.[14] "The possibility of converting calories into allocations in kind only exists on paper; it has completely failed. It is bankrupt because the conversion price established by the Supreme Economic Council stays far lower than market prices."[15] Workers insisted that they be paid in-kind. If not, then the prevailing prices at the local market had to be the basis for wages calculated in calorie money.[16] Similar dynamics affected the incomes of workers across the country. "A skilled laborer, who received the caloric supplement in kind, got a 24.4% higher actual income by the middle of April than he'd had on the 1st of February, while at the same time the very same worker who received the monetary equivalent of calories, got 15.8% less income, and only reached 22.6% of the actual income reached in peacetime [c. 1938]" (Varga 1946, 3). The pengő equivalent of the caloric wage constantly eroded as inflation spiraled out of control. On February 28 the exchange rate was set at 100 pengő; on April 10 it jumped to 600; on May 1 it was 3,000; on May 16 its value rose to 18,000; and on June 6 it soared to 1,200,000. In April people had given up quoting prices in denominations, preferring to refer to the color of banknotes (Siklos 1991, 6). "The calculating abilities of people could no longer take the astronomical rates. Confusion arose in official mathematical circles whether the numerical grouping of a billion and a quadrillion was located between a million and a trillion, or between a trillion and quintrillion" (Büky 1946, 5).[17]

12. W. A. Bomberger and G. E. Makinen (1983, 804) estimate that "the combination of reparations and [Soviet army] occupation costs accounted for 25–50 percent of monthly expenditures by the Hungarian government during the hyperinflation."

13. MOL P1611, 125 doboz, XII. sorozat, 1473, p. 7.

14. Gazdaságpolitikai Osztály, Szociáldemokrata Párt, PIL 283 f., 32 cs., 6 ő.e., pp. 33–33a.

15. Gazdaságpolitikai Osztály, Szociáldemokrata Párt, PIL 283 f., 32 cs., 6 ő.e., pp. 33–33a.

16. Gazdaságpolitikai Osztály, Szociáldemokrata Párt, PIL 283 f., 32 cs., 6 ő.e., p. 34.

17. "A trillion banknote consists of as many ten pengő notes as it would take to stack them end to end closely alongside one another to circle the earth twenty-five million times at the equator" (Büky 1946, 8).

The rate of inflation in 1945–46 exceeded all expectations. The policy of calorie money was unable to mitigate the damages; the value of the calorie pengő was recalibrated constantly. To the dismay of the members of the Supreme Economic Council, the effort to distinguish skilled labor from less skilled forms failed, as the discrepancy between the value of food rations and calorie money determined the relative value of wages, not the classificatory scheme designed by the planners. Hopes to enroll factory owners in bearing partial burden for public provisioning of the labor force were dashed, even though the regulations for calorie money were detailed in the collective agreement renegotiated in February 1946. The relative weakness of industrial unions in the postwar period also contributed to the difficulties of seeing the policy implemented. Difficulties with the transportation networks across the country—slowly recovering from war damages—impeded the easy movement of produce from country farm to urban table. Last but not least, the thriving black market undercut any government moves to rein in costs. Only the introduction of an entirely new currency in August 1946 halted the catastrophe.

Technical Norms

After the Hungarian Communist Party took over the government in 1948, socialist policymakers shared the plight of their bourgeois predecessors: success of the socialist economy rested on the shoulders of the proletariat. Achieving the high levels of growth that policymakers envisioned to jump-start the economy would require enormous effort on the part of the working class, an achievement in no way guaranteed by the pitiful state of industrial and agricultural production in the years after World War II. To paraphrase the title of Vladimir Lenin's famous treatise, "What was to be done?" The Communist Party put its faith in science. A gargantuan project mandating the scientific calculation of all wages in every state-owned enterprise was initiated, to be refined over time in the ensuing decades.[18] Planners expected productivity would increase exponentially, thereby raising the living standards of the working class. They also expected that carefully examining every phase of activity entailed in a task would prompt workers to innovate on the shop floor, as their participation in assessing the minute elements of their jobs would open their eyes to alternative technical solutions.

18. Lewis Siegelbaum (1990) has written an excellent discussion of norms and productivity in 1930s Soviet Union.

The scientific design of norms may seem at odds with the egalitarian spirit of the socialist project, as it would lead to disparate incomes. Yet Marx himself criticized the wrongheaded ideas proposed in the Gotha Program by the Social Democrats in 1875 that advocated the equal distribution of social goods among all in society. Since the physical and mental capacities of workers differ, Marx argued, distributing goods equally among all would introduce new sources of inequality. "But one man is superior to another physically or mentally and so supplies more labour in the same time, or can labour for a longer time; and labour, to serve as a measure, must be defined by its duration or intensity, otherwise it ceases to be a standard of measurement" (Marx, quoted in McClellan 1977, 568). The dictum we know so well, "from each according to his ability, to each according to his need," would only be realized in the final phase of communism, when the last vestiges of bourgeois political economy had disappeared. In the meantime, labor contributions would be key, expressed in the oft-quoted dictum in socialist tracts of the 1940s and 1950s: "each according to his ability, each according to his work."

In the first two years after the war, piece-rate wages were being rethought and recalibrated.[19] In 1947 a small coterie of work scientists established the Work Science and Rationalization Institute, offering their services to industry keen to revise wage rates (Lampland 2016, 167–68). Economists weighed in with treatises on the scientific construction of wage systems (Egyeki 1948; Hegedüs 1947a, 1947b; J. B. 1949; Márosi 1947; Mártonfi 1946, 1949; Sándor 1947), arguing that determining wages entailed a theoretical and mathematical synthesis in which base rates and hourly wages could be figured out by formula "with mathematical precision" (Hegedüs 1947b, 36). As a result, the system would be "independent of the [person's] trade, the changing value of money, . . . and ingrained customs of the firm" (37). Science would cut out the middleman of everyday wage calculations: the shop floor boss and his prejudices. Scientific wages would be fair wages (20). Scientific wages would also be part and parcel of the broader efforts to rationalize the planned economy in socialism. Luckily, the Communist Party did not need to start from scratch. State planning had been officially declared in 1938, when the Hungarian government followed Germany's lead in rearming. State intervention increased during the war (Lampland 2011), but only under the tutelage of

19. In the interwar years, Hungarian work scientists looked to Germany for inspiration. The Soviet engineer Alexei Gastev was engaged in similar exercises in scientific management in the 1920s, but his influence in Hungary was nil.

Communist Party ideologues would the plan be envisioned as both a scientific instrument and a political technology.

The enthusiasm the Communist Party expressed about designing scientific norms faced a conceptual obstacle: piece-rate wages were demonized in capitalism, seen as the preeminent tool used to exploit workers. How, then, would piece-rates function differently in socialism? This fine point of exegesis was articulated in a variety of venues. Here I quote from an essay penned in late 1950 for the Agricultural and Cooperative Agency in the Communist Party apparatus.[20] Piece-rates in socialism and capitalism differed in several crucial ways. In socialism, workers were paid for their contribution to production, whereas in capitalism, wages were set by the laws of supply and demand, completely severing the connection between effort and reward. Moreover, the ability to extract profit in capitalism depended on the private ownership of the means of production. Having seized the means of production, workers could work for their own benefit rather than enrich the bourgeoisie. Of course, being responsible for the common good meant that a sizable portion of workers' contributions would be channeled to sustain public infrastructure and the growth of the economy as a whole. Finally, by constructing piece-rate systems that were difficult to decipher, capitalists were able to extract profit easily. The only way to ensure that workers could identify their interests with those of the state would be to make the calculations transparent.

In the opening essay of a new journal, *Wage and Norm* (December 1950), a leading communist economist, István Friss, argued that the study of wages and norms was essential to the building of socialism (see also Péteri, this volume). No one labored under the illusion that a precise norm system (*szabatos normák*) could be established overnight. Party officials and government bureaucrats faced a steep learning curve. "The proper system of wages . . . does not develop on its own. Its construction requires a lot of knowledge and study. We are nowhere near the level of knowledge . . . to be desired; it would be worthwhile to devote much time and energy disseminating it" (Friss 1950, 1). This was especially true in the agricultural sector, where payment in-kind dominated.[21]

As a first step, government officials issued a regulation in 1949 proposing a provisional rate schedule for agricultural wages based on job catego-

20. Mezőgazdasági és Szövetkezeti Osztály, Magyar Dolgozók Pártja, MOL 276 f., 93. cs., 373 ö.e., pp. 207–9.

21. Mezőgazdasági és Szövetkezeti Osztály, Magyar Dolgozók Pártja, MSO, MDP, MOL 276 f., 85 cs., 7 ö.e., p. 2; 1948.dec.30.

Table 1 Drawing 1.000 milliliter of blood by one person
Norm = frequency × time × exertion factor

Components of an operation	Frequency	Time factor	Exertion	Norm/unit (in minutes)
Cut bristles off the rump and the tail with a scissors	1/1	1.13	1.10	1.243
Wash the pig's rump and tail	1/1	0.39	1.10	0.429
Cut off the pig's tail	1/1	0.05	1.05	0.053
Place the cup for drawing blood on the rump	1/1	0.33	1.15	0.380
Take blood	1/1	12.36	1.25	15.450
Take the cup off the rump and close the vacuum	1/1	0.20	1.10	0.220
Take the cup to the table designated for the blood and return	1/1	0.31	1.15	0.358
Pull the pig to the door and let it out	1/1	0.33	1.20	0.396 18.529
	6 percent of time wasted			1.112 19.641
Since the worker taking blood is also the one tying the pig up, the time doing that is also added.				2.347 min.
Drawing 1.000 milliliter of blood by one person				**21.988 min.**

Source: Chart compiled by Phylaxia, the State Vaccine Development Institute, March 27, 1950, MOL XIX-K-1-j 3 d., 8140/18, pp. 3–4.

ries used for civil service positions.[22] The regulation classified all hourly and monthly wages in ten separate categories. Under Wage Category III we find tasks such as cleaning seeds, planting potatoes after the soil has been turned by a plough or by a hoe, weeding by hand, drying sunflower seeds, and sewing sacks; Wage Category VII included, among other tasks, spreading artificial fertilizer by hand, loading sugar beets and potatoes onto a wagon, hoeing every sort of feeder grain, managing a stud farm, and harvesting rice.[23] The document outlining the introduction of piece-

22. Mezőgazdasági és Szövetkezeti Osztály, Magyar Dolgozók Pártja, MOL 276 f., 93 cs., 81 ö.e.

23. Mezőgazdasági és Szövetkezeti Osztály, Magyar Dolgozók Pártja, MOL 276 f., 93 cs., 81 ö.e., pp. 209–11.

rates into state farms describes the initial norms as "fair, neither lax nor harsh."[24] Properly calibrated technical norms would then be devised based on time and motion studies. Tackling every branch of agricultural production at once was unrealistic, so officials began by developing norms for soil and plant cultivation.

Time and motion studies entailed breaking up tasks into discrete actions, timing them, and assessing their frequency in production.[25] Staff were also expected to calculate time wasted in the course of each task (Mártonfi 1949, 213). The eventual norm assigned to a task was expressed in terms of the physical dimensions of the task's outcome, for example, kg, piece, pair, m^2, and so on. In this respect, the process resembled US practices. But here the two approaches to time and motion study diverge. In Hungary, the final norm was assessed not only in terms of time spent and frequency but also in relation to the level of physical exertion it demanded, described as an exertion bonus or factor (*fáradtsági pótlék, tényező*). (See table 1.) Assessment of the level of exertion was to be conducted on every single phase of a task performed, not attributed to the process as a whole, since different elements of a task required different levels of exertion (Mártonfi 1949, 166). Recognizing the difficulty of accurately assessing exertion on the shop floor, time and motion specialists provided charts of the levels of exertion associated with various actions, for example, moving a mass, moving a mass without wheels, picking up and shelving items, wrapping goods (Mártonfi 1949, 167–77). Hence the temporal value of a specific task—a movement or action that constitutes only a portion of a job overall—would be multiplied by the appropriate exertion factor. "One must use the exertion factor to ensure that workers are able to fulfill the norm equally, employing the same amount of effort, for tasks of varying difficulties" (167). This echoes Marx's point in the Gotha Program, that the only proper measurement of work is duration and intensity. A focus on exertion as the measure of work stands in stark contrast to the prevailing view in the United States at the time, where output was the sole consideration. In the third edition of *Motion and Time Study*, Ralph Barnes (1949, 323) makes this clear: "The results of work determine its value rather than the effort exerted. . . . Accomplishment can usually be measured most

24. Mezőgazdasági és Szövetkezeti Osztály, Magyar Dolgozók Pártja, MOL 276 f., 85 cs., 16 ö.e., p. 8.

25. The quality of items produced was also a consideration, but actually incorporating a measure of quality into norm calculations was indefinitely postponed.

effectively in terms of the quantity of work done per unit of time, that is, pieces per hour or tons per day."

The exertion factor in these calculations should not be confused with fatigue, that is, the end result of one's efforts at work.[26] I initially confused the Hungarian term for exertion (*fáradtság*) with fatigue (*fáradság*), since as Rabinbach (1992) points out, early studies in work science wrestled with the problem of fatigue (see also Gilbreth and Gilbreth 1916). This distinction between what constitutes work and, therefore, what needs to be measured—output/time versus energy expended over time/output—replicates the difference Biernacki identified in wage systems in English and German factories. Unfortunately, this significant difference has been overlooked. When comparing time and motion studies in various countries, the apparent similarity of technique has led observers to assume that the terms of the analysis meant the same thing. As I show here, that assumption is flawed. I would add that the formalizing practices of quantifying output were complicit in obscuring significant distinctions relevant to the study of productivity and of work more generally.

The history of implementing the new system of norms followed the pattern of worker resistance commonplace in the history of rationalization and scientific management elsewhere in the twentieth century. Those overseeing the implementation of the new norms were often as clueless as the manual labor force about the manner in which norms had been established, making it difficult to defend them in the face of worker resistance. In calculating norm rates, discrepancies between pay scales for similar tasks confounded workers and discouraged them from aspiring to exceed the norm when their fellow workers were required to do less for the same compensation. In their efforts to recruit workers to state farms, farm managers exaggerated or outright lied about the payment levels and in-kind compensation workers would receive, a self-defeating strategy because as soon as the workers found out the actual pay rates and in-kind allocations, they simply left.

The fits and starts of implementing new wage systems are interesting, but, for the purposes of studying the political economy of socialism, less important than the party-state's continued insistence that workers adhere to strict norms. This commitment to scientific precision was a crucial component of a socialist planned economy, justified, officials claimed, by the Soviet Union's enormous success at industrialization. The degree of

26. My friend László Váradi drew my attention to this distinction, for which I am very grateful.

commitment to precision is demonstrated in the frequent correspondence between party bureaucrats, government workers, and state farm officials over the details of norm calculations and their accommodation to conditions on the ground.[27] Workers and managers frequently criticized the specific metrics used to gauge wages, appealing to the relevant bureaucratic agency to alter the calculations. Ministry officials came to defer to those actually engaged in the work, actively soliciting their experiences and suggestions about wages, norms, and premiums.[28] Several examples illustrate this process. In February 1950 the National Enterprise Cultivating Mushrooms submitted recommendations for categorizing different tasks. A dissenting opinion was appended, written, and signed on March 6 by the plant's party secretary, wage clerk, and six shop stewards.[29] The workers took issue with the enterprise's various recommendations and countered with precise calculations of their own. In February 1951 the head of Tata County's Political Department took issue with the regulation on the distribution of premiums to tractor drivers. "In my opinion, the suggestions and the examples published in the instructions contradict each other."[30] Comparable work was judged by different standards, leading to substantial discrepancies in workers' premiums. Another example of local initiative comes from the Animal Husbandry Research Institute. In June 1951 workers employed doing agricultural labor at the institute submitted a request to the management of the Poultry Cultivation Department that they be paid according to output rather than for time spent on the job.[31] Moreover, by eliminating hourly wages, the institute would not have to deal with recruiting sufficient workers.

Recruiting workers to state-run farms continued to be a problem all throughout the early 1950s. Wages at state farms consistently lagged behind those in industry. In 1950 state farm wages constituted only 59 percent of an industrial worker's monthly pay; by 1955 it had increased to 79 percent, an improvement, but not enough for most (Donáth 1977, 156).

27. My research was restricted to the study of agricultural enterprises. The examples here come from enterprises managed by the Ministry of Agriculture. The ministry oversaw thirty national enterprises, which included long-standing research institutes, state farms, and specialized departments devoted to improving the cultivation of specific crops or livestock (Miniszertanácsi Előterjesztései, Földművelési Minisztérium, MOL XIX-K-1-c 20 d., 00367/54).

28. Munkaügyi Osztály, Földművelési Minisztérium, MOL XIX-K-1-j 38 d., VI-322–292.

29. Munkaügyi Osztály, Földművelési Minisztérium, MOL XIX-K-i-j 2 d., 8140/72/6.

30. MOL 276 f., 93 cs., 296 ő.e.

31. MOL XIX-K-1-j 6 d., 8140.947.

András Hegedüs, who had been minister of state farms in 1952–53, remembered the state of employment this way: "The most valuable labor power stayed far away from state farms. Increasingly the shortage of labor power was reduced by employing the labor power of prisoners and the population that had been exiled to the countryside" (quoted in Varga 2003, 297). Confronting the problem head-on, the Ministry of Agriculture allowed state farms to sign sharecropping contracts with workers in May 1954.[32] No sharecropping was allowed for grains or any crops already subject to mechanization. This was a huge concession, since sharecropping was considered a pernicious form of capitalist exploitation and had been banned since 1949. The party-state's compromise effectively delegated the most labor-intensive work to families, who gladly took on the extra burden in order to farm more independently. In addition to these measures, the ministry proposed that the plan covering wages on crops for 1955 include an increase in in-kind payments to state farm employees to ensure a more stable workforce.[33]

Scientific hubris was the undoing of technical norms. It was never clear that the amount of time invested in designing technical norms had any real effect on productivity. It certainly did not improve the productivity of bureaucratic agencies, whose time was spent on designing norms that no one wanted. It is difficult to assess just how many state farms actually adopted technical norms or whether, as in the case of cooperative farm regulations, workers simply ignored them (Lampland 2016, 188–222). And when the state finally capitulated and allowed sharecropping in 1954–55, the fight to impose scientifically designed wages had been lost. I did not examine sources for this project beyond 1956, but we do know that technical norms were designed and promoted into the 1960s. In 1968 Ferenc Kalocsay published a comprehensive overview of norming practices in agriculture, covering the history of scientific management as well as the history of norm calculations in Hungary. When I interviewed Kalocsay in 1997, his opinion of technical norms had soured.[34] "Hungarian practice took off with this mania in pursuit of exacting precision. . . . We wanted to be more German than the Germans." But the whole process foundered, since "completely norming the entire people's economy" was beyond their limits.

32. MOL XIX-K-1-j 38 d., VI-322–218.
33. MOL XIX-K-1-j VI-322–24/1.
34. Ferenc Kalocsay, interview by author, August 8, 1997.

Conclusion

Over the course of a decade, two innovative schemes were devised by Hungarian policymakers to compensate workers' efforts to rebuild and expand the economy. Though the logic of the two schemes differed—a piece-rate wage system versus rations augmenting monetary wages—they shared two significant features. Both policies drew on interwar practices in scientific management and public health geared to improving productivity and living standards. And both policies took for granted the notion that measuring the expenditure of labor power was key to assessing productivity. A crucial distinction between the two policies, however, is that one was implemented in a capitalist economy, the other by a socialist government. In closing, I would like to make two points.

The transition to socialism in Hungary occurred in the midst of an era in which scientific management, planning, and rationalization influenced business practices and government policy formation worldwide. It should not be surprising, therefore, to see a continued interest in the science of economic management under communist rule. This observation has been hindered, however, by a long-standing assumption that once the Communist Party seized power in 1948, the economy was radically reshuffled. This was not, in fact, the case. While the scope of economic planning expanded under the communist regime over time, in its initial years the party-state built on the regulatory infrastructure and planning apparatus that had been in place for a decade. In the early years of the socialist state, Marxist-Leninist ideologues in Hungary boasted of the superior scientific pedigree of historical materialism over "bourgeois economics," vowing to rationalize government in the interests of the people's economy. Nonetheless, they adopted many features of the planned economy crafted by the same bourgeois economists who had preceded them in officialdom. As a result, it would have been nigh impossible to distinguish between the science of wage determination developed in the 1950s under socialism from the practices of scientific management advocates and work scientists in capitalist Hungary of the 1930s. Having ignored continuities in policy formation and economic reasoning between capitalist and socialist regimes in Hungary in the 1950s, it has been much harder to understand how the socialist economy grew into its own over time, that is, how or to what degree it shed the trappings of capitalism in pursuit of an alternative economic formation in the 1960s to 1980s.

Considering these two wage systems in tandem has also brought to light a crucial distinction made in defining the nature of work in the

Anglo-Saxon world versus the cultural region of central Europe. I have argued that in Hungary work was conceptualized in terms of the physical movements and expenditure of energy (labor power) entailed in any specific task. As evidence, I have shown how the techniques of time and motion studies were altered to accommodate this difference, a minor change in technique with far-reaching implications. Further study would be required to discern how the discrepancies discussed here could affect the comparative study of labor productivity. Needless to say, this insight underscores the importance of exploring the sociocultural histories of concept formation in the social sciences, research that is exemplified in the pages of the *History of Political Economy*. The analysis also testifies to the necessity of examining formalizing practices, such as wage calculation, from the earliest phases of design through the final processes of implementation. For it is in these humble details that historical contingencies are revealed.

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