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Dana Simmons, *Vital Minimum: Needs, Science, and Politics in Modern France*. Chicago and London: Chicago University Press, 2015. 243 pp. Tables, figures, notes, bibliography, and index. \$45.00 U.S. (hb). ISBN 0-226-25156-X.

Review by Larry S. McGrath, Wesleyan University.

On January 1, the minimum wage in France (or SMIC, the *Salaire minimum interprofessionnel de croissance*) was raised to 9.67€ per hour. It was 9.61€ in 2015. The annual readjustment is indexed to two factors: the inflation of the consumer price index for the bottom 20 percent of households and half the increase in the purchasing power for employees' average hourly wages. Ever since it was introduced in 1970, the SMIC adjusts automatically. But how did it come to be that an algorithmic function would determine the minimum wage? Why, that is, do economic indices serve as the baseline for peoples' social and physical needs?

Before they became a matter of dollars and cents, needs were determined by the natural sciences in France. Chemical measurement ascertained the absolute level of nutrients that humans must ingest in order to sustain the body. Nutrition guidelines mattered most. And at the close of the eighteenth century, chemists such as Antoine Lavoisier set the agenda for what counts as a need.

From beneath today's automatic minimum wage calculations, Dana Simmons excavates the "vital minimum"--a fluid and contested notion of the requirements to sustain life. In her subtly argued and delicately researched first book, *Vital Minimum: Need, Science, and Politics in Modern France*, Simmons traces the shifting meanings of need from a natural to a social concept across the overlapping domains of chemistry, physiology, anthropology, agronomy, as well as social statistics and political economy. Determining which domain grasped the basic degree of subsistence was the preoccupation of scientists, labor activists, and eugenicists alike. Although they sparred over just what constituted needs (as distinguished from mere wants), their endeavors coalesced around an enduring understanding of needs: they depended on work. The provisions deemed "vital" were meant to reproduce economic value by sustaining workers and their families (which is to say future workers). This idea of vitality reflects a conception of human life emblemized by the young Marx's claim that labor is man's species-being (*Gattungswesen*). Indeed, the vital minimum was meant to ensure the reproduction of production.

Lavoisier conceived work as a mechanical process of combustion. He contended that matter enters the body and generates heat, but does not produce anything new. Because he believed that matter is only redistributed, Lavoisier could calculate exertion as a function of respiration (comprising the carbon dioxide emitted). He charged the chemist with the limited task of measuring. According to Simmons, Lavoisier's contribution to the chemical revolution also spurred a new model to determine needs: combustion as the process common to all work. And since he posited production and consumption as co-extensive, the byproducts of combustion could serve as the basis to measure the minimum input necessary to sustain work.

Subsequent agronomists adopted Lavoisier's model. In the book's second chapter (following the introduction), Simmons closely reads the work of Jean Baptiste Boussingault and Jean Baptiste Dumas, who brought quantitative precision to the determination of needs. Using a scale balance, they documented the levels of nitrogen and carbon contained in excrement and exhaled air. On this basis, Boussingault and Dumas arrived at the absolute levels that humans must consume in order to maintain continuous combustion when performing manual labor. As a result, needs took the form of dietary standards, notably different from the 9.67€ guaranteed today.

Monographic precision and a synthetic ambition propel Simmons's inventive approach to the history of the science of need. She weaves together disparate literature across the problems that straddled both transformations in the understanding of needs and corollary transformations in conceptions of life. Which science assesses needs? And which needs count as necessary? These questions orient Simmons's inquiry into the epistemology of scientific practices. By framing them within the past two centuries of French social and political history, Simmons probes the further question that continues to outstrip scientific inquiry: whose needs count as most important? She argues that conditions of scarcity from depression to famine and war laid bare the gendered, racial, and class exclusions inscribed in the measurement of need. Simmons writes with conceptual rigor befitting science and technology studies, while also delivering a lucid narrative inviting to historians of all stripes.

Vital Minimum is divided into eight chapters. They are organized chronologically and thematically across a series of critical moments, from the chemical revolution to the reconstruction of France after the Second World War, in which needs occupied the centerpiece of science and politics. The book's conceptual trajectory follows the movement from natural to social conceptions of the vital minimum, arriving at the contemporary moment when, according to Simmons, "[r]eal' consumption recorded through social surveys appeared a better guide to human needs than 'theoretical' physiological measures of vitamins and calories" (p. 163).

Simmons's aim, however, is not simply to trace the emergence of a social knowledge out of the natural sciences. This approach has characterized much historiography of the statistical sciences' development in nineteenth-century France (notably in the work of Philippe LeGall and Theodore M. Porter, among others). Yet such a conceptual division has undergone sustained criticism within science studies. To cite Bruno Latour, "Nature and Society have no more existence than East and West." [1] Following suit, Simmons traces their imbrication. Needs are circumscribed by social exigencies as much as they inflect natural knowledge. Indeed, an incisive merit of Simmons's book is that it shows how the vital minimum was a physiological specter ineluctably haunting the market. As she illustrates, economic forces left to themselves lack the means to reproduce the living forces on which they depend.

The workplace was not the only site where physiological metrics were deployed. In the third chapter, Simmons explores the startling pursuits of the vital minimum in the public institutions of the July Monarchy and Second Empire: schools, barracks, hospitals, and especially prisons. All were rationalized according to a mechanistic conception of consumption and production obtained from the farm, where livestock were fed following baseline standards in order to minimize costs and to maximize output. Simmons demonstrates that similar agronomic metrics oriented, for example, the construction of Paris' Conciergerie prison. By way of her clear and methodological reconstruction of Boussingault's and Dumas' ventilation experiments, where air was collected in glass balloons to assess its humidity and composition, readers are transported into the most cringe-worthy rendition of Jeremy Bentham's panoptic vision. In 1843, the prison was designed to provide ten cubic meters of air for each cell: the minimum air supply deemed necessary for inmates.

Physiological conceptions of the vital minimum rationalized private life as well. In the fourth chapter, Simmons examines the emergence of the social survey out of an anthropological amalgam of biology and politics. In order to analyze the burgeoning realm of civil society in the wake of the Revolution, surveyors

documented lifestyles, environmental conditions, personal expenses, and—critically for Simmons’s purposes—family budgets. Yet rival conceptions of need motivated competing approaches to social reform. On the one hand, a conservative model of fixed needs hinged on a hierarchical notion of civilization; on the other hand, a progressive model of changing needs treated evolution as inherent to society. Simmons aptly grounds the multiple inflections of the social survey in zoological debates from the early nineteenth century. Advocates of the conservative model turned to Georges Cuvier’s comparative anatomy, which posited static types of people. His approach fueled colonial voyages, such as the Baudin expedition to the Pacific islands in 1800 to ascertain primitive needs (and by analogy, the basic needs of French men and women). Jean Baptiste Lamarck’s thought became serviceable as an alternative, evolutionary approach appropriated by labor advocates. They argued that the social survey ought to improve workers’ conditions, which required a dynamic and normative measurement of needs.

The development of physiology as a discrete science did not, to be sure, straightforwardly facilitate naturalist conceptions of need. As Robert E. Mitchell and John Tresch have recently argued, vitalism persisted as a viable biological framework impervious to the “input and output” framework underpinning nutritional metrics. Yet even scientists who did not countenance a vital principle to explain life nonetheless found mechanistic models to be problematic. Claude Bernard, for example, posited the organism’s internal milieu as independent of its material environment. He thought that only actively experimenting on organ tissues would reveal the body’s needs. Measurement would not suffice. Simmons’ book, however, does not examine why certain models and not others were incorporated into the vital minimum. The question is displaced onto the social and political terrain of modern France. The risk is that we are left with a linear narrative untethered from the field of physiological possibilities, which vied for explanatory authority within the scientific community. Simmons doesn’t linger on this epistemological problematic. Instead, her book takes a different turn in the subsequent four chapters, in which the biological determinants of need recede to the background.

The Franco-Prussian War of 1870 is the subject of the fifth chapter. As Paris became an island encircled by Bismarck’s forces, food scarcity compelled rationing. Needs, Simmons argues, preoccupied municipal politics. Members of the National Guard were guaranteed subsistence for themselves and their families. Enrollment swelled as a result. Those who did not dedicate their labor to defense were deemed “useless mouths.” Simmons tracks the proliferation of the term, an epithet hurled at those thought to be undeserving of ration cards. During the war, appeals to universal conscription went hand-in-hand with the demand that all deserved subsistence provisions. Bread, the culinary core of the Parisian palate, was the food rationed most deliberately. Debates over how and who deserved bread ultimately paved the road, Simmons argues, to the modern welfare state.

In the sixth chapter, Simmons explores workers’ movements. Beginning in the 1880s, private companies introduced supplemental wages, first in textiles and then in banks and water-gas services. But far from acting as a legal minimum wage (which was part of the Federation of Socialist Workers’ platform), the supplemental wage functioned as a carrot easily revoked by management to penalize striking workers. A need-based provision did eventually enter union contracts. By 1916, the Labor Ministry introduced a “vital wage” comprising four components: the uniform base wage, a part based on merit, a cost-of-living supplement dependent on a consumer price index, and a family allowance provided only for male workers. Simmons’s inquiry into the gendered dynamics of the vital wage builds on a mounting body of scholarship on the masculine ideals of Republican citizenship in the Third Republic (notably in the work of Mary Lou Roberts and Judith Surkis). But Simmons’s argument reaches further. Animating workers’ political gains, she demonstrates, was the application of thermodynamics to the physiology of need. Energy expenditure was found to be more important than chemical exchange. When Max Rubner devised the calorie in 1883, he offered a homogenous unit with which to measure nutritional guidelines (replacing carbon and nitrogen). The newfound uniformity lent statistical authority to socialists’ claims that the state ought to guarantee a vital minimum that would cover daily caloric consumption.

France had to wait, however, until the Second World War for a national minimum wage. It was part of the Charte du Travail implemented under Vichy in 1941. As Simmons explores in chapter seven, the vital minimum allied with the politics of social hygiene during the period. “The twentieth-century European welfare state,” she argues, “was as much a racial-eugenic regime as a social democratic one” (p.117). At the center of the chapter is the ascendant “science of man,” an anthropological program that informed France’s new institutional landscape. The Foundation for the Study of Human Problems and the Ministry of Provisioning endorsed nutritional guidelines based on classifications of biological types. In their return to the conservative legacies of naturalist notions of need, these organs established a hierarchical model of whose vitalities deserved which subsistence: a story that Simmons tells using original archival materials from, among other sources, the Centre d’études hygiéniques de Marseille and the Institute National de la Santé et la Recherche Médicale. Echoes of the Franco-Prussian War abounded: scarcity was again at stake. As a result, unequal conceptions of vitality were used to justify demoting ration cards for communists, Romanies, and Jews.

The post-World War Two period did not bring about immediate freedom from want. Against historical treatments of the *Trente Glorieuses* as a period of excess, Simmons argues in chapter eight that scarcity characterized the period. Her focus is on labor unrest from 1947-1950, culminating in the SMIG (*Salaire minimum interprofessionnel garanti*). Strikes coordinated by the CGT (Confédération du Travail) and the CFTC (Confédération Française des Travailleurs Chrétiens) lent newfound power to workers. But Simmons hones in on the questions that guided workers’ demands for a guaranteed standard of living. What belongs in a daily menu? Should clothing and holiday expenses be included in subsistence provisions? And is running water a necessity alongside wages? Such questions proved difficult to standardize. But the SMIG commission did arrive at an optimal model for daily caloric consumption: 2,890 for all people. But who counted as a person? Pro-family groups sought to extend the provisions beyond workingmen. To the contrary, as Simmons writes: “Union leaders in the SMIG commission were not about to accept that wages be confused with welfare payments” (p. 146). Ultimately, SMIG failed, Simmons argues, because no scientifically neutral standard could determine vital necessities. Instead, the minimum wage was indexed to a cost-of-living standard, marking the triumph of an economic conception of need.

Simmons’s penetrating history of the vital minimum offers a much-needed launching pad for further research. How might the burgeoning statistical matrices of need have reciprocally inflected understandings of nature in modern France? Why did statisticians’ budding confidence that social relations ensure their own stability not only undergird social surveys, but also coincide with the elaboration of self-organizing processes in biology, or what the French physiologist Jacques Monod called “autonomous morphogenesis”? *Vital Minimum* offers historians the conceptual tools to deepen our understanding of the enmeshed legacies of social and natural knowledge. In this Simmons accomplishes no small feat.

NOTE

[1] Bruno Latour, *We Have Never Been Modern*, trans., Catherine Porter (Cambridge, Mass: Harvard University Press, 1993), p. 85.

Larry S. McGrath
Wesleyan University
sommermcg@gmail.com

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