Empirical Inquiries and the Assessment of Social Progress in Western Europe:

A Historical Perspective

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Preface

It is a great pleasure to introduce this work of Jean-Michel Collette. In less than 100 pages, he has succeeded in giving us a clear, complete, rigorous and highly entertaining panorama of an important facet of the intellectual history of Western Europe. It is the story of those who understood, as early as the seventeenth century, that it would be intellectually rewarding and politically useful to observe and measure the living conditions of people.

Listen to William Petty, who was not only the first to publish an estimate of the national income of England but also founded the new science of "political arithmetics"—a name widely used until it was replaced by "statistics" at the end of the eighteenth century. To justify the use of "numbers, weight and measure" in dealing with social topics, he said: "For falsity, disproportion and inconsistence cannot be rectified by any sermonications, though made all of figurate and measured periods…, [any] more than vicious wines can be remedied with brandy and honey". Listen to Rowntree who, among other achievements, refined the "poverty line" invented by Booth and drew the distinction between "primary" and "secondary" poverty:

> To raise the material standards of those in poverty may prove difficult, but to raise the mental and spiritual life to a markedly higher level will be an infinitely harder task. [Y]et on its accomplishment depends the lasting greatness of the State.… A totalitarian State does not demand high intellectual or spiritual standards from its people.… A democratic State can only flourish if the level of intelligence of the community is high and its spiritual life dynamic.

This was written in 1941. A century before, Le Play had argued that prosperity was defined not only by "material consumption" but also by "stability" of social mores and moral values. Still earlier (even before Villermé had founded empirical sociology with his famous surveys), Quételet developed new statistical techniques and Ducpétiaux classified, in 1853, households' expenditures in three categories: expenses of a "physical and material" nature; of a "religious, moral and intellectual" type; and of a "luxurious and improvidential" type. Who could ever think that work on statistics and indicators is dry and somewhat boring?

The great human beings evoked by Jean-Michel Collette obviously were characterized by intellectual curiosity, a strong appetite for knowledge, and a burning desire to understand their society and the world. (Le Play measured the budgets of working-class families not only in Western Europe, but also in Scandinavia and in the Russian and Ottoman Empires!) They also had genuine sympathy for the subjects of their inquiries and an active interest in the reforms that their findings were to stimulate and orient. These clergymen, physicians, self-made social scientists, wealthy merchants and prominent academics worked very hard, with patience and steadiness, and with enthusiasm. With joy, it would seem. For they were convinced that it was necessary and possible to improve the human condition. Neither detached nor cynical, they studied and learned, measured and published to make a difference in their societies. No doubt

they had their pettiness, their personal ambitions and quarrels, but their work and lives breathe dignity, nobility and faith. They believed in the possibility of human progress.

These same pioneers obviously had ideas and assumptions about the meaning of the social conditions they were analysing and measuring. Their minute descriptions had a purpose, and their interpretations had a theoretical framework. Some years before the French Revolution, for instance, Lavoisier assembled data to help reform the fiscal system and economic policy of his country. In the late nineteenth century, Booth embarked on the monumental work that culminated in his *Life and Labour of the People of London* in order to discover "the numerical relations which poverty, misery, and depravity bear to regular earnings and comparative comfort". But their respect for facts was much stronger than their desire to prove their point. At least among those described in this superb essay, intellectual honesty and integrity appears to be beyond any doubt. Is it because Jean-Michel Collette has selected only the authors he could be comfortable with? Or is it because this line of work is simply not possible without constant preoccupation with the truth? At any rate, none of these thinkers was encumbered with a comprehensive theory of social change or an all-embracing vision of what constitutes a good society. They had moral principles and sharp intellectual tools rather than ideological convictions.

If lessons should be drawn, the virtues evoked above offer plenty of inspiration. But a few additional comments, in the form of suggestions for reflection and research, are perhaps in order. The most obvious is that this type of synthetic and yet extremely well researched and informative panorama, drawn by Jean-Michel Collette for Western Europe with an incursion into North America, should be undertaken for other regions and cultures as well. Keeping as a point of entry the assumed relationships between "good statistics" and "good government", what is the historical experience of China, Eastern Europe, India, Japan, Latin America or the Middle East? International and national statistical techniques and publications unquestionably have their origins in the work summarized in this essay. But this is precisely one of the reasons to look elsewhere for traditions and ideas that dominant forms of modernity have ignored.

The intellectual curiosity and innovative spirit that was required in the seventeenth century to measure the levels of living of "temporal and spiritual lords", as well as of "cottagers", "paupers", "common soldiers" and "vagrants", is now required to understand and measure such phenomena as the process of economic and financial globalization, the apparent concentration of power in the hands of a new international class, and the living conditions of the unemployed and marginalized in different cities of the world. We need new typologies of social groups that would capture differences not only in income, but also in security and hope for a better future. There is certainly much work to be done in such domains and many others. But are basic concepts and basic data sufficiently questioned? Is there sufficient interrelation between the work of philosophers and sociologists and the work of statisticians and other national and international civil servants, for instance, on the conception and measurement of poverty? Could more conceptual and statistical work be done on Rowntree's distinction between "material" and "spiritual" poverty—a distinction reaffirmed in terms of "needs" by the World Summit for Social Development, convened in Copenhagen in March 1995?

The "social investigators" and "social reformers" discussed here were disturbed, often shocked, by the misery they encountered in the households they surveyed. And they provided hard data and sober analyses to inform the ruling elite and the benevolent and educated public of this state of affairs. Although Jean-Michel Collette had no space to treat this question, he would probably agree that these writings had a role in the measures that were taken and in the progress that was achieved in Western European societies throughout these three centuries. For enormous progress was achieved, at least in material comfort. The world community as a whole, and notably the international organizations of the United Nations system, need to receive the same kind of service and the same kind of pressure from intellectuals and scientists concerned with the common good. Again, many examples could be given of such efforts. But they are dramatically insufficient.

Originally, Jean-Michel Collette prepared his essay in the context of the 1999 Copenhagen Seminar for Social Progress, organized by the Danish Ministry of Foreign Affairs. The topic of this seminar was "defining, measuring and monitoring social progress and social regress". Its report will be issued in a few months. UNRISD has also done significant work on statistics and indicators, including aggregate indices, particularly during the 1970s and 1980s. A resumption of this work, with a renewed approach, would make sense on the part of an institute with a demonstrated capacity for intellectual rigour and political imagination. The readers of the following pages will certainly agree that this is worthwhile endeavour.

Jacques Baudot

Préface

J'éprouve un grand plaisir à présenter cet ouvrage de Jean-Michel Collette. En moins qu'une centaine de pages, il réussit à nous brosser un panorama clair, complet, rigoureux et très divertissant d'une facette importante de l'histoire intellectuelle de l'Europe occidentale. C'est l'histoire de ceux qui ont compris, dès le XVIIème siècle, qu'il serait intellectuellement gratifiant et politiquement utile d'observer et de mesurer les conditions de vie des gens.

Ecoutez William Petty, qui non seulement a été le premier à publier une estimation du revenu national de l'Angleterre mais a aussi fondé une nouvelle science, celle de l'"arithmétique politique", appellation largement employée jusqu'à ce que celle de "statistiques" ne vienne la supplanter à la fin du XVIIIème siècle. Pour justifier l'emploi de "nombres, de poids et de mesures" dans l'étude de sujets sociaux, il dit ceci: "Car des propos moralisateurs, bien que faits de périodes figurées et mesurées, ne sauraient pas plus corriger la fausseté, la disproportion et l'incohérence que le cognac et le miel amender un méchant vin". Ecoutez Rowntree qui a notamment à son actif d'avoir affiné le "seuil de pauvreté" inventé par Booth et introduit la distinction entre pauvreté "primaire" et "secondaire":

> Améliorer la condition matérielle des pauvres peut se révéler difficile, mais porter la vie mentale et spirituelle à un niveau sensiblement plus élevé sera une tâche infiniment plus ardue. Pourtant de son accomplissement dépend la grandeur durable de l'Etat…. Un Etat totalitaire ne demande pas à son peuple un niveau intellectuel ou spirituel élevé…. Un Etat démocratique ne peut prospérer que si la collectivité a un niveau d'intelligence élevé et une vie spirituelle dynamique.

Ceci a été écrit en 1941. Un siècle plus tôt, Le Play faisait valoir que la prospérité se définissait non seulement par "la consommation matérielle" mais aussi par la "stabilité" des mœurs et des valeurs sociales. Plus tôt encore (avant même que Villermé eût fondé la sociologie empirique avec ses fameuses enquêtes), Quételet mettait au point de nouvelles techniques statistiques et Ducpétiaux classait, en 1853, les dépenses des ménages en trois catégories: les dépenses de nature "physique et matérielle", de type "religieux, moral et intellectuel" et de type "luxueux et somptuaire". Qui songerait à juger ingrat et quelque peu rébarbatif le travail sur les statistiques et les indicateurs?

Les personnalités évoquées par Jean-Michel Collette se caractérisaient de toute évidence par leur curiosité intellectuelle, une grande soif de savoir et un ardent désir de comprendre leur société et le monde. (Le Play a mesuré les budgets des familles ouvrières non seulement en Europe occidentale, mais aussi en Scandinavie et dans les empires russe et ottoman!). Ils éprouvaient aussi une sincère sympathie pour les sujets de leurs enquêtes et s'intéressaient activement aux réformes que leurs conclusions devaient encourager et orienter. Ces hommes d'église, médecins, autodidactes des sciences sociales, riches marchands et grands érudits ont travaillé avec acharnement, patience et régularité, et avec enthousiasme. Avec joie aussi, semble-t-il. Car ils étaient convaincus qu'il était nécessaire et possible d'améliorer la condition humaine. Sans détachement ni cynisme, ils ont étudié et appris, mesuré et publié pour changer quelque chose à leur société. Ils avaient sans doute leurs petitesses, leurs ambitions et leurs querelles personnelles mais leur vie et leur oeuvre respirent la dignité, la noblesse et la foi. Ils croyaient en la possibilité d'un progrès humain.

Ces mêmes pionniers avaient à l'évidence des idées et des hypothèses sur le sens des conditions sociales qu'ils analysaient et mesuraient. Leurs descriptions minutieuses avaient un but et leurs interprétations un cadre théorique. Quelques années avant la Révolution française, par exemple, Lavoisier recueillait des données en vue de la réforme du système fiscal et de la politique économique de son pays. Vers la fin du XIXème siècle, Booth entreprenait l'œuvre monumentale qui a abouti à son livre *Vie et travail du peuple de Londres* afin de découvrir "les relations numériques que la pauvreté, la misère et la dépravation peuvent avoir avec des gains réguliers et un confort relatif". Mais leur respect des faits était bien plus fort que leur désir de prouver leurs théories. L'honnêteté et l'intégrité intellectuelles, tout au moins de ceux qui sont décrits dans ce superbe essai, semblent être au-dessus de tout soupçon. Est-ce parce que Jean-Michel Collette n'a choisi que les auteurs avec lesquels il se sentait à l'aise? Ou est-ce parce que ce type de travail n'est tout simplement pas possible sans un souci constant de la vérité? En tout cas, aucun de ces penseurs ne s'est encombré d'une théorie complète du changement social ou

d'une vision globale de ce qui fait une bonne société. Ils avaient des principes moraux et des outils intellectuels pointus plutôt que des convictions idéologiques.

S'il faut tirer des leçons, les vertus évoquées ci-dessus fournissent abondance d'inspiration. Mais quelques commentaires supplémentaires, sous la forme de suggestions en vue d'une réflexion et de recherches, ont peut-être leur place ici. Commençons par le plus évident: ce type de panorama, synthétique mais néanmoins très fouillé et instructif, brossé par Jean-Michel Collette pour l'Europe occidentale avec une incursion en Amérique du Nord, devrait exister aussi pour d'autres régions et cultures. Si l'on garde pour point de départ la relation supposée entre "les bonnes statistiques" et le "bon gouvernement", quelle est l'expérience historique de la Chine, de l'Inde, du Japon, du Moyen-Orient, de l'Europe de l'Est ou de l'Amérique latine? Les techniques et publications statistiques, nationales et internationales, ont incontestablement leurs origines dans les travaux résumés dans cet essai. C'est précisément une des raisons qui inciteraient à chercher ailleurs des traditions et des idées que les formes dominantes de la modernité ont ignorées.

La curiosité intellectuelle et l'esprit novateur qu'il fallait au XVIIème siècle pour mesurer les niveaux de vie des "seigneurs temporels et spirituels" ainsi que des "villageois", des "pauvres", des "simples soldats" et des "vagabonds", il les faut aujourd'hui pour comprendre et mesurer des phénomènes tels que la mondialisation économique et financière, la concentration manifeste du pouvoir entre les mains d'une nouvelle classe internationale et les conditions de vie des chômeurs et des laissés-pour-compte de différentes villes du monde. Nous avons besoin de nouvelles typologies des groupes sociaux, qui tiennent compte des différences non seulement de revenus, mais aussi de sécurité et d'espoir en un avenir meilleur. Il y a certainement un gros travail à faire dans ces domaines et dans beaucoup d'autres. Mais les concepts fondamentaux et les données de base sont-ils suffisamment remis en question? Y a-t-il suffisamment d'échanges entre le travail des philosophes et des sociologues et celui des statisticiens et d'autres fonctionnaires nationaux et internationaux sur la conception et la quantification de la pauvreté, par exemple? Pourrait-on poursuivre le travail conceptuel et statistique sur la distinction de Rowntree entre la pauvreté "matérielle" et "spirituelle", distinction réaffirmée en termes de "besoins" par le Sommet mondial pour le développement social, tenu à Copenhague en mars 1995?

Les "enquêteurs sociaux" et "réformateurs sociaux" dont il est question ici étaient émus, souvent révoltés, par la misère rencontrée dans les ménages qu'ils étudiaient. Ils fournissaient des données brutes et de très sérieuses analyses à l'élite au pouvoir et au public instruit et bienveillant pour les en informer. Bien que Jean-Michel Collette n'ait pas pu, faute d'espace, traité cette question, il ne nierait probablement pas que ces écrits aient contribué à faire adopter des mesures et à faire progresser les sociétés d'Europe occidentale au cours de ces trois siècles. Car des progrès énormes ont été accomplis, du moins pour ce qui est du confort matériel. La communauté mondiale dans son ensemble, en particulier les organisations internationales du système des Nations Unies, a besoin aujourd'hui de recevoir les mêmes services et de subir les mêmes pressions de la part d'intellectuels et de scientifiques soucieux du bien commun. On

pourrait, là aussi, donner de nombreux exemples de ce genre d'efforts. Mais ils sont terriblement insuffisants.

Jean-Michel Collette a initialement rédigé son essai dans le contexte du Séminaire de Copenhague de 1999 pour le progrès social, organisé par le Ministère danois des Affaires étrangères. "Définir, mesurer et observer le progrès social et le recul social", tel était le sujet de ce séminaire. Le compte rendu paraîtra dans quelques mois. L'UNRISD, de son côté, a beaucoup travaillé sur les statistiques et les indicateurs, y compris les indices globaux, surtout dans les années 70 et 80. Un institut dont la rigueur intellectuelle et l'imagination politique ne sont plus à démontrer pourrait utilement reprendre ce travail en en renouvelant l'approche. Les lecteurs des pages suivantes seront certainement d'avis que l'entreprise en vaut la peine.

Jacques Baudot

Prefacio

Es un gran placer presentar esta obra de Jean-Michel Collette. En menos de cien páginas, este autor ha logrado proporcionarnos un panorama claro, completo, riguroso y sumamente ameno sobre una faceta importante de la historia intelectual de Europa Occidental. Es el relato de aquellos que entendieron desde fecha tan temprana, como es el siglo XVII, que observar y cuantificar las condiciones de vida de la población podría ser intelectualmente satisfactorio a la vez que políticamente útil.

Hay que escuchar a William Petty, quien no sólo fue el primero que publicó una estimación del ingreso nacional de Inglaterra sino que también fundó la nueva ciencia de la "aritmética política", denominación que fue ampliamente utilizada hasta que a finales del siglo XVIII fue reemplazada por el término "estadística". Para justificar el uso de "números, pesas y medidas" al tratar sobre aspectos sociales, este autor dijo que: "Así como ni la miel ni el brandy pueden remediar los vinos atroces, ninguna admonición puede rectificar lo que es falso, ni lo que está desproporcionado ni lo que es inconsistente, aunque se recurra a cifras y mediciones [si no son confiables]". Escúchese también a Rowntree quien, además de otros logros, afinó la "línea de pobreza" (inventada por Booth), y trazó la distinción entre pobreza "primaria" y pobreza "secundaria":

> Puede resultar difícil elevar los niveles materiales de aquellos que viven en la pobreza, pero mucho más difícil aún será la tarea de elevar la vida mental y espiritual a un nivel marcadamente más alto. Sin embargo, la grandeza perdurable del estado depende de que esto se logre.... Un estado totalitario no requiere que su pueblo tenga elevados niveles intelectuales o espirituales.… Un estado democrático sólo puede florecer si el nivel de inteligencia de la comunidad es alto y su vida espiritual, dinámica.

Lo anterior fue escrito en 1941. Un siglo antes, Le Play sostenía que la prosperidad no sólo se definía por el "consumo material" sino también por la "estabilidad" de las costumbres sociales y los valores morales. Más antes todavía, (aún antes de que Villermé hubiera fundado la

sociología empírica con sus famosas encuestas) Quételet desarrolló nuevas técnicas estadísticas, y Ducpétiaux clasificó, en 1853, el gasto de los hogares en tres categorías: gastos de índole "física y material"; gastos de tipo "religioso, moral e intelectual"; y los de tipo "lujoso y no previsible". ¿Quién pudo pensar alguna vez que trabajar con estadísticas e indicadores fuera árido y relativamente tedioso?

Obviamente, los grandes seres humanos evocados por Jean-Michel Collette se caracterizaban por su curiosidad intelectual, su afán de saber y por su ardiente deseo de entender a su sociedad y al mundo en general. (Le Play cuantificó los presupuestos de gastos de las familias de la clase obrera, no solamente en Europa Occidental, ¡sino también en Escandinavia y en los imperios ruso y otomano!). Tenían asimismo una sincera simpatía por los temas objeto de sus pesquisas, y un interés constante en las reformas que pudieran ser promovidas y encauzadas como resultado de esas investigaciones. Aquellos eclesiásticos, médicos, científicos sociales autodidactas, comerciantes prósperos y académicos eminentes trabajaban muy duro, con paciencia, perseverancia, y entusiasmo. Parecería incluso que gozaban de su trabajo. La razón de ello era que estaban convencidos de que era necesario y posible mejorar la condición humana. Ni indiferentes ni cínicos, estudiaron y aprendieron, cuantificaron los datos y publicaron sus obras para lograr que sus sociedades fueran mejores. Sin duda, aquellos investigadores tenían sus pequeñeces, sus ambiciones y conflictos personales, pero su labor y sus vidas respiraban dignidad, nobleza y fe. Creían en la posibilidad del progreso humano.

Esos mismos pioneros, obviamente, tenían ideas y supuestos acerca del significado de las condiciones sociales que ellos estaban analizando y cuantificando. Sus descripciones minuciosas tenían un propósito, y sus interpretaciones tenían un marco de referencia teórico. Por ejemplo, algunos años antes de la Revolución Francesa, Lavoisier reunió datos para ayudar a reformar el sistema fiscal y la política económica de su país. A finales del siglo XIX, Booth emprendió la tarea monumental que culminó con su obra *Vida y trabajo del pueblo de Londres*, a fin de descubrir "el peso relativo de la pobreza, la miseria y el vicio al compararlos con el ingreso regular y la comodidad". Pero su respeto por los hechos era mucho más fuerte que su deseo de probar su punto de vista. Por lo menos entre aquellos a los que se hace referencia en este excelente ensayo, tal parece que su honestidad intelectual y su integridad estaban fuera de toda duda. ¿Se debe a que Jean-Michel Collette ha seleccionado solamente a los autores con los que se siente a gusto? ¿O se debe a que esa línea de trabajo sencillamente no es posible sin una preocupación constante por la verdad? De cualquier manera, ninguno de esos pensadores estaba abrumado con una teoría completa del cambio social o con una visión que abarque todo lo que constituye una buena sociedad. Tenían principios morales y herramientas intelectuales precisas en vez de convicciones ideológicas.

Si se tuviera que obtener alguna lección de aquellas experiencias, las virtudes evocadas en los párrafos anteriores ofrecen inspiración suficiente. Pero es necesario tal vez agregar algunos comentarios en forma de sugerencias para la reflexión y la investigación. La más obvia es que este tipo de panorámica sintética y sin embargo sumamente bien investigada e informada, trazada por Jean-Michel Collette para Europa Occidental con una incursión en América del

Norte, también debería llevarse a cabo en otras regiones y culturas. Manteniendo como punto de partida las supuestas relaciones entre "buenas estadísticas" y "buen gobierno", ¿cuáles son las experiencias históricas de China, India, Japón, el Medio Oriente, Europa del Este o América Latina? Sin duda, las técnicas y publicaciones estadísticas nacionales e internacionales provienen del trabajo que se ha sintetizado en este ensayo. Pero esta es precisamente una de las razones para buscar en otros lugares tradiciones e ideas que hayan sido ignoradas por las formas predominantes de la modernidad.

La curiosidad intelectual y el espíritu innovador que en el siglo XVII se requería para medir los niveles de vida de los "señores temporales y espirituales", así como de los "acasillados", los "indigentes", los "soldados rasos" y los "vagabundos", es lo que se requiere ahora para entender y medir fenómenos tales como el proceso de mundialización económica y financiera, la aparente concentración del poder en manos de una nueva clase social internacional, y las condiciones de vida de los desempleados y los marginales en diversas ciudades del mundo. Se necesitan nuevas tipologías de grupos sociales con las que se puedan captar las diferencias no sólo en el ingreso, sino también en la seguridad, así como en la esperanza de un futuro mejor. Hay ciertamente mucho qué hacer en ésos y en muchos otros aspectos. Pero, ¿se han sometido suficientemente a juicio los conceptos y la información básicos? Por ejemplo, ¿cómo se interrelacionan los trabajos de filósofos y sociólogos con los de estadígrafos y otros funcionarios civiles nacionales e internacionales en torno a la noción y cuantificación de la pobreza? ¿Podrían realizarse más trabajos conceptuales y estadísticos sobre la distinción que hizo Roundtree entre pobreza "material" y pobreza "espiritual", que fuera reafirmada en términos de "necesidades" por la Cumbre Mundial para el Desarrollo Social que se efectuó en Copenhague en 1995?.

Los "investigadores sociales" y los "reformadores sociales" aquí comentados se consternaron, y a menudo se escandalizaron, ante la miseria que advertían en los hogares por ellos encuestados. Además, proporcionaron datos confiables y análisis ponderados al informar a la élite gobernante y al público benévolo y educado sobre este estado de cosas. Aunque Jean-Michel Collette no tuvo espacio para tratar esta cuestión, probablemente estaría de acuerdo en que aquellos escritos tuvieron una función importante en las políticas que se elaboraron y en el avance que se logró a lo largo de esos tres siglos. Ya que se alcanzó un progreso enorme por lo menos en lo que se refiere a la comodidad material. La comunidad mundial como un todo, y notablemente las organizaciones internacionales del sistema de las Naciones Unidas, necesitan ser objeto del mismo tipo de atención y el mismo tipo de presión por parte de intelectuales y científicos interesados en el bien común. De nueva cuenta, se podrían mencionar muchos ejemplos sobre dichos esfuerzos; pero siguen siendo dramáticamente insuficientes.

Originalmente, Jean-Michel Collette preparó su ensayo en el contexto del Seminario de Copenhague para el Progreso Social, en 1999, organizado por el Ministerio Danés de Asuntos Extranjeros. El tema de este seminario fue "definir, medir y vigilar el progreso y el retroceso social". Su informe aparecerá en unos meses más. UNRISD ha hecho también una labor significativa sobre estadísticas e indicadores, incluidos los índices agregados, especialmente durante los decenios de 1970 y 1980. Para un Instituto como éste, que ha demostrado su

capacidad de rigor intelectual e imaginación política, tendría sentido que retomara esa labor con un enfoque renovado. Los lectores de las páginas siguientes seguramente estarán de acuerdo en que dicho esfuerzo vale la pena.

Jaques Baudot

Introduction

The idea that good government should be based on precise information has a long history in Europe—a history that extends over more than three centuries. It originated in England when individuals of varied backgrounds tried to apply quantitative analysis techniques to the study of social phenomena, starting with vital statistics and moving to the more complex issues of income and wealth estimates.

The most eminent representative of this new approach was William Petty, a self-made man with a wide range of talents and interests, who, in 1665, was the first economist to publish an estimate of the national income of England and to formulate a general theory of government founded on concrete empirical knowledge. A few years before carrying out his computations, Petty had helped his friend and close associate John Graunt, also a self-made man, in his intellectual endeavours to write his *Natural and Political Observations Made upon the Bills of Mortality*—the first treatise on vital statistics which is generally regarded as having laid the foundations of the new science of demography. From the rather unpromising set of population data constituted by the London parish records on christenings and deaths, Graunt estimated, through several independent methods, the population of the city and drew a large number of conclusions, including some of the most important principles of vital statistics.[1]

By applying the same systematic approach to the analysis of income and wealth generation and distribution, Petty was able to enlarge the scope of the new quantitative methods to socio-economic phenomena. He aptly called it "political arithmetics" emphasizing with this concept two related principles: first, that society could be subjected to the same kind of empirical analysis as the physical world; second, that social topics should be dealt with "in terms of numbers, weight and measure" rather than in "indefinite generalizations" and "comparative and superlative words". In the introductory part of his *Political Arithmetick* (published in 1690), Petty conceded that the method he advocated was, to quote his words, "not yet very usual".[2] But he expressed in several statements the deeply felt conviction that in due course quantitative approaches to the analysis of society would become common usage insofar as they alone were in harmony with the tenets of good government and the requirements of Natural Law.

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[1] Significantly, Graunt was elected to the newly established Royal Society within a month of the first edition of his *Natural and Political Observations* in 1662, and was strongly supported by King Charles II, who (according to Spout, the first secretary and historian of the Society) was deeply impressed by his computations and the outstanding quality of his work. For more details, see Deane, 1987:900–903 and Hull, 1899, Vol. 1, pp. 34–53, containing the introduction to Petty's writings.

[2] Petty further emphasized this point in a speech delivered to the Royal Society on 26 November 1674: there is, he said, "a political arithmetic and geometric justice to be yet cultivated in the world…. For falsity, disproportion and inconsistence cannot be rectified by any sermocinations, though made all of figurate and measured periods, pronounced in tune and cadence, through the most advantageous organs; much less by grandisonous or euphorical nonsense farded with formality; no more than vicious wines can be remedied with brandy and honey or ill cookery with enormous proportions of spice and sugar" (quoted in Higgs, 1925, Vol. 1, p. 56). In the same vein, the author stressed in the introductory part of his *Political Arithmetick* that, even if observations "expressed by number, weight or measure are not always true, certain and evident", they can always be used as suppositions to show the way to knowledge (Petty, 1899, Vol. 1, pp. 244–245).

With minor variations the name which William Petty gave this new science was widely used in England,[3] France[4] and other European countries[5] for the next hundred years or so, until it was displaced toward the end of the eighteenth century by the term "statistics", a concept initially developed in Germany by a group of fact-finding scholars interested in describing the socio-political "constitutions" of the various European states.[6] The work of the Political Arithmeticians of the Enlightenment paved the way for the numerous empirical investigation techniques that were developed during the last two centuries. These new approaches included such important analytical tools as household budget surveys, the measurement of income distribution and income growth and the assessment and monitoring of poverty levels.

Although none of the new techniques and analytical approaches was explicitly designed to measure social progress (or regress), they all provided researchers, policy makers and the community at large with some of the basic data and instruments required to discuss and, if need be, assess changes in the living conditions and the social environment of the population. They also were widely used to prepare the extensive reform work required to cope with the most pressing needs of the new industrial age.

The aim of this paper is to briefly describe how new quantitative research techniques were developed and applied in selected Western European countries for policy analysis and policy reform purposes. The focus of the paper is on the nineteenth century, a period of considerable intellectual (and practical) achievements during which the foundations of today's modern economic and social information systems were laid.

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[3] The last major work to come out of the Political Arithmetic movement is Arthur Young's two-volume treatise, published in 1774–1779 and entitled *Political Arithmetik, Containing Observations on the Present State of Great Britain and the Principles of Her Policy in the Encouragement of Agriculture*. This publication was a commentary on current agricultural issues, which also summarized and updated some of his earlier national product estimates, originally published in his eight-volume tour of the North and the East of England. For more details on Young's tours of England and the development of national accounting techniques, see Deane, op. cit., and Stone, 1997:141–181.

[4] The term "*arithmétique politique*" or "*arithmétique morale*" became widely used in France in the second half of the eighteenth century. However, it should be pointed out that the search for (and analysis of) both qualitative and numerical information on the state of French society far antedated the Age of Enlightenment. Indeed, Colbert (who was Louis XIV's superintendent of finances from 1661 until his death in 1683) is widely credited with the systematization of previously scattered efforts in this field. The general inquiries (or *enquêtes*) that he instituted consisted of detailed demographic, political and economic descriptions of the territorial units governed by the intendants—the "ancestors" of the modern prefects. At the same time, Vauban who was "commissioner-general for fortification", undertook the preparation of 24 memoirs describing provinces, counties or cities, which also served as a basis for the first national income estimate of France published in his famous *Dîme royale* (The Royal Tithe). For more details on social inquiries and national income estimates in France, see Levasseur, 1889, Vol. 1, pp. 55–60; Faure, 1918:243–275; Westergaard, 1932:5–6; Gilles, 1964:23–80; Studenski, 1958:52–77; Lécuyer and Oberschall, 1968:37–39.

[5] An overview of developments in other Western European countries is found in Westergaard, 1932:6–15 and Lécuyer and Oberschall, 1968:40–41.

[6] The term "constitution of states" (*Staatenkunde*) designated a mixture of geography, administrative law and political theory. It mainly consisted of descriptive accounts of states, their people and governments, their customs and industry presented in the form of complex classificatory systems. Although its origin is often traced to the seventeenth century, its main exponents like Achenwall and Schlözer developed—and systematized—their ideas in the second half of the eighteenth century (Westergaard, 1932:7–13, Oberschall, 1965:4–5, and Lazarsfeld, 1970:82–102).

Household Budget Estimates and Related Inquiries into Family Conditions

Statistical estimates: The legacy of the seventeenth and eighteenth century Political Arithmeticians

The level of household income and its use in the form of personal consumption or investment outlays is an essential component of human welfare. Although the large differences in the standard of living of rich and poor families have often excited attention, and often compassion, in the past no systematic analysis of household income and expenditure was ever attempted before the last decade of the seventeenth century.

By far the most outstanding contribution of the Political Arithmetics school of the late seventeenth century to the analysis of the income and expenditure of the various social classes is that of Gregory King, a topographer and surveyor, who lived from 1648 to 1712 and, in the later part of his life, became secretary to the commissioners of public accounts. In 1695 he was one of the high-ranking officials in charge of the new tax on "marriages, births, burials, bachelors and childless widowers"—a duty which provided him with essential sources of statistical information at a time when the size, trend and structure of the population was still a matter of great political concern and much speculation.

The work which gave King a well-deserved fame was the "Scheme on the Income and Expenses of the Several Families of England", subsequently issued as part of his *Natural and Political Observations and Conclusions upon the State and Condition of England* (1696). After giving a variety of demographic estimates (on age, sex, occupational and geographical distribution of the population of England and Wales), he opened the economic part of the *Observations* with a detailed account of income and outlay of the Kingdom in 1688—the year of the Glorious Revolution.[7]

The population of England was estimated at about 5.5 million, distributed over 1.36 million families. Income, expenditure and savings were distributed among 26 social classes, ranging from the higher ranks of the nobility ("temporal" and "spiritual lords", baronets and knights) to the lower ranks of the social spectrum ("cottagers and paupers", "common soldiers" and "vagrants"). For each of these social groups, King provided estimates of the number of households, the number of heads per households, as well as corresponding income and expenses.

As a result of these computations (which were complemented by a detailed analysis of the structure of consumption), the author was able to show that 512,000 households spent less than they earned and, therefore, "increased the wealth of the Kingdom", while the remaining 849,000 families were left with a deficit (equal to 7 per cent of their income) which had to be compensated by charitable gifts and other transfers from employers, upper class families and the Church. According to historians who examined these computations, all King's estimates were made with

[7] The most recent account of King's life and achievements is found in Stone, 1997:71–117.

"an accountant's meticulous concern for internal consistency" and, in this respect, were well in advance of any calculation made in this field during the following century.[8]

Nevertheless, despite considerable shortcomings in existing statistical databases, several interesting attempts at measuring incomes and expenditures of the population were made during the eighteenth century. Although much more limited in scope than the computations of G. King, one of the more interesting exercises in this respect is the report prepared by Antoine-Laurent Lavoisier—one of the founders of modern chemistry—for the French National Constituent Assembly to which he had been elected as an alternate delegate shortly after the outbreak of the Revolution. In 1784 Lavoisier (who also held the office of a provincial Fermier-Général, or tax collector) had begun to assemble data on population, income, production and consumption to be used in formulating plans for reforming the existing fiscal system and revising the government's economic policies. The resulting work (which was submitted to the Taxation Committee of the newly elected Assembly and subsequently issued by the latter as an official publication) contained perfectly consistent estimates of: net agricultural output of the Kingdom; total daily earnings and expenditure of certain types of gainfully employed persons; total per capita consumption and expenditure of the whole population and of its different classes; and data on specific kinds of consumption and expenditures regarded as indicative of the welfare of the population.

Thus, Lavoisier's computations showed that the average rural family of five persons had an income estimated at 587 *livres* per year, which, in the absence of sizeable savings, resulted in a per capita consumption of 117 to 120 *livres*. Among the rural families at the lowest subsistence level (*les plus misérables*), per capita consumption amounted to 60 *livres* a year, providing one pound of bread per person a day, with bread consumption representing approximately 70 per cent of the total money value of family consumption. The daily consumption of meat was estimated at six ounces a day in Paris and the large cities, four to five ounces in the small cities, and one-and-a-half ounces in the countryside.[9]

Together with other prominent officials of the Ferme-Générale, Lavoisier was sentenced to death in 1794 by the revolutionary Jacobin Assembly elected in 1793. However, the pioneering work that he had accomplished was not forgotten. Two years after his execution, his estimates (which were left uncompleted) were further developed by his close friend, the mathematician J. Lagrange.[10] Lagrange attempted to use Lavoisier's estimates to develop a composite indicator

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8 Deane, 1968:385–386 and Stone, op. cit., pp. 71–117.

9 Lavoisier, 1893, Vol. 6, pp. 442–464. Based on his national income computations—the first document of its kind ever to have been submitted to a legislative body—Lavoisier addressed an eloquent plea to the National Assembly to establish an agency within the government that would regularly collect the data necessary for the preparation and publication of reliable estimates of national income. Lavoisier's request was formulated as follows: "It is now left to these representatives of France to establish an agency in the government that would undertake to prepare a balance sheet of the results of agricultural production, of commerce and of growth of the population; and would depict in a single summary table the current situation of the country, its wealth in people, in production, in industry and in the accumulation of capital. Such a grand agency, which does not exist in any country, can now be established in France" (ibid., p. 405). The agency in question was set up a few years after Lavoisier's forward-looking proposal was formulated. However, it took more than a century and a half before comprehensive, consistent and regularly updated sets of national accounts could be compiled.

10 Lagrange, 1843:193–249. It may be recalled that Joseph-Louis Lagrange was one of the greatest mathematicians of his time. Invited by Frederick the Great to come to Berlin, he spent 20 years as director of the Prussian Academy of Sciences.

of food consumption per capita, which he deemed to be the best index of a country's relative prosperity or poverty.

Although Lagrange's indicator was much too abstract and circumscribed for practical use, it had the merit of stimulating further research into household consumption, including a study of the city of Paris made by Benoiston-de-Chateauneuf[11] in which an attempt was made to compare conditions following the Napoleonic Wars with those of 1789 as reported by Lavoisier and Lagrange. The author of this new investigation found that the quantity of bread consumed proved to be larger and that of meat smaller in 1817 than in 1789. The increased consumption of bread was estimated to be two-and-a-half times greater in quantity than the decrease in meat—an indicator that according to the criteria set out by Lagrange showed a regress in the real standard of living.

Despite their imperfections, the studies undertaken by the Political Arithmeticians of the eighteenth century and their successors, the statisticians of the following century, provided a much-needed impetus to the search for better and more precise information on living conditions of the population. A key role in this respect was played by the various social inquiries that were carried out from the end of the 1790s onward in response to the numerous challenges posed by rapid and largely uncontrolled industrialization processes.

Social inquiries and the analysis of household budgets

The first detailed investigations of the workingman's conditions were made in England at the end of the eighteenth century. They were carried out by two very different investigators who were stimulated to this task by the profound distress of the working classes at this time.

The first investigator was David Davies, a clergyman about whom little is known. He initially collected his budgets in his own parish and then through a network of correspondents elsewhere, mainly fellow pastors, until he amassed 127 budgets from all sections of England, Wales and Scotland. The focus of the inquiry was on "labourers in husbandry"—one of the poorest segments of the agricultural population—"in order to make their case known, and to claim for them the just recompense for their labour". The reasons for the investigation were to be found in the high prices which prevailed in England at that time and which had resulted in a considerable deterioration of already extremely precarious living conditions.[12]

His great work, *La mécanique analytique* was written there. On learning of the execution on 8 May 1794 of his friend Lavoisier, he was reported to have stated to the illustrious astronomer, Delambre: "it took them but a moment to cut off his head, but it will take more than a century for the world to produce another one like it." (Studenski, 1958:70).

[11] Benoiston-de-Chateauneuf, 1822, Vol. 1, pp. 8–15. In addition to the works by Lavoisier and Lagrange, Benoiston-de-Chateauneuf used for his comparisons the data compiled in 1790 by Léon Biollay—a social investigator at the end of the eighteenth century who had systematically collected information on the costs of provisions and of merchandise in France around 1789/1790. Interestingly enough, these documents concerning general conditions in that country at the time of the Revolution were also supplemented by the budget of a weaver living in Abbeville in 1764. For more details on the compilation and analysis of household budgets in the eighteenth century, see Morineau, 1972:449–477, and the literature quoted therein.

[12] More data on Davies and the budgets he compiled are found in Stigler, 1956:198–200. In addition to providing basic data on household budgets, Davies also attempted to explain the causes of the situation observed. One of them was "luxurious living" of the higher classes. The other was that agriculture had lost its productive capacity because gentlemen farmers preferred grass farming, and "many thousands acres of good land, arable and pasture" were converted into roads, canals, parks and pleasure grounds. These conditions, concludes Davies, compel one "to agree with Dr. Price that, although the nominal price of labour was four to five times higher in 1790 than in 1514, the price

The expenditure accounts were divided into weekly and annual items (covering food, rent, fuel, clothes, medical care and sundries) and the cost of living was estimated for one week. Against these expenses Davies placed the earnings, and by subtraction he found the deficits. In nearly every case, he found that the head of family needed more money for a decent living than his actual wages. Davies did not explain how people managed to survive under such dismal conditions, but implied that this was achieved by reducing the level of living and by public support.

Two years later, Francis-Morton Eden[13]—the eldest son of Robert Eden, Governor of Maryland—published a three-volume study titled *The State of the Poor*. It was a monumental work in which, to quote from the introductory part of the study, he attempted to lay before the public "accurate details respecting the present state of the labouring part of the community as well as the actual poor". The questionnaire used to prepare the inquiry was similar to that designed by John Sinclair for his *Statistical Account of Scotland*, but was limited to those aspects which Eden thought have a bearing, direct or indirect, on poverty.[14]

After an extensive history of the Poor Laws and their application, most of the work is taken up by parish reports which contain information, some of it with considerable numerical detail, on population size, the number of houses that paid taxes, principal manufactures, typical wages in the principal occupations, the rent of farms, land taxes, the price of foods, mutual help societies and their membership, the number of poor people, and detailed descriptions of the parish workhouses and their inmates, among other things. Starting from the principle that "it is hardly possible to form any accurate judgement of the conditions of the labouring classes in any district of the Kingdom without first knowing what a labouring man earns and how much of the necessaries of life he can purchase by his earnings", Eden collected, either directly or through his correspondents, budgets from 60 agricultural and 26 non-agricultural families.[15]

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of corn was seven times and of meat and raiment about fifteen times higher". For more information on price changes and their impact on living conditions in Britain, see Burnett, 1969:129–189.

[13] Eden visited several parishes himself to collect the information, but, in the end, he was overwhelmed by the work and had to enlist the cooperation of a number of clergymen. As this cooperation soon proved to be insufficient, he sent "a remarkably faithful and intelligent person" to carry on the survey according to the questionnaire supplied to him (Stone, 1997:278–279).

[14] The Scotsman John Sinclair is reported to have been the first to introduce quantitative techniques into rural surveys. A wealthy landowner—and a prime mover in the institution of the United Kingdom Board of Agriculture of which he later became a president—he was familiar with the German statistical tradition; and when a private population census of Scotland was carried out through the agency of the Scottish clergy, he conceived work along the same lines but with much more ambition. This work eventually resulted in a social inquiry of considerable proportions, so broad that it took over seven years to complete. The heart of the inquiry was a questionnaire with more than 100 items that were designed to be completed by correspondents, mainly the Scottish clergy, in the 881 parishes of Scotland. The results were published in 21 volumes between 1791 and 1799. However, a definite quantitative exploitation of the results was not published until 1825, after Sinclair had retired from public life. For more details, see Higgs 1926:402–403; Jones, 1948:23–24; Lécuyer and Oberschall, 1968:41–42; and Kent 1981:13–14. A replication of the initial survey was undertaken in 1832 at the initiative of Sir Henry Jardine. The work was completed in 1845 and was published in 15 volumes.

[15] The innumerable difficulties encountered by Eden and his collabourators in the collection of budget data have been described at length in the introductory part of the parish reports. In this introduction, Eden stressed that many people were reluctant to discuss their annual earnings with precision; some were so careless that they could not give satisfactory information; but most were afraid that the purpose of the questions was to bring about a reduction in their wages or something equally disagreeable, and so were "unchangeably mysterious and insecure". Therefore various ways had to be devised to overcome difficulties that at first sight looked almost insurmountable. According to Stone, from whom this information is taken (ibid., p. 278), "anyone who has tried to collect budget data in recent times will sympathize with the author".

Although the breakdown of expenditures does not follow exactly that of Davies, the conclusions that can be derived from Eden's work closely resemble the latter's findings. In all groups observed, income was less than the average expenditure; and approximately 20 per cent of families' expenses had to be met by private or public transfers of resources. In practically all cases, more than 75 per cent of household budgets had to be allocated to food—much more than in the poorest of today's less developed countries. Indeed, very little could be spent on other than the most elementary basic needs, which probably, in the case of clothing, amounted to little more than rags. At a time when the prevailing view was that idleness, drunkenness and improvidence were at the root of these social evils, Davies and Eden, in their own way, provided the factual material needed for a more sober assessment of reality.

When Eden and Davies prepared their reports, Europe was entering a period of considerable turbulence and hardship marked by 20 years of almost continuous wars. With the return to more peaceful conditions in 1815, attention switched to domestic reforms. Numerous social investigations, both private and public, were undertaken in the more industrially advanced countries of Europe—such as England, France and Belgium—to assist policy makers and social reformers in their attempts to change outdated legislation and put in place the new institutions (particularly in the field of education, public health, housing and social welfare) required by the new industrial age.

At a time when efficient organizations for the collection and dissemination of statistical data had yet to be put in place, many inquiries were merely designed to fill enormous gaps in basic economic and social information.[16] However, as experience developed and effective institutions were set up to collect much-needed social data, quantitative investigations rapidly moved well beyond a simple descriptive sociography to become empirical sociology in embryo. The best illustration of this new empirical social science in the making is provided by Villermé's study of textile workers in France—a study which was commissioned in 1834 by the Académie des Sciences Morales et Politiques to which Villermé had been elected the same year.[17] The purpose of the inquiry was to explore the variety of factors, from working conditions to housing and family life, which affected the condition of people in the rapidly expanding textile industries.

Born in Paris in 1782, Louis-René Villermé was 52 years old when he began his great inquiry into the conditions of the cotton, wool and silk industry workers. He spent two and a half years observing workers in the most important textile manufacturing centres in all parts of France, as well as in the Swiss canton of Zurich, where his tour ended. His two-volume report is the crowning work of a career as a social investigator which started in 1820 with the publication of a small book on the reform of the penitentiary system of France and continued practically

[16] In this age of "statistical enthusiasm" (to quote the expression coined by Westergaard in his *Contribution to the History of Statistics*), the need for quantitative information was partly filled by the numerous "statistical societies" which sprang up in the United Kingdom and, to a lesser extent, in other continental countries of Europe. An extensive description of the British statistical movement in the first half of the nineteenth century is found in numerous books and scientific publications, including Westergaard, 1932; Ashton, 1934; Cullen, 1975; Bédarida, 1976; and Kent, 1981.

[17] The best and most comprehensive presentation of Villermé's life and work is found in the introduction by J.P. Chaline and F. Démier to a new edition (in 1989) of his famous *Tableau* (Villermé, 1989:1–75). See also Braun and Valentin, 1989:1–32, and Barles, 1999:104–112.

uninterrupted until his death in 1863, by which time he had produced more than 120 studies dealing with public health, statistics and social reform issues. Trained as a physician like so many social investigators of that period in France, Villermé demonstrated remarkable "clinical" skills in observing social phenomena and addressing new topics, such as the measurement of differential mortality according to social classes which he tackled in several scientific contributions including his famous *Tableau de l'état physique et moral des ouvriers employés dans les manufactures de coton, de laine et de soie* (Survey of the Physical and Moral Conditions of Workers Employed in Cotton, Wool and Silk Factories).

To prepare his report, Villermé used both statistical data and his own qualitative observations. He found some statistics in the annual reports of the *départements*[18]—an important source of information at that time, but for the most part he collected them himself directly or through his correspondents in the various places he visited. In addition to basic vital statistics, quantitative data dealt with the number of workers, the average rate of pay for the different occupations, the length of the working day and the budgets of families, some of them aggregated, others more detailed and always accompanied by precise indications on the cost of the main items consumed. These data were always complemented by information of a more qualitative nature on educational levels, health status, morality, cleanliness, and internal arrangements of both workplaces and workers' dwellings. The *Tableau* in which the results of the inquiry were summarized consisted of two largely independent volumes.

In the first volume of his work, Villermé brought together all his facts, arranging them in almost the same way for each of the industrial areas he had visited, a procedure which enabled him to present a systematic description. Concerning wages and workers' budgets which, together with working conditions, constituted the focal point of his analysis, he always tried to relate them to a hypothetical minimal budget which he devised with all due caveats for each place visited—an approach amply justified by considerable differences in the cost of living in different cities. Furthermore, both when he used statistics and when he made qualitative observations, Villermé made use of indicators, without designating them as such. Thus, he took a high number of illegitimate births to be a reliable index of the disruption of customs, and he interpreted "qualitative" indices such as being paid monthly (rather than daily or weekly) as signs of stability and indices of a relative affluence.[19]

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[18] From 1800 to 1840, the date when Villermé's inquiry was published, some of the most remarkable statistical memoirs and studies were prepared in various *départements* and related local administrations. A typical example is the six-volume compendium prepared in 1817–1830, entitled *Recherches statistiques sur le département de la Seine* (Faure, 1918:289–290, and Lécuyer and Oberschall, 1968:45–46). In 1816 the *administration préfectorale* of the Seine *département* conceived the idea of resuming research work that went back, it seems, to the years 1802 and 1803, and which in reality was related to the publication of the civil registration documents ("*actes de l'état civil*") ordered by Colbert in 1670. To quote from the introductory part of the publication, these investigations were carried out according to a programme "outlined, after an exhaustive discussion of all relevant questions", with the concurrence of the mathematician Fourier. The final publication contained data not only on the "movement of population" but also on goods consumed, levels and distribution of wealth, causes of death, etc. Since, at the same time, various ministerial departments, such as the Ministry of Justice, started publishing a broad variety of social data on a regular basis, publication of this information made possible the emergence of "moral statistics"—a field in which one of the earliest achievements was a remarkable study of relations between crime and education levels (in 1829, by Balbi and Guerry). It should also be mentioned that numerous empirical investigations were undertaken by the various public health boards (such as the Conseil de Salubrité de la Seine) set up in the largest cities of France.

[19] Ibid., p. 46.

The second volume of the *Tableau* (which is the only part of the inquiry to have been submitted to the Académie des Sciences Morales et Politiques) covers most of the same categories in an analytical way. At the end of his meticulous observations—and for many years unparalleled descriptions of living conditions in the new industrial world—Villermé concluded that, on the whole, the lot of workers had markedly improved compared to conditions prevailing in the previous century—a conclusion for which he underwent severe criticism on the part of several social investigators of that time, such as Eugène Buret,[20] but to which he steadfastly adhered. He also maintained that working conditions in the new manufacturing establishments he visited were superior to those prevailing in traditional rural or urban industries. At the same time, using the budget data he had painstakingly collected as evidence, he demonstrated the extreme precariousness of living conditions even for relatively well-off categories of workers in an emerging market economy subjected to sharp and sudden cyclical fluctuations.

Like most of his colleagues of the rather liberally inclined Académie des Sciences Morales et Politiques, Villermé was against extensive state intervention in economic and social life. However, he constantly invoked the protection of the law for the children employed in the new manufacturing establishments whose sufferings he sympathetically described in his *Tableau*, sometimes breaking into fierce indignation. In fact, his book ended with a well-documented plea for the enactment of a law restricting children's employment—a wish that was partly fulfilled when a law to that effect was adopted by the French Parliament in March 1841.[21]

The pioneering work of Villermé was continued by other eminent members of the Académie des Sciences Morales et Politiques, such as Adolphe Blanqui, the author of a survey of *Labouring Conditions in France* prepared in the wake of the revolutionary events of 1848,[22] and Louis Reybaud—another social investigator of great repute who undertook in the 1850s and early

[20] Born in 1810, Antoine Eugène Buret died very young (at the age of 32), shortly after the publication of his major work, *De la misère des classes labourieuses en Angleterre et en France* (On the Poverty of the Labouring Classes in England and France). This two-volume publication was the expansion of an essay for which he won a F5,000 prize, awarded by the Académie des Sciences Morales et Politiques, and in which he presented a thesis on the growing impoverishment of workers under the impact of the emerging manufacturing systems. His work was based on both direct observation, particularly in England, which he had the opportunity to visit several times, and on secondary sources such as Villermé's inquiries, on which he drew extensively for his demonstration. Although he professed utmost admiration for the work of the latter, he nevertheless criticized Villermé sharply for his too optimistic presentation of the progress achieved during the preceding decades. According to Buret, Villermé's conclusions contradicted the observations presented in his book (see Buret, 1842:606–607, Part 3, Chapter 4). Buret's own investigations and relations to Villermé's findings are examined in Rigaudias-Weiss, 1936:83–123.

[21] The role played by Villermé in opposing the employment of children in manufacturing establishments, as well as in ensuing legislative reforms, is examined at length in Braun and Valentin, 1989:17–101. Braun and Valentin's study also contains a detailed presentation of the parliamentary debates which started in 1839 and eventually led to the adoption on 22 March 1841 of a law regulating the work of children in manufacturing establishments.

[22] Born in 1798, Jérôme Adolphe Blanqui (who was the brother of L.A. Blanqui, the well-known revolutionist) was a prominent economist and publicist of the "liberal age" in France. Elected a member of the Académie des Sciences Morales et Politiques in 1838, he spent several years of his professional life conducting social inquiries on behalf of the Académie. The most important of these was published (in abridged form) in 1848 and entitled *Des classes ouvrières en France pendant l'année 1848* (On Labouring Classes in France during 1848). Although less detailed and less systematic than that of Villermé, this investigation provided a wealth of relatively objective information on the condition of the working classes in various parts of France and was widely used in the debate which took place during this revolutionary year. More details on Blanqui's inquiry, the role of the Académie and the ensuing debates are found in Savoye, 1994:117–143.

1860s several in-depth investigations (extended to England, Switzerland and Germany) of the same textile industries Villermé had visited 20 years before.[23]

The problems posed by the plight of the new industrial proletariat were also the object of extensive inquiries in other rapidly industrializing countries. In Belgium, for example, the Ministry of the Interior undertook in 1844—just four years after Villermé had completed his famous report—a large-scale investigation into the condition of the working classes. This investigation resulted in the publication (in 1848) of a three-volume official compilation of detailed questions and answers concerning wages, hours of work, employment conditions, standards of living, hygiene and child labour in all the industries in the major cities and towns of Belgium during the period 1843–1848. Reports from manufacturers, chambers of commerce, trade associations, mining associations, medical bodies and other relevant authorities were all included in detail.

A very interesting technical innovation was the inclusion in the study of a typical weekly budget for a Ghent family of two adults and four young children. This budget (which amounted to F14.38 weekly) was reported to be indicative of conditions in both large and medium-sized cities. It showed that approximately 75 per cent of the families' income was spent on food, 43 per cent of which consisted of a bread—a food of extremely poor quality since it was often adulterated with vegetable and foreign matters. Under these conditions it was hardly surprising that wives frequently worked; so did many of the children, at a wage that was miserable but still essential for the family's survival.[24]

The preparation of this extensive report—one of the first of its kind in Europe—had benefited from the contribution of Edouard Ducpétiaux,[25] a jurist born in Brussels in 1804, who in several respects played the same role in Belgium as Villermé (and his successors) in France. Shortly after the revolution of 1830, Ducpétiaux was appointed general inspector of the Penitentiary and Beneficent Institutions of the newborn kingdom and started his career as a social investigator with the publication of two major works on prison reforms. An indefatigable researcher and writer, he soon extended his investigations to the problems connected with the

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[23] Born in Marseilles in 1799, Marie-Roch Reybaud was elected representative in 1848 both to the constituent and legislative assemblies, and in 1850 became a member of the Académie des Sciences Morales et Politiques. Throughout his whole life (he died in 1879), he wrote either as an economist, a journalist or a novelist. The major work he prepared for the Académie is his four-volume *Etudes sur le régime des manufactures*, which was divided as follows: Vol. 1, 1859, Silk; Vol. 2, 1863, Cotton; Vol. 3, 1867, Wool; and Vol. 4, 1874, Iron and Coal. The first three volumes (which also contain a number of detailed workers' budgets) were rightly considered as a natural follow-up to Villermé's inquiries, since they provided a solid basis for assessing the changes in living and working conditions which took place over the two (or three) preceding decades.

[24] See Vol. 1 of Belgium, Ministère de l'Intérieur, 1847. (Vol. 2 and Vol. 3 of the official inquiry contain the contributions of the various official and non-official bodies interviewed). One year after the Ministry of the Interior of Belgium had published the results of its extensive inquiry, the French National Assembly (which was elected in 1848 after the fall of the monarchy) decided to carry out a vast inquiry into the state of industrial and agricultural labour. The inquiry was organized in each *canton* of France (the lowest administrative unit above the municipal level) and was the first of its kind to be managed by a tripartite structure (in which representatives of employers, labour and administrative bodies were involved). The level of response was considered to be extremely good. However, the general *rapporteur* was overwhelmed by the sheer amount of information collected in this way, and the only practical result was to provide future historians with first-class materials on labour conditions in France in the middle of the nineteenth century.

[25] On Ducpétiaux's work, see Albrecht, 1912:17–23; Chlepner, 1956:37–39; Rubbens, 1922:111–172, and the literature quoted therein.

condition of the working classes, published an essay in 1843 on the *Condition physique et morale des jeunes ouvriers* (Physical and Moral Condition of Young Workers)—a title reminiscent of Villermé's well-known *Tableau*—and two studies on the extent of pauperism in Belgium (1844) and in Flanders (1850), which obtained a prize from the Royal Academy of Belgium. However, his major work on household budgets in that country was published somewhat later, in 1855. Together with a number of other major studies described below, this book is rightly considered to have opened a new era in the field of consumption studies and related analyses.

Emergence and development of modern household budget studies

The works of Edouard Ducpétiaux, Frédéric Le Play, and Ernst Engel that appeared after 1850 form a trilogy that may be considered the foundation of the "modern" school of family living investigations. Each investigator contributed to a given field and each stimulated a group of followers, both at home and abroad, who carried on his work.

Ducpétiaux was the first to publish his *Budgets économiques des classes ouvrières en Belgique*.[26] His major contributions to studies of the type analysed here were in the fields of collecting information and in the techniques of classifying households' expenditures. In line with the procedure followed with the ministerial inquiry of 1843–1848, he did not estimate expenses from available statistical data but proceeded in 1853, under the guidance of Quételet, the famous statistician, and the International Statistical Congress (which had just been set up under Quételet's chairmanship), to secure information about Belgian families divided into three social classes. The first 48 families were those "in need", their average income amounting to F595 a year—approximately 15 per cent less than the Ghent family referred to above. The second social class comprised 51 families with an average yearly income of F797, an amount that "just sufficed to cover expenditures". The third class included 54 families who were able to save during the year, with an average income of F1,198. In order to obtain comparable data, Ducpétiaux attempted to study only those families with both parents living and with three or four children under the age of 17. In principle, all nine provinces of Belgium were covered.

Ducpétiaux's chief contribution, however, was in the practical use of Quételet's systematic classification of households' expenditures, which was presented to the International Statistical Congress in 1853. This classification focused on three main functional categories, which were further broken down as follows:

1. Expenses of a physical and material nature: food; rent; clothing; bed clothing; heat; light; furniture; health; sickness-related expenditures; household insurance; taxes; postage; laundry; tools for one's trade; and costs for garden and home production of food.
2. Expenses of a religious, moral and intellectual type, including: church; school; training; books, etc.; contribution to moral, intellectual and charitable organizations; mutual societies and insurances; and saving.

[26] Ducpétiaux's budgets were published for the first time in the *Bulletin de la Commission Centrale de Statistiques*, No. 6, 1855. The main statistical tables are reproduced in Engel, 1857. From the expenditure lists collected by Ducpétiaux, Engel was able to construct a budget for each of the 199 families according to Le Play's superior budget classification; and by means of the latter's family monographs, he was able to classify Le Play families according to Quételet's and Ducpétiaux's typology of working-class families.

3. Expenses of a "luxurious and improvidential" type, including: alcoholic drinks, cafés; tobacco; gambling; toilet articles; theatre; fêtes and public recreations; and loans and expenses at the pawn shop.

The analysis of poor and "relatively well-off" workers on which Ducpétiaux's study focused showed that in most cases expenses of a religious, moral and intellectual nature were practically non-existent. However, expenses of the third type, particularly those relating to alcoholic drinks and tobacco, could absorb a not insignificant part of the workers' budget. In a significant number of cases, the income and expense account showed deficits that could only be made up by charity and other transfer payments.

Le Play, a towering figure of the nineteenth century empirical sociology in the making,[27] is another outstanding contributor to the analysis of households' budgets and family living conditions. Born in 1806 near Honfleur, a small town in Normandy, he graduated from the Ecole Polytechnique and held various posts in the Ministry of Industry. In 1840 he was appointed Professor of Metallurgy at the Ecole des Mines—a post that he kept until 1856, when he became Counsellor of State and Commissioner-General of the World Exhibitions organized in Paris in 1857 and 1867 by the French Government. In 1871 he retired from government service to devote the rest of his life to research and the dissemination of his ideas about social reform.

Between 1829 and 1854 his profession as a consulting engineer in mining and metallurgy gave him the opportunity to make extensive journeys throughout Europe for several months every year, ranging from Spain to the Ural Mountains and from Scandinavia to the Ottoman Empire. According to his autobiography, the July Revolution which overthrew the Bourbon monarchy in 1830 provided the shock—and the interrogation—which were decisive for his future orientation as a sociologist: is it possible to prevent disorder and "suffering" (a recurring theme throughout his work) by tracing the causes of social evils through scientific observation, just as in the case of physical phenomena?

Le Play did not consider the study of society as a survey of practical facts alone. He believed that the chaos which he saw around him was a chaos of social ideas and, therefore, he stressed that all generalizations should be derived from a patient analysis of facts. In his search for accuracy and empirically based conclusions, he laid down well-defined rules of research and proceeded by use of a questionnaire in which he carefully and systematically tabulated all the data which he or his investigators collected.

In order to collect the data he needed, his method was to make in each place careful inquiry of teachers, clergy and other social authorities until he found what was considered to be a really

[27] The role of Le Play in the development of modern sociology was defined by Raymond Aron in the preface of his *Main Currents in Sociological Thought* as follows: "Modern sociology has two main sources: the socio-political ideas or doctrines on the one hand, and the administrative statistics, surveys and empirical investigations on the other hand.... It is possible to argue that the empirical and quantitative sociology of to-day owes more to Quételet and Le Play than it does to Montesquieu or Auguste Comte" (Aron, 1967:16). However, Aron added that his own inclinations predisposed him in the first direction. On Le Play's life, work and influence, see Higgs, 1890; Auburtin, 1906; Albrecht, 1912; Herbertson, 1946; Lazarsfeld, 1970; Brooke, 1970; Goldfrank, 1972; Clark, 1973; Kalaora and Savoye, 1989; Lécuyer, 1992; and Arnault, 1993.

typical family, whether a Sheffield cutler or a Dutch fisherman, and then he would arrange to live with (or near) the family for some weeks if necessary, observing their whole manner of living. Some hint of his tact in winning the confidence of these families may be gained from his description of the expedients used for this purpose:

> Not to be abrupt in pushing inquiries, an introduction from a well-chosen source helps in abridging the preliminaries; to secure the confidence and sympathy of the family by explaining the public utility of the enquiry, and the disinterestedness of the observer; to sustain the attention of the people by interesting conversation; to indemnify them in money for time taken by the investigation; to praise with discrimination the good qualities of different members; to make judicious distribution of small gifts to all (*La méthode sociale*, 1879:223).

With these broad guidelines as a starting point, each investigator was to proceed by three methods: first, direct observation of the household and its surroundings; second, direct questioning of the members of the family; and, third, questioning of other knowledgeable people in the neighbourhood about the family. The data gathered by each of these methods could then be compared with those obtained by means of the other two methods.

In his search for accuracy and consistency, Le Play considered it essential that all estimates be computed in both physical and monetary terms. Furthermore, all stock and flow data had to be systematically cross-checked through a system of double-entry bookkeeping techniques designed to ensure the reliability of the results obtained.

This overriding concern for accuracy in analytical work was typical of the investigator's desire to submit the emerging social sciences to the same stringent rules as those applied to the study of the physical world. In the methodological part of his work, this strongly felt conviction was expressed as follows:[28]

> The surest means of knowing thoroughly the moral and material life of men is much like the process which chemists use to learn about the nature of minerals. A given mineral is known when by analysis it has been separated into its constituent elements, and when it is found that the combined weight of all these elements is equal to that of the specimen which has been analyzed. A numerical verification of the same nature can always be made by the scholar who analyzes carefully the existence of the social unit constituted by the family.

Thus, by progressive stages, Le Play transferred and adapted to the study of societies a method derived from mineralogy which he knew so well—field observation of a complete and normal sample. The simplest and most permanent human group being the family, he decided that an insight into all the phenomena occurring in such groups could be obtained by studying their budgets. "All the acts which constitute the life of a working man's family", he wrote, "result in an income or an outlay". In this way, he collected the basic material for about 300 monographs from practically all countries of Europe and the adjoining regions of Africa and Western Asia.

[28] Le Play, 1879:224.

The first series of studies—*Les ouvriers européens* (European Workingmen), composed of 36 monographs—was published in 1855 and almost immediately brought him immense fame. Twenty years later, this work was further expanded in a six-volume publication and in numerous studies prepared under the auspices of the Société internationale des études pratiques d'économie sociale—a research group that he had founded in 1856 to promote empirical research work and prepare new family monographs.[29]

Case studies published in the various editions of *Les ouvriers européens* include only a small proportion of those actually written. Indeed, Le Play rigorously excluded those that fell below his stringent standards and only issued just over one tenth of those he prepared himself. Each monograph (which, on the average, extended over 50 large format pages) contained sections on the following items: description of the locality and the immediate physical environment, list of the members of the family, religion and morality, health and hygiene, property, fringe benefits (in the form of rights of usage, and allowances in kind or service), work (including detailed listing of home and side activities), food, house and belongings, recreation, family background and history, and detailed income and expenses for a year, both in kind and money (see Annex 1). In addition to this core pattern, a number of supplementary sections were added to each case study in order to provide relevant information on the social and cultural institutions surrounding the family, including inheritance laws or customs to which Le Play attached great theoretical importance.

The insistence placed by Le Play and his followers on the accuracy of descriptions and the attachment to minute recording of households' income and expenditures is explained by the fact that, for him, the well-being of the family is the cornerstone, and, indeed, the mirror image of the prosperity of society. However, it should be stressed that, in the Leplaysian system, prosperity is not just defined by the level of material consumption; social cohesion and stability were at least as important. Hence a high level of stability with respect to custom and adherence to moral value (the "Decalogue", in the author's biblical terminology), alongside a low level of consumption, could still represent a satisfactory condition. The nomads of Bashkiria, in the south Uralian region of the Russian Empire, for which he had prepared a detailed case study, with their established way of life and strict adherence to the tenets of their faith, could be just as "prosperous" as geographically mobile workers with a high (but often intermittent and precarious) income and a complete break-up of their traditional way of life.

In the last edition of *Les ouvriers européens*, Le Play returned to his constant theme—prosperity and stability versus disorganization and suffering—when he contrasted the lot of a foundry worker in Bulgaria (with a yearly wage equal to F310) with that of a similar worker in Western Europe earning more than F3,000. As the former had security and many fringe benefits, his

[29] Le Play's major work, *Les ouvriers européens* (Le Play, 1876, 6 vol.), was extended into a series of regular publications entitled *Les ouvriers du monde*. These publications contain case studies prepared by his followers. The publication (which covered practically all industries of the world) ceased shortly before the outbreak of the First World War and was intermittently resumed during the interwar period. A synoptic presentation of 100 family budgets prepared by Le Play and his followers from 1850 to 1890 is contained in the comparative study prepared by Cheysson (Cheysson, 1890:70–157). See also the paper read before the Royal Statistical Society in 1893 by Higgs on the analysis of "workmen's budgets" (Higgs, 1893:255–293).

material conditions may have been better than the latter's.[30] On the question of insecurity, Le Play also referred to the example of a Paris suburb where the bulk of the population were men, because women had been left in the countryside as men were drawn into better paid but extremely precarious urban employment.

Le Play's empirical investigations gave rise to a very elaborate typology of families and social systems (all of them differentiated according to their degree of "stability" or "disorganization").[31] But while family monographs rested on solid and well-documented empirical foundations, the general conclusions he derived from his theories about "prosperous" and "suffering" societies depended on much more uncertain and disputable sociological premises. The shortcomings inherent in this type of broad generalization explain why, after Le Play's death in 1882, many of his followers preferred to concentrate their attention on empirical analytical work and to extend the framework developed in *Les ouvriers européens* to new fields of investigation, such as industrial labour surveys and local community studies.[32]

Together with Ducpétiaux's research into Belgian households' budgets, Le Play's empirical work on family conditions also exerted a decisive influence on Ernst Engel, a German economist and statistician who is widely considered to be one of the founding fathers of modern socioeconomic analysis. Born in 1821, Engel received early training at a mining academy in Germany. Then in 1847 he went to the Ecole des Mines in Paris, where he came under the influence of Le Play, a teacher for whom he always professed the greatest admiration.[33] During a subsequent stay in Belgium, he became acquainted with Adolphe Quételet and was strongly impressed by the latter's faith in the possibility of discovering

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30 Le Play describes the family of the iron foundry workers of Samakova (Bulgaria) as follows: "The family described in the present monograph is an example of the superiority found in the poorest workers of the Orient, compared to those who, in the wealthiest agglomerations of the West, enjoy wages ten times higher". (Le Play, 1877–1879, Vol. 2, p. 234).

31 The cases presented by Le Play in his six-volume family monographs are classified according to the degree of social stability (or, conversely, disorganization) found in the various types of families investigated. Thus, the first type of families examined in *Les ouvriers européens* starts with the patriarchal households of Eastern Europe where the author finds the highest degree of stability. The study ends with family monographs collected mainly in Western Europe and the Mediterranean region where the maximum degree of social disintegration is diagnosed. The classification of populations according to their degree of stability is closely related to the typology of families, which were classified under three main headings: patriarchal families, i.e. extended families in which three or more generations and numerous relations live together under the guidance of the official "father"; nuclear families where two generations (parents and children) form the normal unit, and there are no other formal links at all; and stem-families (or *familles-souches*), where close links are maintained between generations, but which escape the stifling influence of the patriarchal system and which provide the basis of "prosperous (stable) societies". However, while the typology of families is defined in a relatively rigorous (although not unambiguous) fashion, the classification of societies according to their degree of stability/disorganization rested on what appeared to be Le Play's own purely subjective assessment (Brooke, 1970:80–81). A good summary of his views in this respect can be found in his latest work on the "essential constitution of mankind" (Le Play, 1881).

32 The main source of information on industrial labour surveys and local and regional community studies is provided by the empirical studies published in the two journals founded by Le Play and his followers, *La réforme sociale* and *La science sociale* (the latter founded in 1886). An overview of methodologies followed by the numerous investigators of the Le Play's school is found in Du Maroussem (1900)—one of the best social investigators in France at the turn of the century and a leading member of the newly established French Labour Office—and Cheysson (1896:286–295). For German-speaking countries, see Landolt, 1894:10–99 and Albrecht, 1912:28–48. An extensive description of Le Play's influence on the development of empirical social research in Europe and North America is found in Sorokin, 1938:71–92; Brooke, 1970:117–137; Kalaora and Savoye, 1989:53–71 and 125–259; Prein, 1989:7–9; Ronfani, 1989:34–36; and Tomasi, 1989:37–39.

33 In his memoirs, L. Brentano, one of Engel's students, recalls how Engel used to put a copy of *Les ouvriers européens* on the seminar table and call Le Play "the father of the descriptive social-scientific monograph". As shown in Annex 1, Le Play's influence was decisive on the future orientation of G. Schnapper-Arndt, one of the most remarkable social scientists of the younger generation. For more details see Oberschall, 1965:44, and Annex 1.

quantitative social laws based on statistical "regularities".[34] Upon his return to Germany, Engel took up statistics as a profession and became director of the statistical bureaus of the Kingdom of Saxony (from 1850 to 1858) and Prussia (from 1861 until his retirement in 1882).[35]

Starting in 1862 and continuing for more than 20 years, Engel conducted a statistical seminar in Berlin, which was attended by many of the future prominent economists and sociologists of the younger generation, including L. Brentano, K. Bücher, F. Knapp, F. Tönnies and G. Schnapper-Arndt. Engel was also a founding member of a research association set up in 1872 by a group of reform-minded social scientists, journalists and public officials to promote empirical investigations of economic and social conditions in Germany—the *Verein für Sozialpolitik*.

One of the first problems Engel set himself to address was the measurement of economic welfare. As a hypothesis he assumed that "the degree of well-being of man is manifested as a ratio in which the part of his expenditure which is necessary for physical sustenance is in proportion to that part of his expenditure dedicated to the satisfaction of remaining essential needs". One of the first steps he took to test this hypothesis was to examine the budget data collected by Le Play and Ducpétiaux in the course of their investigations.

The expenditure data collected in these surveys soon convinced Engel that there was a relation between a household's income and the allocation of its expenditures between basic needs items, such as food, and other (higher level) types of outlays. Furthermore, he observed that families with larger incomes tended to spend more on food than poorer households, but that the share of food expenditures in the total budget tended to vary inversely with income. From this empirical regularity (which was soon to be referred to as "Engel's law"), he went on to infer (as early as 1857) that, in the course of economic development, agriculture would decline relative to other sectors of the economy—an observation that was advanced as an argument against Malthusian fears of overpopulation.

At a later stage of his scientific career, Engel developed his analysis of family budgets by taking household composition into account. In his little book, *Der Kostenwert des Menschen* (The Economic Evaluation of Man), published in 1883, he defined what has since become known as an equivalent measurement scale, to give appropriate weights to persons of different ages and sexes. In order to compare families of different sizes, he took the average consumption of an infant as unity and added a tenth for each year of growth until 20 years for females and 25 years for males. This unit of consumption was called a *quet* in honour of the famous Quételet. Although the increase in the unit with the size of family could be compared with a curve of

[34] The concept of statistical regularity found its expression in Quételet's theory of the "average man" ("*l'homme moyen*") about which he wrote in the various versions of his well-known *Physique sociale* (Quételet, 1835 and Quételet, 1869). Quételet called "laws" the observed constancy in time of suicide rates, crime rates, marriage rates, etc., in a population or stratum of the population. The analysis of statistical distributions was a method to arrive at the formulation of these "laws". On Quételet and his contribution to the development of quantitative approaches in the emerging social sciences, see Lottin, 1912 and Lazarsfeld, 1970.

[35] More information on Engel and his influence on later economic and social research is found in Zimmerman, 1932, Allen and Bowley, 1935:5–15, Schumpeter, 1954, Berthomieu, 1966, Stigler, 1965, and Houthaker, 1968. See also Engel, 1857 and 1895.

growth, it was not exactly identical with tables of physical growth because the unit was used not only to measure food expenditures but other consumption items as well.

Using this new unit of measurement and a revised classification of expenditures, Engel undertook, shortly before his death in 1896, to re-analyse the data contained in the Ducpétiaux study of 1855 and to compare them with more recent investigations made in 1886 and 1891, as well as with similar inquiries carried out by Carroll D. Wright in the United States (see Annex 2). The much-expanded analysis included a comparison of the city and the country, as well as of consumption among the various social classes in Belgium, according to the occupation of the head of the household. Based on the latest discoveries of the nutrition science that was then in the making, data concerning the protein, fat and carbohydrate composition of typical diets were also analysed.

In the conclusions of a paper published by the International Statistical Institute (of which he had been president), Engel noted that the real purchasing power of the Belgian worker had increased significantly between 1853 and 1891 despite a sharp rise in the price of some of the goods and services consumed. The rise in real income was associated with a more rapid increase in the consumption of animal as against vegetable foods. Free income and household saving, however, grew very little "since the increased income of all the social classes was largely, indeed almost exclusively, used for the purpose of bettering their physical living conditions; and now (in 1891), much more than previously, more alcoholic beverages are consumed both at home and in the restaurants and cafés". This observation led to the theory that "increased incomes of those who have suffered material suppression and dissatisfaction are usually followed not by approved and reasonable lines of action but by an extreme and unbalanced reaction in the direction of lack of control".

Engel was convinced of the truth of the above theory and also of another that held that, where conditions are gradually getting better, workers learn to improve their living conditions without being exposed to the danger of dissipation and extravagance. His final conclusions were that the worker's greatest well-being was promoted under conditions in which not more than 80 per cent of his budget is needed for the material satisfactions of life and the remaining 20 per cent, or more, is available for cultural items. The degree to which a family approached this standard was the measure of the well-being of the society.

Thus, with somewhat different perspectives, Engel, Ducpétiaux and Le Play appear to have made unique contributions to the methods and conclusions derived from their extensive and pathbreaking studies of households' budgets. Each carried out in-depth investigations in the same environment, each used his own methodological approaches, and each reached conclusions somewhat different from the others. Engel and Ducpétiaux emphasized the material conditions of life; while Le Play held that social organization was primary because it guaranteed social stability and its corollary, social peace. However, the three of them laid the groundwork for numerous investigations of the living conditions of families, which were undertaken from the end of the nineteenth century onward in many European countries. In

addition to providing an increasing amount of comparable information on household budgets and their structure, these studies shed new light on the various economic and social factors that influence consumption patterns and their evolution.

The work of Engel, Ducpétiaux and Le Play also exerted a decisive influence on the budgetary investigations carried out in the United States by Carroll D. Wright. A scholar of outstanding organizational capacities, Wright was selected in 1873 to head the newly established Massachusetts Bureau of Labour Statistics. In this capacity, and later as Commissioner of the Bureau of Labour in the US Department of Commerce, he played a decisive role in the development of large-scale budgetary investigations in the New World. Through a well-known feedback effect, the inquiries he directed had a stimulating impact on similar endeavours in Europe.

Whatever their geographical origin, all these inquiries clearly indicated that family expenditure patterns were strongly influenced by the size and distribution of income among the various classes of the communities considered. It is, therefore, hardly surprising that the development of national income estimates was closely linked to the analysis of household consumption. Indeed, while an increasing number of economists, sociologists and statisticians tried to systematically collect and analyse household budget data (see Annexes 3 and 4), others attempted to estimate how national resources were distributed among the various social classes. As was the case with family budgets, the preparation of income distribution and income growth estimates required considerable efforts, skills and ingenuity on the part of the enterprising scholars who provided the first truly "modern" estimates of national income.

Income Distribution and Income Growth Estimates

Income distribution estimates

During the nineteenth century, and particularly during its second half, estimates of national income became more numerous, more reliable and more meaningful. Analyses rested on a more consistent conceptual basis; better statistics were employed; techniques of combining and reconciling data or filling missing links were vastly improved; the methods used became more rigorous; and presentations of estimates were made more understandable to the layman.

Many factors were responsible for the progress just described, but most important among them were undoubtedly the considerable improvements in the collection and publication of official statistics. The "statistical century" (to quote the title of a paper published in October 1900) started with the inauguration of decennial population censuses and continued with the organization of large-scale surveys including such topics as manufactures, agriculture, mineral industries, housing and business establishments. Furthermore, the advances made in economic theory affecting the concepts of production, consumption, distribution, saving and investment, greatly facilitated the task of scholars who undertook to prepare national income estimates, both from an "income generation" and "income distribution" perspective.

The first comprehensive national income estimate of the nineteenth century is that of Patrick Colquhoun.[36] Born in 1745, Colquhoun, like Adam Smith, was a native of Scotland where he started his career as a high-ranking official of the city of Glasgow. After moving to London in 1789, he quickly developed an interest in the solution of social problems—an interest reflected in several publications, including a *Treatise on Indigence*, which immediately attracted considerable attention. However, the work which won him instant fame was his *Treatise on the Wealth, Power and Resources of the British Empire*—a book published in 1812, in which he had set himself the objective of developing "the general system of national economy in a concise and connected manner".

The elaboration of this general system called in the first place for precise estimates of the national income created by "the labour of the people employed in agriculture, manufactures, trade, commerce, navigation, and other branches of productive industry". Having computed the new property created annually in Great Britain and Ireland for the nine sectors selected, Colquhoun proceeded to distribute this total among the various classes (50 social groups ranging from the nobility to "vagrants and thieves") into which he had divided the estimated 17 million people of these two countries. Eleven thousand families (corresponding to a total number of 110,000 persons) were credited with an average yearly income of £2,000 per family. For 490,000 in the "farmer" and "lesser freeholder" group, he showed a per family income of £100–120 a year, or approximately £20 per person. With an average income estimated at £13 per head, the total "labouring group" ("artisans and labourers in manufacture and construction" plus "agricultural labourers and miners"), numbering almost half the total population, was estimated to be receiving a total annual income of only £91 million—less than one fifth the total national income.

Colquhoun (who was accused a few years later by the prominent economist, James Ramsay McCulloch, of having taken many of his figures out of the "Arabian Nights Entertainments")[37] frankly acknowledged that in developing this income distribution he had to rely considerably "upon observation and conjecture". In order to overcome these shortcomings, he proposed that in the future national income estimates be performed at regular intervals, preferably on a yearly basis by the government of the United Kingdom—a suggestion that was implemented 129 years later, in 1941, when the first official national income estimates were published in the wake of the war planning effort.

In 1842, however, with the reintroduction by Robert Peel of the income tax (which had been used for the first time in 1798 by Pitt to finance the war against France), the British government made, at least indirectly, an outstanding contribution to the development of national income estimates. Proposed as a temporary measure to fill the gap in public revenue created by the repeal of the Corn Laws, the income tax was regularly re-enacted thereafter, and, as usually

[36] An extensive description of Colquhoun's life and contribution to economic, social and statistical research is found in Stone, 1997:183–205. See also Studenski, 1958:103–106. According to Max Beer (quoted in Studenski, ibid., p. 106), "from about 1820 on, critics of the capitalist regime and later the socialists found in Colquhoun's treatise the facts and figures they required to demonstrate that the system of private property is based on the plundering of the labouring poor".

[37] Ibid., pp. 103–104.

happens in this case, made permanent in 1874. As labour income was exempted from its application, the tax covered, thoroughly and universally, the middle and upper classes. The new records of income tax collection provided far more reliable data for use in improved national income estimates than did the production and trade statistics on which Colquhoun and his successors relied.

In 1868, Robert Dudley Baxter, an economist and statistician of considerable repute at that time, used this expanded "database" to present a paper before the London Statistical Society on the *National Income of the United Kingdom*, publishing it in book form during the same year.[38] In addition to income tax statistics, a broad variety of information sources were used, including census data, private and official surveys on wage rates in various occupations, and data on dwelling rentals revealed by records of local property taxes.

As a starting point for his calculations, Baxter took the population figures of the 1861 census and broke them down into the number of income recipients and the number of those without income, subdividing the former, in turn, into upper, middle and "labouring classes", with estimates for the number of dependents in each case. After appropriate adjustments, he then calculated the income of the upper and middle classes. The wages of manual labour were estimated on the basis of census figures showing the number of wage earners in different occupations, as well as on data derived from published sources on average earnings in such occupations. In estimating these earnings, account was taken in each case of differences in the wages of men, women and children as well as in the number of days ordinarily worked by them during the year.

As indicated by the tables found in Annex 5, Baxter managed to provide accurate estimates of the number of income recipients and the average income in England, Scotland and Ireland taken separately. These data were further broken down into several classes (upper and middle classes, higher skilled labour, lower skilled labour, agricultural workers and unskilled labour) and sources of income that emerged from the computations performed for the United Kingdom as a whole.

Such prominent economists and statisticians as Griffen and (later) Bowley continued the work initiated by Baxter in 1868. For many years, however, both the scope and breadth of the latter remained unparalleled in the United Kingdom or, for that matter, in continental Europe.

After England, France was the country where the more numerous estimates of national income were made during the nineteenth century. The development of these estimates proceeded more or less along the same lines as in the United Kingdom during the same period. In the early decades of the century, stress was laid on the supply side variables of the economy, in the form of sectoral

[38] According to the *British Dictionary of National Biography* (Stephen and Lee, 1908, Vol. 1, p. 1357), R.D. Baxter (1827–1875) was a member of the London Statistical Society and several other learned associations devoted to the promotion of economic and social research. Born in a family of parliamentary lawyers, he declined an invitation in 1873 to stand for parliament, preferring to devote most of his life to economic and political writing. His national income computations are described in Studenski, 1958:114–117, from which the information contained in Annex 5 is taken.

value-added estimates. During the second half of the century, and particularly during the last quarter of it, attention shifted to the income-distribution side of national accounts.

The gradual shift toward the income-distribution approach was undoubtedly facilitated by the continuous progress made in the collection of economic, financial and social data from the end of the eighteenth century (when the first national *Bureau de statistiques* was set up) to the last decade of the following century (when an *Office du travail*[39] was put in place in order to collect and disseminate information on labour conditions, household budgets, wages, salaries and other incomes). This considerable improvement in the economic and social research database occurred at a time when, under the impact of growing social conflicts (exacerbated by the depressed environment of the late 1870s and early 1880s), economists and statisticians became more concerned with income distribution issues than with the production side of the economy.

Furthermore, with the growth of large and medium-sized industrial establishments and the ensuing division of labour, the various income sources of the population could be more easily differentiated as wages and salaries, property incomes and mixed (entrepreneurial) earnings. In addition to official statistical compilations, an increasing amount of information on these various incomes became available in economic, financial and social studies that were published in growing numbers at that time.

One of the best representatives of this emerging new trend in economic and statistical thinking was Paul Leroy-Beaulieu. Born in 1843, Leroy-Beaulieu was the editor of the influential economic journal *L'Economiste français*, and a professor of political economy, first at the newly founded Ecole Libre des Sciences Politiques and later at the Collège de France, a prestigious teaching and research institution to which he was elected in 1880 shortly before publishing his *Essai sur la répartition des richesses* (An Essay on the Distribution of Wealth).

Based on his own estimates of the distribution of the 685,000 income recipients in the city of Paris in 1878—the latest year for which data were available—the author demonstrated that the population of that city could be divided into five major income groups. These were defined as follows:

1. a low-income group (*les petits revenus*), below an income level of F2,500 per year;
2. a modest income group (*les revenus modestes*), with yearly incomes ranging from F2,500 to F6,000;
3. a relatively affluent middle-class category (*la classe aisée*), with incomes between F6,000 and F32,000;
4. a high-income group (*la classe riche*), in the F32,000–133,000 income range; and

[39] The history of the French Labour Office (*Office du travail*)—to which the French National Statistical Office (*Statistique générale de la France*) became subordinated at the turn of the century—is found in Bertillon, 1895:320–334, and Pic, 1909:123–135, both of which also contain information on the emergence and development of similar institutions in other European countries. See also Luciani, 1992, which contains the proceedings of a recent symposium devoted to the history of the *Office* and its counterparts in Europe and America. The organization and development of the United Kingdom Labour Statistics Office is described in Bateman, 1896:279–280. For Germany, see Schnapper-Arndt, 1908:357–359.

5. a very high income category (*la classe très riche*), with an estimated income above F133,000 per year.

According to Leroy-Beaulieu's estimates (which were later corroborated by other statisticians' computations), the lowest and "modest income" categories accounted for 68 and 20 per cent of the 685,000 income recipients considered, respectively. The middle-class group represented slightly less than 10 per cent of this total. With 1,410 and 420 estimated income recipients respectively, the two higher-income categories accounted for a mere 2.3 per cent of the total population.[40]

The work initiated by Leroy-Beaulieu in 1880 was considerably expanded—and improved—by various economists and statisticians during the latter half of the century. In 1890, Alfred Coste, a member of the Statistical Society of Paris and himself a statistician of considerable repute, prepared a detailed breakdown of the national income of France (for the year 1886) which was distributed among eight social categories, ranging from the 7.5 million agricultural and industrial workers to the 3.7 million members of the "propertied classes". In 1895, Coste was appointed Technical Assistant to the Parliamentary Committee on a Proposed Income Tax, for which he prepared new estimates, this time divided into eight income groups.

The picture that emerged from Coste's broader and more precise computations did not differ basically from the one provided 15 years earlier by Leroy-Beaulieu. According to these new estimates, the number of households at the lower end of the income scale (i.e. those with an income of less than F2,500 a year) represented 86 per cent of the total number of income recipients but had to content themselves with 56 per cent of the total distributed income. Conversely, 20 per cent of total estimated income went to the higher social groups (with an income above F10,000). This group consisted of 187,000 households representing a mere 1.7 per cent of the estimated number of income recipients.[41]

At the turn of the century, Clément Colson, a professor of economics at the Ecole Polytechnique, further expanded Coste's estimates by taking explicitly into account differences in the cost of living in Paris and in other regions of France, in order to provide more accurate classifications of the various income categories. He also carried out research into the distribution of private wealth, which was shown to be much more highly skewed than that of personal incomes—a finding later corroborated by numerous inquiries both in France and other countries.[42]

Toward the end of the nineteenth century, the extensive work on national income estimates carried out in France and the United Kingdom prompted economists and statisticians in other countries to attempt the preparation of similar estimates. Germany, a latecomer in this type of exercise, is the country where progress made in the development of national accounting systems was the most spectacular. Two factors are usually held responsible for this change. The

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[40] For more details on income and related wealth distribution computations at the end of the nineteenth century, see Leroy-Beaulieu, 1881:525–531 and De Foville, 1890:509–521.

[41] Coste, 1890:226-239. Six years later, Coste's estimates were used (after appropriate updating) by Paul Doumer, Minister of Finance, in his report to the French National Assembly on the project concerning the establishment of an income tax.

[42] Colson, 1927:387–426.

first was the emergence in the second quarter of the century of a strong labour movement, led by the Social Democratic Party; the second factor was the introduction in Prussia and some of the other states, such as Saxony, of proportional and progressive taxes, which provided an easily accessible database for the analysis of income distribution.

The first income distribution estimates for Prussia were prepared almost simultaneously, in the 1870s, by Ernst Engel, Adolph Soetbeer and Adolph Samter—all of them statisticians of world repute at that time. The basis for these computations was provided by poll tax and income tax data for 1868, 1873 and 1875. In 1889, building on his previous work, Soetbeer (who was also the author of a classical book on price movements) published a series of estimates for Prussia, covering the years 1872–1887.[43]

For the period extending from 1871, the year the German Empire was founded, to the outbreak of the First World War, at least 20 major works on national income are reported to have been published in the various German states that had an income tax. However, the few estimates that were made during the period for the German Empire as a whole consisted mainly of very crude projections of statewide figures, with the goal of arriving at a hypothetical national total.

The first truly comprehensive estimate for the whole of Germany was prepared by Karl Helfferich in 1913. Born in 1872, and with a middle-class family background, Helfferich was a professor of money and finance at the University of Berlin. He left this post at an early age to become managing director of a large financial establishment; and later, during the First World War, he was Minister of the Interior and Vice-Chancellor of the German Imperial Government. One year before the outbreak of the war, in a book surveying the progress of the German economy under Wilhelm II, he presented an estimate of the growth of German national income from 1896 to 1912. National income for 1896 was estimated at DM21.5 billion and for 1912 at DM40 billion, indicating a 45 per cent growth in the per capita income during that period.[44]

Helfferich's analysis also included a comparison of the distribution of Prussian personal incomes in 1896 and 1912. The conclusion of the study was that "a general shifting of incomes upward" had definitely taken place in Germany. This movement was particularly pronounced in the case of the poorer social classes, a significant segment of which had moved from tax-exempt status into intermediate income groups. Therefore, the "plutocratic development" (*plutokratische Entwicklung*), so often asserted by opponents of the capitalist system did not exist.

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[43] Studenski, 1958:144–145. Studenski notes that in Germany, as in most European countries at that time, the preparation of national income estimates met with considerable resistance on the part of prominent economists in the academic world. For example, in 1875, Adolf Wagner, one of the leading German economists of that time, wrote that all existing national income estimates were "extremely uncertain". Despite the "great improvements made recently in the collection and analysis of statistical data", they were found to be "less and less usable" and, therefore, were bound "to be less frequently attempted than in the past" (ibid., p. 134).

[44] Helfferich, 1917:90–123. On the role of Karl Helfferich as an economist, see Williamson, 1971:12–55, and Studenski, 1958:144–145. A strong nationalist at that time, Helfferich used his statistical skills to demonstrate the superiority of Germany over its main economic competitor in Europe—the United Kingdom—and over its archenemy, France. With respect to the former he was proud to note that, while wages in the mining industry were higher in Britain than in Germany at the turn of the century, the reverse situation was observed 13 years later. When comparing the situation in his country with that of France, the author stressed that "in 1908 the average income of the German people had reached the level of 555 marks as compared with only 514 marks for the average Frenchman" (ibid., p. 144).

That the large increase in incomes precisely in the lower tax groups was not due to more rigorous tax assessment, but was a real fact, was illustrated by an analysis of the growth of wages of miners in various districts of Germany which, net of social security contributions, had grown at a faster pace than the average income of the population.

Helfferich's greatest achievement, when performing the above computations, was to provide relatively precise estimates of both income distribution and income growth between the benchmark periods selected for the exercise. Indeed, as the statistical infrastructure improved, one-time estimates of national income for a given year gave way to dynamic evaluations of changes over time.

Income growth estimates

Although income growth measurement was attempted relatively early in the nineteenth century, it took many years of long and painstaking effort on the part of statisticians before medium- and long-term growth trends could be assessed with a reasonable measure of success.

The first precise measurement of income growth over a relatively long period of time was made in 1822. In 1822–1823, Joseph Lowe, up to that moment a little known economic writer, published a book entitled *The Present State of England in Regard to Agriculture, Trade and Finance, with a Comparison of Prospects of England and France*, which attracted considerable attention and was recognized by later economic theorists as being, in some respects, a landmark. One chapter in this book was devoted to the presentation of a new estimate of the national income of the United Kingdom built on the estimates prepared by Colquhoun in 1815.

Lowe corrected, updated and projected these data up to the year 1822–1823 with the aid of data from the 1821 census, the Report of the Parliamentary Agricultural Committee of 1821, and a variety of other official and non-official sources. Since one of Lowe's purposes was to calculate the burden of existing taxation, the estimates were limited to the taxable income remaining after deducting from national income the subsistence incomes that could not bear any taxation.[45]

In order to provide reasonable estimates of this "burden", Lowe tried to provide consistent statistical series of both public expenditures and national (taxable) income for the whole 30-year period between 1792 and 1823. He thus computed that the national income had grown from £125 million in 1792 to £170 million in 1806, £188 million in 1814 and approximately £200 million in 1823. The comparison over time was ensured by the fact that, through the use of a proper price deflator, all data were expressed in base-year (1792) prices. As the first economist and statistician to have performed this kind of estimates, the author of *The Present State of England* is rightly regarded as having been the first national income estimator to express a

[45] After an extensive presentation of Lowe's national income computations, Studenski assessed the latter's contribution as follows: "Lowe's estimates of national income, both in their character and in the uses to which they were put, were of considerable merit. While they lacked the spectacular features of Colquhoun's calculations, they were used for a superior type of analysis". In Studenski's view this superior type of analysis included a precise definition and estimate of the United Kingdom's annual savings or investments in the modern sense of "addition to our national capital" (Studenski, 1958:109).

chronological series of national income figures in constant prices, thereby providing analysts with an indispensable tool for measuring real income growth.

In addition to the taxation reform issues on which his book was focused, Lowe was especially interested in combating Malthus' theory that the resources of any country are limited and that, in the absence of proper checks and balances, an increase in population, such as the one the United Kingdom was experiencing at that time, inevitably brings in its wake a reduction in the standard of living. On the basis of his income estimates, he contended that England's volume of production had increased since 1792 at least as rapidly as population.[46]

While Lowe's statistical series were designed to provide information on the evolution of relatively high incomes, i.e. the taxable population, George Porter used data on wages of lower income groups as benchmarks to assess *The Progress of England*—to quote the title of the three-volume statistical compendium that was published under his direction from 1836 to 1843. Born in 1792, George Richard Porter, a foremost statistician and economic publicist of his day, was one of the founders of the London Statistical Society. In 1833 he was appointed chief of the newly established Statistical Department in the United Kingdom Board of Trade.

In the sections of the book dealing with incomes, consumption and living standards of the population, Porter and his associates provided data on the evolution of weekly wages for 12 categories of artisans and manual workers in various parts of England, from the beginning of the century to 1834—the latest year for which data were available at the time his compendium was published. Similar information was provided on price changes, particularly for such basic commodities as wheat, clothing and selected consumer goods items. The conclusions that emerged from this factual presentation were summarized as follows:

> It will be apparent from the examination of the foregoing tables that although at certain seasons all those who live by daily wages must have suffered privation, yet with some exceptions, this condition has, in the course of years, been much ameliorated. The exceptions here alluded to are hand-loom weavers and other analogous employment conducted in the dwellings of the weavers. The diminution in the weekly earnings of other parties has been small in any case, and certainly not commensurate with the diminished cost of the necessaries of life. By this means they have acquired with their somewhat diminished wages a much greater command than before over some of the comforts of life. ... The reduction in the prices of all kinds of manufactured goods, accompanied as it is by improvements in their quality, has been such that few indeed are now so low in the scale of society as to be unable to provide themselves with decent and appropriate clothing. [47]

Just in case the reader would not have been convinced by the examples provided, Porter added:

[46] Ibid., 1958:107–109.
[47] Porter, 1838, Vol. 2, p. 255.

> … it cannot be necessary to adduce any evidence in support of this fact, which is obvious to anybody who passes through the streets; so great indeed is the change in this respect, that it is but rarely we meet with anyone who is not in at least decent apparel, except it be a mendicant whose garb is an auxiliary to his profession.

Although the methods used to process existing statistical data were extremely crude compared with the more sophisticated tools devised earlier by Lowe (or Colquhoun) to construct their national income aggregates, still they were vastly superior to the approach followed at approximately the same time by John Ramsay McCulloch in his two-volume *Statistical Account of the British Empire*. In this book, the author (who was a professor of political economy at the newly founded University of London and one of the most distinguished economists of his time) tried to demonstrate, among many other things, that considerable improvement had already taken place in the material condition of the population and that this process should be further encouraged by the government through the repeal of the protectionist Corn Laws.

While Porter tried to substantiate his arguments by providing empirical evidence in the form of consistent statistical time series, McCulloch limited himself, in his usual doctrinaire manner, to bluntly asserting that "the comforts of all classes have been wonderfully augmented within the last two centuries". Furthermore, the "labouring orders" were reported to be "the principal gainers, as well as by the large numbers of them who have succeeded in advancing themselves to a superior station, as by the extraordinary additional comforts that now fall to the share even of the poorest individuals". Although the author of the *Statistical Account* conceded that "it would be very desirable to have a table representing the numbers and incomes of the different ranks and orders of the people" he did, in fact, constantly express reservations about the possibility of constructing meaningful economic aggregates. Indeed, one of his main findings in this regard was that it was quite impossible "to form anything like a correct estimate of the total aggregate income of any extensive country".[48]

Fortunately enough, Moreau de Jonnès, an eminent French statistician, held different views about the possibility and desirability of computing aggregate income figures. As head of the Bureau of Statistics of the Trade Ministry, Moreau de Jonnès occupied approximately the same position in France as Porter did in the United Kingdom. An able writer and a dynamic administrator, he was responsible for the first truly effective, and relatively exhaustive, population enumeration to be held in France since the organization of regular quinquennial population censuses was initiated at the beginning of the century. Under his leadership, the preparation of an agricultural and an industrial census was ordered and implemented, albeit, in the latter case, at the price of considerable delay.

The publication of the final results of the industrial census provided Moreau de Jonnès with the opportunity to put together the results of the three types of censuses—agricultural, industrial and population—which he had directed during the preceding two decades. The purpose of this synthetic work was to lay the foundation for a rapid assessment of the changes that had taken

[48] McCulloch, 1839, Vol. 2, pp. 494–509.

place in France since the Revolution. As the work was completed in the mid-1850s, the period covered for the progress assessment exercise was 1790–1850.

Although he attached great importance to the provision of as comprehensive estimates as possible, Moreau de Jonnès did not attempt to give complete national income aggregates. He computed only the total estimated incomes from agriculture, industry and handicrafts, and then only those of the "labouring population". He apparently considered the existing statistics on property incomes much too tentative and, therefore, unreliable for the purpose of estimation. The data selected for the benchmark year 1789 were the estimates prepared in 1790 by Tolosan, who was then considered to have been one of the ablest statisticians of the early revolutionary period.

The main results of the exercise were summarized in a synthetic table containing both Tolosan's estimates for 1789 and Moreau de Jonnès' own computations for 1850. In addition to statistics on population and its distribution both by social classes ("labouring" and "other classes") and economic sectors (agricultural, manufacturing, handicrafts, others), the synthetic table contained data on the gross value of output distributed by sectors, estimated labour income, and average daily and yearly wages in a typical "labouring class family" of 4.5 persons. The survey concluded with the following commentary:

> These figures prove the error of those who believe that an immense rise in national wealth has taken place during this period. The tremendous social and technical advances of the nineteenth century have produced a rise in labour incomes of only one third. Each family obtains today for its labour 100 francs as against the 67 which constituted its remuneration sixty years ago. But the division of large landed estates has enabled the cultivators to acquire numerous parcels of land and to derive from them, through hard and intelligent labour, a supplementary remuneration to that paid to them by the more opulent classes of society.
>
> We have shown that the 24 million inhabitants of the rural communities consist of 5.3 million families of 4 and a half persons each. An examination of tax records shows that one half of them possess rural property bringing in, on the average, an annual income of 105 francs and paying a real estate tax of 21 francs. ... At the utmost, these little properties add but 200 to 300 million francs a year to the incomes of these agriculturalists.... Instead of earning merely 562 francs a year from their ordinary labour, these families now earn a combined income from such labour and their properties of 667 francs, thus having about 2 francs a day for their needs throughout the year. This is the whole measure of comfort these rural dwellers have been able to achieve.

Then Moreau de Jonnès concluded with the following patriotic note: "In recompense, the new possessors of the land, who laboured so long under the feudal and clerical yoke, ... above all, have furnished over the past sixty years eight million armed men for the defence of their country's independence and the maintenance of its territorial integrity."[49]

Whatever the skill and ingenuity of analysts, there was a definite limit to what could be expected from the interpretation of available statistical data. In a tribute to Porter and his contributions to the analysis of long-term economic and social trends, the newly-elected

[49] Moreau de Jonnès, 1856, as quoted in Studenski, 1958:125–126.

President of the Royal Statistical Society, Robert Giffen, the leading British statistician of the last quarter of the century, tried to assess the "progress of the working classes" from 1833 (the year when Porter took over his functions as head of the Board of Trade Statistics Department) to 1883—the year in which he delivered his paper to the Royal Society. After pointing out that, in the absence of data on "aggregate earnings", all that could be done is "to compare what appear to be the average wages of the working classes", the author went on to explain the difficulties he had encountered in trying to develop reliable statistical series. These were summarized in the following way:

> What I propose to do first and mainly, as regards this point [i.e. the selection of the best comparative cases possible], is to make use of an independent official record which we have to thank Mr. Porter for commencing. I mean the record of wages which has been maintained for many years in the Miscellaneous Statistics of the United Kingdom, and which was previously commenced and carried on in the volumes of Revenue and Population Tables which Mr. Porter introduced at the Board of Trade about fifty years ago. It is curious on looking back through these volumes to find how difficult it is to get a continuous record. The wages in one volume are for certain districts and trades; in a subsequent volume, for different districts and trades, the descriptive classification of the workers are also constantly changing.

Despite the difficulties encountered in both the collection and interpretation of data, Giffen managed "to pick his way through the figures" relating to the evolution of daily wages in 13 different occupations and five different locations of the United Kingdom. This led him to the conclusion that "the workman now gets 50 to 100 per cent more in money" (depending on the trade considered) for "20 per cent less work". In other words, the labouring classes have gained "from 70 to 120 per cent in fifty years in money returns". In real terms, the gain was still higher since, "with the exception of one or two activities such as rent and meat", most articles which the workers consumed "had rather diminished in price", the downward trend in the price of certain consumer goods such as bread being "especially remarkable".[50]

At least indirectly, the report prepared by Giffen also demonstrated that, despite undeniable improvements, the collection and processing of data relating to wages and workers' living conditions left much to be desired in the United Kingdom. The need for a drastic overhaul of the existing statistical information system in this respect was clearly acknowledged when a few years later, in March 1886, the House of Commons decided "steps should be immediately taken to ensure in this country the full and accurate collection and publication of labour statistics". The corresponding tasks were defined as follows:[51]

1. "the collection of statistics relating to wages which have been published in Parliamentary blue books during the last fifty or sixty years, with the addition

[50] Giffen, Vol. 1, 1904:382–422. Giffen's computations of the growth of real wages were complemented by a variety of other indicators of progress. These included data on the evolution of death rates and increases in life expectancy over the period considered, crime and "pauperism", the spread of education among the popular classes, access to property, and upward social mobility. Concerning the latter point, Giffen took pain to demonstrate that "the capitalist classes are far from stationary and that they receive recruits from period to period—in other words, that wealth, in certain directions, is becoming more diffused, although it may not be diffusing itself as we should wish" (ibid., p. 409). On Giffen's estimates see also Meyer, 1900:365–366.

[51] Schloss, 1893:44–45.

> of some prominent and authentic unofficial statistics which have been published from time to time, or which may be easily procurable, so as to furnish a tolerably complete picture of the progress of the community in respect of the earnings of the wage-receiving classes during the period in question;
>
> 2. the compilation of similar statistics relating to the savings and general conditions of the same classes, the prices of commodities and other matters in which the masses of the community are vitally interested;
> 3. the collection of similar statistics regarding foreign countries which have been published from time to time in the reports of Her Majesty's secretaries of legation and consuls, or which the Board of Trade may have been able to compile from the official publications of foreign governments"; and
> 4. the adoption of proper "arrangements for obtaining from time to time a fuller record of wages, with special reference to hours of labour, slackness or abundance of employment, and the proportion of the wage-receiving classes at each rate of wage or earnings, than has been the case in this country, and for the regular collection and publication of such statistics from time to time".

The implementation of the British Parliament's decision was entrusted to a newly set up Labour Department within the Board of Trade, which was placed under the general supervision of Giffen himself. To carry out this task, Giffen was assisted by a chief Labour Correspondent to the Board of Trade, a trade union official who took up his duties at the end of 1886.[52]

The Labour Office started its operations on a very modest scale but soon developed into a full-fledged ministerial department, which became the main source of information for all questions relating to employment, wages, labour relations and working conditions. In addition to the regular monitoring of current social trends, particularly through direct inquiries and a well-organized network of "labour correspondents" in the various industrial districts, the newly set up Department sponsored investigations of a retrospective nature into the evolution of wages from the beginning of the nineteenth century onward.

The first statistical series—expressed in index numbers, a new analytical tool at that time—were published in 1895[53] and led, a few years later, to the preparation of detailed estimates of real wage growth at quinquennial periods. The corresponding computations had been performed by Arthur L. Bowley, a young statistician who was soon to become the most prominent social scientist of his generation.

Based on these data, Bowley showed that after a very slow increase in the first half of the nineteenth century the level of average wages rose rapidly and, in fact, was multiplied by a factor of two during the latter part of the century. Despite the recession that affected the United Kingdom economy in the early 1880s, the upward trend continued during the last two decades of the century and resulted in a marked increase of both employment and wage levels. From 1881 to 1902, the years selected as benchmarks, average wages were estimated to have risen by 30 per cent, while prices fell by 9 per cent and the average income of the population as a whole

[52] Ibid., pp. 45–46.

[53] Bowley, 1895:224–272. The basis for Bowley's estimates of changes in average wages over a 30-year period was provided by the "returns of wages, 1830–1886", compiled by the newly set-up Labour Office (under Giffen's direction) in 1886. Other important sources were data compiled by renowned scholars such as L. Livi and R. Baxter (ibid., pp. 226–227).

rose by 20 per cent. As employment grew also by more than 30 per cent during the same period, the considerable structural change which took place at that time, away from agriculture and traditional industries toward the rapidly expanding engineering and metal trade sectors, could be effected "without any necessity on the part of any man to change his occupation, but simply by changes in the supply of new-comers". Rapidly expanding industries resulted in lower unemployment levels (as assessed by the percentage of trade union members out of work) and more regular types of work (as measured by fluctuation in employment levels of various industries). As all these estimates were "consistent with and tended to reinforce each other", the author concluded that "available information, so far as it goes, suggested that remarkable and stable progress" had been made over the last decades.[54]

However, on several occasions in his paper as well as in further studies, Bowley took pains to stress that these rather optimistic conclusions applied only to those social groups, namely regular wage earners, for which sufficient information was available. For other groups—"the hidden hemisphere of the moon", to use his expression—the situation was probably less satisfactory. In the first place, the author mentioned the problems raised by the measurement of precarious employment, in other words,

> …this large army of workmen who are not permanently attached to any regular occupation, but who shift from trade to trade in pursuit of momentary demand, or who get work occasionally in some trade which they have never made their own. We have practically no information about the present number of such men, nor do we know in the least whether they are increasing or not.

At the time Bowley computed his wage indices, no reasonable estimate could be offered of "the extent to which the figures given would be affected by their inclusion".[55]

Second, the assessment of poverty strongly depended on estimates of the number of people totally out of work—estimates that, at the end of the nineteenth century, could at most be considered as second-best data. Indeed, as mentioned above, unemployment data were limited to members of trade unions; and statistics relating to "pauperism" consisted exclusively of the number of recipients of social welfare benefits under the particular systems of relief in force, "which had been frequently altered in the past, and had no very close and necessary relation with the real amount of poverty".[56]

At the time (1904) Bowley was attempting to assess England's progress over the previous decades, the main sources of information on poverty were found in the large-scale urban surveys performed by a number of private social investigators. According to Bowley, these researchers had provided a wealth of invaluable information on the nature, extent and causes of the "appalling amount of poverty prevailing in the great towns among the large class of people

[54] Bowley, 1904:1–31.
[55] Ibid., pp. 22–25.
[56] Ibid., p. 22.

who have no regular means of livelihood".[57] However, the picture provided by these surveys was essentially static, as it depicted the situation at a given point in time and not its evolution.

The challenge, therefore, was to further improve this type of inquiry by transforming this static picture into a dynamic instrument for the assessment of the long-term process of social change, thereby making it possible "to establish any proposition as to the progress the nation is making".[58] Together with other pioneers of empirical social research in England, Bowley was to play a considerable role in the development of the new survey techniques and methodological approaches required to properly assess the pace, direction and nature of the ongoing process of change.

Comprehensive Social Surveys and the Assessment of Progress

Empirical social investigations in the United Kingdom at the end of the nineteenth century were dominated by the towering figures of C. Booth and B.S. Rowntree, two outstanding scholars and social reformers whose inquiries were subsequently used as benchmarks to measure and assess the pace and direction of social change in given communities.

Social surveys and the measurement of poverty

Charles James Booth was born in Liverpool in 1840, the third son of a prosperous and charitably minded corn merchant. He left school at the age of 16 to work as an apprentice in a steamship company, and a few years later he joined the import/export business his eldest brother had set up in New York. This small business was soon transformed into a flourishing shipping company, which provided him with the resources required to finance the large-scale research project to which he devoted 17 years of his life. The aim of this project, as formulated by its sponsor, was to discover "the numerical relations which poverty, misery, and depravity bear to regular earnings and comparative comfort".[59]

Booth began his research by investigating the occupational characteristics of the population of the United Kingdom (as reflected in the official Census data) and went on to study the inhabitants of a small, depressed area in the eastern part of London. The results of these as well as other endeavours were published in the *Journal of the Royal Statistical Society* (of which the author was soon to be elected chairman), beginning in 1886.[60] Ultimately, he planned, organized

[57] The investigators referred to in Bowley's study were C. Booth and B.S. Rowntree, whose investigations had just been published at the time Bowley was preparing his statistical studies relating to national progress in wealth and trade since 1882.

[58] Ibid., p. 22.

[59] A recent description of Booth's life and contribution to social surveying in England is found in Stone, 1997:339–387. See also Pfautz's extensive introduction to a selection of Booth's writings (Pfautz, 1967:3–85).

[60] Booth, 1902–1903, 17 vol. (A first nine-volume edition of *Life and Labour* was published in 1892–1897). It may be interesting to note that, at the same time Booth and his team were starting their massive investigation into London life and labour, the German Social Policy Association (*Verein für Sozialpolitik*) was organizing a large-scale survey of rural labour in Germany (Georges, 1985:158–181). Max Weber, who was then 27 years old and had just passed his bar examination, was called on to analyse the reports from Eastern Germany, and from them came his first major work on *The Condition of the Agricultural Labourers in Germany East of the Elbe* (Weber, 1892). The survey (which brought him instant recognition as an expert on the land question) is also reported to have been instrumental in shaping Weber's thinking about social research (Oberschall, 1965:27). One of his conclusions was that the *Verein*'s inquiry had laid too much stress on the material conditions of the workers, whereas "the problems which the conditions of the rural labourers reveal lie predominantly in the psychological sphere". Indeed, according to Weber, "the question is not how high the income of the workers really is, but whether as a result of the level of wages an

and directed at his expense a monumental investigation that resulted in publication, 17 years later, of the 17-volume classic study: *Life and Labour of the People of London*.[61]

The work was divided into three major subject areas: "poverty", "industry" and "religious influences".[62] In the four-volume poverty series (published in 1892), Booth divided London's four million inhabitants into eight social classes on the basis of income.

The lowest group consisted of class A, "the lowest class of occasional labourers, loafers and semi-criminals", and class B, "those on casual earnings". Initially Booth identified the very poor with class B alone, but class A was so small that classes A and B were ultimately combined as "the very poor". Class C, those with what Booth called "intermittent earnings", and class D, those with "small regular earnings", formed "the poor". The four better-off classes, E, F, G and H consisted of the comfortable working classes and the middle classes. Thus, those "in poverty" comprised classes A through D, and the "poverty line", Booth's well-known invention, was drawn between classes D and E.

It follows that the essence of Booth's taxonomy of poverty lies in the division between the very poor and the poor, and, even more so, in the division between the poor and the comfortable working classes. Booth described these divisions as follows:

> By the word 'poor', I mean to describe those who have a sufficiently regular though bare income, such as 18 to 21 shillings per week, for a moderate family; and by 'very poor', those who from any cause fall much below this standard. The 'poor' are those whose means may be sufficient, but barely sufficient for decent independent life; the 'very poor', those whose means are insufficient for this according to the usual standard of life in this country. My 'poor' may be described as living under a struggle to obtain the necessaries of life and make both ends meet; while the 'very poor' live in a state of chronic want.

The major source of information for this large-scale inquiry into living conditions was provided by an extensive cross-examination of school board visitors who performed house-to-house visitations in the normal course of their duties. Every house in every street was on their books, where details of every family who had children of school age were entered. Booth and his assistants discussed with them information collected on every inhabitant of every house in every street in the district, verifying the facts by reference to the visitor's daily records.

Armed with this system of classification and this main source of information, Booth was able to deduce from the data supplied by the school board visitors that 8.4 per cent of the population of London, excluding those living in institutions, were in classes A and B, 22.3 per cent in classes C

orderly economy is possible for the workers, whether they and their employers are satisfied according to their own subjective evaluation, or why they are not satisfied, what direction their wishes and aspirations are taking, for future developments will depend upon these factors" (ibid., p. 27).

[61] Booth, 1893:558–591, and Booth, 1894:1–79. According to Booth's biographers, the Simeys, he spent over £33,000 on the survey—a sum that would correspond to more than £1 million in today's prices (Stone, 1997:349).

[62] These ideas are expressed in the third series of investigations dealing with "religious influences" of *Life and Labour of the People of London*, Booth, 1903, Vol. 7, pp. 424–428.

and D, 51.5 per cent in classes E and F, and 17.8 per cent in the upper classes G and H. Thus, 30.7 per cent of the population not living in institutions was living in poverty.

The classification of social classes was complemented by an attempt to measure the "immediate causes of poverty". Booth did this by asking a number of school board visitors to fill in a questionnaire for a sample of 4,000 families. He thus demonstrated that poverty was not the result of individual failings, such as drunkenness, but was due to questions of employment. The poverty of 55 per cent in the "very poor" classes (A and B) and 68 per cent in classes C and D was due to this cause. "Questions of circumstances" (in the form of illness, infirmity or large family) accounted for approximately one quarter of the cases.

Even before the results of the series had come off the press, Booth began his inquiry into the trades of London. He hoped that such an investigation would shed light on poverty and conditions of employment. In the interest of economy, the street rather than the family was taken as the unit of investigation.

The major source of data for this new line of inquiry was the 1891 census, complemented by materials from the Board of Trade and innumerable interviews with workers, employers and trade union officials. Based on these data, Booth developed a complementary system of social classification using "crowding" as an index. Taking two or more persons per room as crowded, he found 31.5 per cent in this condition, a finding that fully corroborated his previous investigations.

The concept of class was used not only to make operational distinctions between different degrees of poverty and well-being, but also to study class-related aspects of education, living habits, leisure pursuits and participation in voluntary social and religious activities. When analysing the impact of education on occupations in his "industry" series, Booth noted that "the great majority of boys attending the secondary schools of London are of the middle and lower middle classes, with a fringe of sons of professional men, and in endowed schools (where no fees were paid) a sprinkling of children of the working man". He also observed the different attitudes of the different classes toward the education of children. "At the very bottom, education is disregarded, and every effort is made to avoid or abbreviate school life; in the next class, the children are hurried through their 'standards' in order to go to work as soon as possible; above this, the period is voluntarily extended from 13 to 14…." While in the lower classes there was a tendency for sons to follow their fathers' occupations, upper-class working children were likely to be more mobile both occupationally and socially.

When analysing the influence of organized religious efforts on the life of the communities, Booth showed that the influence of Anglican churches was limited to the well-to-do areas. According to him, "the great section of the population, which passes by the name of the working classes, lying socially between the lower middle class and the 'poor', remained, as a whole, outside all the religious bodies". Although there was "less hostility to, and perhaps even less criticism of the churches than in the past", the driving forces shaping the life of the

increasingly organized working classes were "trade unions and friendly societies, co-operative effort, temperance propaganda and politics, including socialism".

Despite Booth's desire to remain as "detached" and objective as possible in his comprehensive account of London life and labour, his findings often disturbed his deep moral sense. When collecting materials for his survey, he became especially concerned over the plight of the aged poor for whom, in a separate book, he drew up and advocated a programme of non-contributory state pensions. Some of his proposals were incorporated in an act of Parliament, enacted by the Liberal Government in 1908. More generally his publications exerted a powerful influence on the extensive social inquiry work that, from the end of the nineteenth century onward, was carried out by other prominent scholars, such as Rowntree.

In many respects, Rowntree's intellectual itinerary bears striking resemblance to that of Booth. Born in 1871, Rowntree was the son of a successful businessman, in a rapidly expanding cocoa and chocolate firm, which he joined in 1889. He was instrumental in getting the company to establish a pension plan in 1906, a five-day week in 1919 and an employee profit sharing plan in 1923. Like Booth, he had become aware of poverty in the midst of plenty, and was personally acquainted with its many-faceted aspects. Fascinated by Booth's London surveys, he decided in 1899 to undertake a detailed investigation of the social and economic conditions of the wage-earnings class in the city of York, where his firm was established. Two years after the decision was taken, the results of the first survey of York were published in 1901 under the title *Poverty: A Study of Town Life*.[63]

Although the approach basically followed the pattern set by *Life and Labour of the People of London*, Rowntree tried to improve his predecessor's method in several important ways. In the first place, he set out to obtain information about the occupation, housing and earnings of every wage-earning family in York—an objective undoubtedly facilitated by the fact that, with its population of 76,000 inhabitants and its 15,000 houses, the city represented only a minute fraction of London. Second, he obtained his information directly from families by using interviewers, namely a paid investigator aided by a team of part-time assistants who went systematically from house to house.

Third, and most important, Rowntree gave far greater precision to the concept of poverty, creating the distinction between "primary" and "secondary" poverty. If a family had "total earnings insufficient to obtain the minimum necessaries for the maintenance of merely physical efficiency", it was regarded as living in "primary" poverty. If its "earnings would be sufficient for the maintenance of merely physical efficiency were it not that some portion of it then is absorbed by other expenditure, either useful or wasteful", then it was deemed as living in "secondary" poverty. Furthermore, it was family income that Rowntree took into account, not just the wages of the chief wage earner. The definition of the "poverty line" was based on

[63] Rowntree's life and work have been described in a major book by A. Briggs, the well-known historian of Victorian England (A. Briggs, 1961).

evidence from recent developments in nutritional science concerning the amount of calories, protein and fat necessary to keep a person in a state of physical efficiency.

Based on these premises, the cost of minimum requirements for food, clothing and other "necessaries" was computed. It was assumed that food, by far the most important item of poor families' budget, would be purchased as cheaply as possible and would be selected with careful consideration of nutritive values. This was called the poverty line standard. Rowntree deliberately made his poverty line standard precise and stringent, so that it could be generally accepted as a minimum.

The method of defining "secondary" poverty involved a higher level of subjectivity. Rowntree took the total number of households where the investigators saw obvious "signs of want and squalor", as reflected in the appearance of children and housing conditions, and subtracted from these the number shown in the "primary" poverty assessment. On this basis, Rowntree found that 43.4 per cent of the wage-earning class (27.8 per cent of the total population) were living in poverty, of which 27.8 per cent (17.9 per cent of the total population) were in secondary poverty—a figure which came very close to Booth's 30.7 per cent estimate for London.

When turning to the analysis of the immediate causes of poverty (for which a more detailed breakdown than Booth's was used), the York surveyors found that in those cases when the chief wage earner had regular work, over half the cases of primary poverty were due to insufficiency of wages. In only 5 per cent of the cases was it a result of the chief wage earner being out of work, or engaged only in intermittent work. Most of the rest was the result of the excessive size of the family in relation to available resources or the death of the chief wage earner. Confirming Booth's findings, Rowntree concluded that the wages for unskilled labour in York were insufficient to maintain a family of moderate size in a state of bare physical efficiency.

Rowntree took the type of analysis initiated by Booth a step further by examining the whole lifespan of a worker, instead of providing a static picture of the situation at a given point in time. Thus he argued that the life of a typical labourer in York went through a number of cycles, made up of alternating periods of deprivation and relative prosperity. In the initial phase of his life, he would probably be in a state of utter poverty until he grew up and became able to supplement family resources by earning an independent income. This situation would last until he married and had children himself—in which case he would probably be sent back to a situation of poverty until his own children grew up. Finally, when reaching old age, in the absence of proper pension provisions and adequate family support he might again sink back into a situation of deprivation.

Rowntree's survey of York was the first in a series of inquiries that he directed until the beginning of the First World War, when he was appointed director of the Welfare Department of the Ministry of Munitions. These new inquiries started with an extensive study of labour

conditions in Belgium, carried out between November 1906 and August 1908.[64] The Belgian study was followed two years later by a new survey in York, where emphasis was placed on unemployment, casual work and their relations to poverty.

Rowntree's new inquiry took place over a three-day period in June 1910, when a team of investigators called at every working-class house in York, to ascertain whether any person there was out of work and wanted to find a job. The results appeared one year later in a book entitled *Unemployment: A Social Study*. The investigators found that out of 82,000 inhabitants, 1,278 (15.6 per cent) could be considered unemployed. One third of these were merely "casual workers", who suffered from intermittent work rather than unemployment proper. Over one half of the workers were characterized as "men of character and physique" willing and able to perform productive duties. Only 16 per cent of the population could be regarded as totally or partly unfit for employment, as a consequence of physical or social handicaps of various kinds.

The last poverty survey undertaken by Rowntree before the war was a detailed investigation of the living and nutrition standards of the British village labourer from five representative districts in the counties of York, Essex, Oxford, Leicester and Berkshire.[65] The survey showed that, with a few exceptions, the families investigated were receiving not much more than three fourths of the food necessary for the maintenance of physical health. Women and children, especially, were reported to suffer from underfeeding. No adequate allowance was made for clothing, which in most cases surveyed were received from charities.

In addition to Rowntree's poverty investigations, the other major contribution to social surveying in the prewar period was the invention and development of sampling techniques. It was Arthur Bowley who pioneered the introduction of these new methods in survey research; and the first account of the use of such techniques was the one he gave to the Royal Statistical Society in 1912—the same year Rowntree started his rural conditions survey. In the paper delivered to the Statistical Society, Bowley reported on working-class households in the medium-sized industrial city of Reading, citing data from a random sample of one in 20 households, amounting to 840 out of a total of 18,000.

The systematic use of these less cumbersome and highly cost-efficient techniques made it possible to considerably enlarge the scope of inquiries and to undertake comparative studies in various localities more easily than had hitherto been the case. Indeed, three years after his presentation to the Royal Statistical Society, Bowley published *Livelihood and Poverty: A Study in the Economic Conditions of Working-Class Households in Nottingham, Warrington, Stanley and*

[64] At the time it was prepared (1905–1910), Rowntree's analysis of living conditions in Belgium is one of the most comprehensive inquiries to have been conducted in that country. Topics included the Belgian system of land tenure, education, industrial and agricultural wages and the "standard of life" among the working people. The assessment of the standard of life was based on intensive budgetary investigations and a nutrition survey involving the analysis of 70 working-class expense records (Bowley, 1911:315–420).

[65] Rowntree and Kendall, 1913:112–240. Rowntree's and Kendall's investigations provided major inputs into the large-scale survey of "earnings, standards of living and conditions of work among agricultural labourers", organized in 1912 by the Land Enquiry Committee of the United Kingdom Board of Trade.

Reading, which was based on a systematic random sample of about one in 20 working-class families in each of the five towns.[66]

With his new techniques—and a slightly modified definition of Rowntree's poverty line—Bowley found that 13.5 per cent of working-class households were on or below the poverty threshold. His figures were in close agreement with the proportion of families that Rowntree had estimated to be in primary poverty in York at the beginning of the century. However, what resulted from Bowley's comparative investigations was that average data masked a wide disparity between the results of individual towns, which varied from under 7 per cent to over 20 per cent.

Bowley's great methodological contribution was his use of sampling techniques, which came to act as a decisive stimulus to social surveys. Some of the surveys carried out during the interwar period were undertaken in entirely new geographical areas (such as Plymouth, Sheffield, and the Merseyside district). Others, which were deliberately conceived from the outset as replications of previous inquiries, provided investigators with the methodological tools they needed to assess what kind of change and, therefore, what progress, if any, had taken place during the period considered.

Surveys revisited and the assessment of social progress

The study by Bowley and his assistant M.H. Hogg, *Has Poverty Diminished? A Sequel to "Livelihood and Poverty"*, was the first research project in which a social survey was repeated in the same areas, and by "as nearly as possible the same methods", as in earlier investigations. The basis of the inquiry was provided by a sample of 800 to 1,000 working-class households in each of the five towns included in the previous surveys. In line with Booth's tradition of factual inquiries, the authors made no policy recommendations, but limited themselves to providing "the detailed numerical setting-out of the problem".[67]

Events dominating the ten years under consideration, 1914–1924, included the loss of life caused by the war, a fall in the birth rate, a rise in prices (partly compensated by a more rapid growth of weekly money wages for unskilled labour), and unemployment. Despite this rather unfavourable overall economic and social environment, Bowley and Hogg came to the conclusion that the improvement that had taken place since 1913 was striking. Even on the assumption that all the families suffering from unemployment in a particular week had no resources and their unemployment was chronic, the proportion in poverty in 1924 (using the same standards as in the previous survey) was little more than half that in 1913. If there had been no unemployment, the proportion of families in poverty taken together would have fallen to one third, and the proposition of persons to a quarter of that in 1913.

The number of families in poverty due to insufficient wages of the head of the household had dropped considerably and was only one fifth of the prewar proportion. Part of this favourable

[66] Bowley and Burnett-Hurst, 1915.
[67] Bowley and Hogg, 1925.

trend was explained by the growth of nominal wage rates (which had grown at a faster rate than consumer prices), but also by a marked reduction in average family size. To quote from the study, "the proportion of families, in which there are five or more children, that are in poverty has fallen greatly, but the number of such families is also relatively much smaller".

The next follow-up inquiry was the *New Survey of London Life and Labour*, a replication of Booth's monumental study. Placed under the chairmanship of Sir Hubert Llewellyn Smith, a nephew of Booth who had taken an active part in the original survey, the work started in 1928 and involved a broad variety of prominent scholars, including Bowley and Sir William Beveridge.[68]

The first volume, published in 1930, presented a comprehensive picture of the changes that had taken place over the four decades or so that had elapsed since Booth's inquiry was completed. It was based mainly on statistical material already available in published form and was illustrated by a wealth of statistical tables and diagrams intended to illustrate the pace and direction of economic and social change in the huge metropolis. This introductory study was followed by three volumes published in 1931, 1933 and 1934, which gave a detailed account of each of London's industrial, trade and service activities, paying more attention to the workers engaged in them than to industrial development proper. Thus, in the best tradition of Booth, the way was paved for an in-depth investigation of social conditions prevailing in the eastern and western sections of the City and County of London. The last volume was divided into three parts, the first dealing with leisure (including adult education), the second with workingmen's clubs and social organizations, and the third with socially harmful activities such as alcoholism, gambling, sex delinquency and crime.

A main innovation of this new inquiry was the combination of two methodological approaches. In order to measure social changes since Booth's days, it was essential to follow the latter's methods as closely as possible. This implied obtaining detailed information on each inhabitant in a given street by questioning school attendance officers as to the social conditions of the families on their books. However, to make trustworthy comparisons with other more recent surveys, and also to obtain an independent check on Booth's more traditional procedures, an independent analysis of a random sample was necessary. This part of the investigation was entrusted to Bowley himself, using the improved methods pioneered in the Five Towns surveys. In this particular instance, the sample consisted of 30,000 working-class families chosen on a systematic basis from borough records or from the voting register.

The results of the two independent surveys were strikingly similar. The sample survey conducted in 1929 showed the number of families with children in poverty to be 10.7 per cent; according to the "street survey" it was 11.6 per cent, while the corresponding figure estimated by Booth 40 years earlier was 37.3 per cent. If the number in poverty was related to the whole population (and not only to families with school-age children), then Booth's figure in 1889–1890 was 30.7 per cent compared with 9.6 per cent—again a decline of about 70 per cent.

[68] Llewellyn Smith (ed), 1930–1935.

Another major difference between the initial survey and the new inquiry was that while the former attributed poverty mainly to low wages, in 1929 it was unemployment which accounted for nearly half of the total cases of poverty. Inadequate wages in relation to the size of family were held responsible for just one fifth of the cases.

The rapid development of new causes of poverty, at a time when the worst effects of the Great Depression of the 1930s had yet to be felt, explains why Llewellyn-Smith, the coordinator of the project, in his concluding remarks cautioned against any undue optimism. His conclusions were formulated as follows:[69]

> While the general result of comparing present-day London poverty with that which existed in Charles Booth's days affords matter for satisfaction and encouragement, it must be remembered that historical comparisons taken by themselves may be misleading. If in place of concentrating our gaze on the upward changes which have been taking place, we fix our attention on actual present-day conditions in the Eastern Survey Area, there is much less ground for complacency. It is disconcerting to learn from the street survey that, in spite of all the improvements which have taken place, the grim fact remains that one in ten of the human beings who inhabit the Eastern Survey Area, and one in seven of those who live in Charles Booth's 'East London', were found at the time of investigation to be subject to conditions of privation which, if long continued, would deny them all but the barest necessities, and cut them from access to many of the benefits of modern progress.

The same balanced approach in assessing the direction, magnitude and impact of social change over a 40-year time span is found in the third replication study undertaken during the interwar period. In 1936 Rowntree repeated the inquiry he had made 37 years earlier, in order to discover what changes had occurred in the living conditions of the workers in the city of York, and how far they had benefited from them during a period when, he remarked, "more far-reaching steps had been taken to raise the standard of life of the workers than during any period of similar length".

The same method of data collection was followed as in the previous survey. There were house-to-house visits, particular care having been taken to discover just the right type of investigator for this purpose. And the same information was sought: number of people in the family, by sex, age and occupation; and the rent, size and condition of the house. Earnings and other incomes, such as pensions and health benefits, were estimated on the basis of a variety of direct and indirect sources. Altogether the new inquiry covered 16,360 families, comprising 55,200 persons, as compared with 11,560 families, encompassing 46,750 persons, in the earlier survey. The "working-class" proportion was estimated at 70 per cent in both cases.

In his new book, which was published in 1941 as *Poverty and Progress: A Second Social Survey of York*, Rowntree reported that 17.8 per cent of the total population of the city of York, or 31.1 per cent of the working-class population, fell below the poverty line. The corresponding figures for 1899 were 9.9 per cent and 15.5 per cent, respectively. These findings were based on new, higher standards which had been redefined in the wake of an earlier investigation into what the author called "the human needs of labour", an account of which had been given in a book published in

[69] Ibid., 1934, Vol. 6, pp. 27–28.

1937. However, if the "old" poverty line had been used, the number of persons in primary poverty would have been limited to less than 7 per cent of the working class.

As with Booth's and other studies published during the same period, the definition and measurement of the extent (and causes) of poverty were only part of a comprehensive inquiry. The first part of the inquiry was focused on the economic conditions of families classified on the basis of income available for paying the weekly rent. The second part was devoted to the provision of basic social services, with special emphasis on improvements in education, health and housing. Rowntree was convinced that "much may be learned about the social progress which any community is making by a study of the changes which take place in the ways in which it spends its leisure". Therefore, the last part of the new survey consisted of an in-depth analysis of leisure time activities (passive as well as active, indoors and out-of-doors) and religion.

In summarizing the main findings of the new survey, Rowntree took care to emphasize "how greatly the workers' standard of living has improved in spite of the fact that the period under review included four years of devastating warfare" in which millions of British citizens were engaged and tremendous losses incurred. This improved standard of living was reflected in the fact that real wages, on the average, were 30 per cent higher than in 1899, though working hours were shorter. Housing was "unmeasurably better", so was health, education and the provision of other basic social services. Concerning the causes of poverty, the author of the inquiry found that "every one was capable of remedy without dislocating industry or our national finance". They can be removed "just as the slums, once thought to be inevitable, are being removed to-day".[70]

But these undeniable achievements were not considered sufficient "to justify any spirit of complacency on the part of those who care for the welfare of the people". This point was stressed repeatedly in the course of the study and more particularly in the concluding remarks of the book, which were formulated as follows.[71]

[70] Rowntree, 1941:451–453 and 476. It should be noted that in his new survey of York, Rowntree did not attempt to measure the extent of "secondary" poverty as he had done in the first. The reason was that he came to the conclusion that it was impossible to estimate with any reliability the number of families who fell below the poverty line as a result of unwise spending on non-essentials. On the other hand, Rowntree (who was initially rather suspicious of sampling techniques) wrote a supplementary chapter in which he checked the accuracy of sampling methods by comparing the results of his full house-to-house inquiry with the results he would have obtained had he limited himself to a sample. The comparison provided the demonstration he had been looking for, namely that the results obtained by the sampling method were, for the most part, accurate.

[71] Ibid., pp. 476–477. In his overall assessment, Rowntree also insisted on the fact that the alleviation of the worst poverty phenomena had been facilitated by a sharp decline in the average size of families in the lower income groups. However, he noted in this connection that "the fact that there has been a substantial increase in the family income is a matter for unqualified satisfaction, but the fall in the birth rate from 30 per thousand in 1899 to 15 per thousand in 1936 is regarded by many as a matter of grave concern" (ibid., p. 454). Rowntree's assessment illustrates a point made by the sociologist A. Niceforo in several studies (Niceforo, 1921:180–186; Niceforo, 1930b:171–208), namely that the process of development involves both progressive (e.g. improvement of living standards) and negative features (e.g. exceedingly low birth rates), which should be carefully weighted before a final judgment is passed.

> It is gratifying that so much progress has been achieved, but if instead of looking backward we look forward, then we see how far the standard of living of many workers falls short of any standard which could be regarded, even for the time being, as satisfactory. Great though the progress made during the last forty years has been, there is no cause of satisfaction in the fact that in a country so rich as England, over 30 per cent of the workers in a typical provincial city should have an income so small that it is beyond their means to live even at the stringently economical level adopted as a minimum in this survey, nor in the fact that almost half the children of working-class parents spend the first years of their life in poverty and almost a third of them live below the poverty line for ten years or more.

In 1950 Rowntree, this time in collaboration with G.R. Lavers, carried out yet another follow-up study of York, entitled *Poverty and the Welfare State*. Much more limited in scope, the purpose of this new inquiry was to ascertain how far the new welfare measures introduced after 1945 (including family allowances, increased pensions, unemployment benefits) had succeeded in abolishing, or at least alleviating, poverty.

At the time of its publication in 1951, the book attracted considerable attention because its findings suggested that the magnitude of the problem, which had been so startling even in 1936, had been reduced almost to vanishing point. Indeed, according to Lavers and Rowntree's estimates, the number of persons in poverty had fallen between 1936 and 1950 from a total of 17,185 to 1,746. Furthermore, as a consequence of the welfare measures taken to alleviate mass poverty, the suffering of people in this unfortunate situation was considered to be "less acute than that of persons in corresponding position in 1936".[72]

However, as in his preceding surveys, Rowntree cautioned against any undue optimism. Much of the progress observed was explained by the quasi disappearance of unemployment (and the growth of women's employment as well). In his view, any relapse into mass unemployment on the scale observed in the interwar period, would have disastrous effects on the poverty situation, as existing welfare legislation was not properly equipped to cope with this kind of threat.[73]

Conclusion

The momentous changes brought about by the industrial revolution in Europe generated a vast amount of empirical investigation, which progressively laid the foundations of today's economic and social information systems. In order to meet the challenges posed by the introduction of much-needed social reforms, independent authorities, statistical bodies, inquiry commissions and philanthropic groups were set up and were staffed by lawyers, economists, physicians, and other civic leaders. Thus, social policy, social research, reform and legislation became part of a single, concentrated effort which required, and in turn generated, a broad variety of information on people's living conditions, income growth and its distribution, consumption and households' savings trends, social welfare and poverty alleviation.

[72] Rowntree and Lavers, 1951:27–45 and 66.
[73] Ibid., p. 45.

In order to promote a better understanding of social conditions and their evolution in the new industrial world, various lines of inquiry were pursued more or less simultaneously. As the family was considered to be the basic social unit, the welfare of which affected the whole society, considerable attention was devoted to the analysis of household budgets and underlying consumption patterns.

Although large differences in the levels of consumption of rich and poor families had often attracted attention in the past, no systematic analysis of family income and expenditure was attempted until the nineteenth century. The first empirical inquiries were undertaken by enterprising English scholars at the end of the eighteenth century and were followed by numerous private and official inquiries during the first half of the following century. At a later stage, the pioneering works of E. Ducpétiaux, F. Le Play and E. Engel provided the foundations of what has been rightly denominated the modern school of family living investigations and consumption studies.

While an increasing number of economists, sociologists and statisticians tried systematically to collect and analyse household budget data, others, at the price of painstaking efforts, pursued a complementary line of inquiry—national income accounting. During the nineteenth century, and more particularly its second half, estimates of national income became both more reliable and more precise. The first estimates were essentially "static" exercises aimed at providing a picture of income flows and their distribution among various recipients at a given point in time. With the development of modern statistical systems, toward the turn of the century, the "static" picture provided by the first national income estimates was progressively transformed into a dynamic instrument for measuring the rate of real income growth over a fairly long time span—usually 50 years or more.

Although income is undoubtedly an essential component of human welfare, a broader variety of information is required to fully assess the scope, magnitude and direction of social change. This broader picture was provided by the large-scale social surveys that were undertaken in the United Kingdom at the beginning of the twentieth century in the wake of Charles Booth's monumental inquiry into London life and labour.

In this survey Booth clearly showed how several different aspects of social reality could be studied contemporaneously as a related whole and illuminated by accurate measurement and informative description of both the occupational and leisure pursuits of people. Through his intelligent probing of social conditions and their underlying causes, he made it possible for policy makers and the community at large to see more clearly which steps were required for reform. More importantly, the precise and well-documented description of people's social conditions and of their immediate physical environment (e.g. housing) provided the solid, factual basis necessary for a replication at a later stage of the initial survey. The work carried out by Rowntree, Bowley, Llewellyn-Smith and other innovative scholars showed how fruitful this new line of inquiry was.

Follow-up studies undertaken during the first half of the twentieth century indicated that the evolution of a given community is made up of both "progressive" and "regressive" phenomena which have to be evaluated in the light of prevailing conceptions about "good" and "bad" society—and, above all, about population growth, as a main determinant of human welfare.[74] Viewed in this perspective, in-depth social surveying work, accompanied by all due explanations and clarifications, would appear to be a prerequisite before a relatively unbiased judgment can be made on the pace and direction of the ongoing process of social change.

In 1941, the grimmest year of the Second World War, Rowntree concluded his second social survey of York with the following remarks:

> We must not rest content with raising to a higher level the physical standard of those who are living in poverty. The survey we have made of the ways people spend their leisure reminds us how much greater today than in the past is the temptation to seek fullness of life by indulging too largely in forms of recreation which make no demands on physical, mental or spiritual powers. ...
>
> To raise the material standard of those in poverty may prove difficult, but to raise the mental and spiritual life to a markedly higher level will be an infinitely harder task, yet on its accomplishment depends the lasting greatness of the State. Everywhere democracy is challenged. A totalitarian State does not demand high intellectual or spiritual standards from its people. ... A democratic State can only flourish if the level of intelligence of the community is high and its spiritual life dynamic.[75]

Although the above factors do not lend themselves easily to quantitative measurement, there is hardly any doubt that they should also be taken into account in any comprehensive assessment of the progress made by a given society in its search for better and more humane living conditions.

[74] In *Wealth of Nations*, Adam Smith stated that "the most decisive mark of the prosperity of any country is the increase of the number of its inhabitants" (Anderson, 1988:7). This assessment took place in a context where, in the absence of reliable population censuses, the prevailing view in Europe was that population was declining or, at best, was stagnant. A few years later, when considering the population/subsistence equation, the Reverend Robert Malthus came to different conclusions. In 1914, after the Malthusian fear of overpopulation had receded, Bowley concluded in a more sober vein that "it should not be assumed that growth of the population necessarily involves progress" (Bowley, 1915:194).

[75] Rowntree, 1941:476–477.

Annex 1 — Family Monographs and Working-Class Budgets: The Legacy of Le Play and His Followers

In the introduction to *Les ouvriers européens*, Le Play wrote:

> The point of departure in my work, and the constant guide of my reflexions, is a series of studies initiated by me half a century ago, and since then extended to the whole of Europe, the adjoining regions of Asia, and more recently still to the rest of the world. Each study has for its object the monograph of a working-class family, the locality it inhabits and the social constitution by which it is governed.

The basis of Le Play's investigation is the family or, to be more precise, the working-class family. "Population", he wrote, "consists not of individuals but of families. The task of observation would be vague, indefinite and inconclusive, if in every locality it were required to extend to individuals differing in age and sex. It becomes precise, definite and conclusive when its object is the family."

By the working classes, Le Play understood all those who with their own hands perform the work which provides for the ordinary (material) needs of the community. These form either the whole society, as among simple populations subsisting on the "spontaneous production of the earth", or, at least, the large majority, as was the case in Le Play's time in all European countries.

According to Le Play, the working classes show in the most marked manner the influence of local conditions, while the upper classes frequently live far from the localities from which they derive their income; and even if resident they are frequently largely exempt from the influence of local conditions. The working classes, on the other hand, are compelled to share in one or another of the local activities; and families so closely connected with a particular set of conditions must obviously present many points of resemblance. The habits and mode of life of one working-class family are to a large extent those of every other working-class family subject to the same conditions, and therefore the description of a typical family has a general as well as an individual importance.

To be of scientific value, the best method of description must not only be capable of being employed with precision but must lend itself readily to purposes of comparison. In Le Play's system, the budget of income and expenses of a family, if it could be drawn up with sufficient precision, was the kind of instrument required to give a fairly complete description of the material conditions of a given community.

When analysing the income side of the family budget, Le Play drew a distinction between four categories of income sources and receipts. The first was income derived from capital invested in real or personal property, which was further subdivided into: immovables, such as house property; movables, namely cash, tools and animals; and rights to insurance and support from mutual benefit societies. The second section that registered receipts dealt with what the author called "subventions". These were defined as payments in money or in kind, usually on a

customary basis, irrespective of the quantity of work executed. They were of three types: rights of sole usage, for example the grant of a house; rights of common usage, that is, rights and privileges enjoyed collectively, very often as a consequence of long tradition; and allowances in kind or service.

The third section of the budget concerned with receipts showed wages earned by various members of the family, and the fourth registered income from any home production or side activity. Although Le Play was fully aware of the importance of domestic activities, no wages were assigned to housework, and only the time devoted to them was taken into account.

The budgets compiled with meticulous care by Le Play for the first edition of *Les ouvriers européens* (published in 1855) show clearly that, at least in Western Europe, wages in the middle of the nineteenth century had become the main income source of the working class.

Table 1: Share of wages in the total income of working-class families, 1844–1853
(percentage shares)

75–85 per cent of total income	60–75 per cent of total income	40–60 per cent of total income
France	West German States	Russian Empire
United Kingdom	Austria-Hungary	Ottoman Empire
Switzerland	Scandinavia	Spain

Source: Based on data compiled by Cheysson, 1890:82–104.

While the budget of receipts indicated the various sources from which the working classes derived their income, the budget of expenses was intended to show how this income was used and to illustrate the material conditions of working-class families. It was divided into five sections. The first three dealt with provision of food, shelter and clothing. The fourth included all expenditures related to intellectual and moral needs, including under this heading such items as education, religion, recreation, hygiene and medical care. The fifth and last section registered expenses related to domestic industries, debts, taxes and insurance.

Two years after the publication of *Les ouvriers européens*, Engel used the data contained in this book to make a typology of family expenditures broken down according to the geographical distribution of populations considered. These were classified under the following seven headings: nomadic populations; Russian workers; Scandinavian workers; Central European workers; English workers; French workers; and other Western European countries.

Despite differences which reflected both cultural conditions and levels of development, Engel's compilations of Le Play's budgets showed that, on the average, more than 90 per cent of family expenditures were related to the satisfaction of basic physical needs, including food, clothing, housing, heating and lighting. An overview of Engel's synthesis of Le Play's data is provided in the table below.

Table 2: Share of family expenses devoted to the satisfaction of basic physical needs around the year 1850
(percentage of total household expenditures)

	Food	Clothing	Dwelling	Heat and light	Total
Nomadic populations	71.5	14.4	5.1	3.3	94.3
Russian workers	42.0	20.5	4.6	4.8	71.9
Scandinavian workers	74.1	14.3	5.6	3.2	97.2
Central European workers	64.9	15.2	7.4	4.9	92.4
English workers	59.9	15.9	12.9	5.8	94.5
French workers	63.3	16.9	6.7	3.9	90.8
Other Western European workers	59.8	19.3	9.8	6.4	95.3
Average	**59.7**	**17.3**	**8.2**	**5.0**	**90.2**

Households' expenditures relating to the satisfaction of higher types of needs were distributed as follows.

Table 3: Share of households' expenditures devoted to the satisfaction of higher types of needs
(percentage of total expenditures)

	Education	Health and hygiene	Domestic industries	Others	Total
Nomadic populations	2.6	1.0	---	2.1	5.7
Russian workers	1.0	1.6	---	25.0	27.6
Scandinavian workers	0.8	1.9	---	0.1	2.8
Central European workers	1.2	3.9	0.3	2.1	7.5
English workers	1.8	2.6	---	1.8	6.2
French workers	1.5	1.5	3.2	2.8	9.0
Other Western European workers	1.5	0.8	---	2.4	4.7
Average	**1.4**	**1.9**	**0.8**	**5.6**	**9.7**

Source: Engel, 1857:27.

After Le Play's death in 1882, many social scientists in Europe and America continued and expanded the monographic type of social investigations best represented by the author of *Les ouvriers européens*. While some of them were avowed disciples of Le Play, others preferred to follow their own distinctive path. However, with the publication in 1883 of G. Schnapper-Arndt's pathbreaking analysis of five rural communities in the Taunus hills region of central Germany,[76] emphasis began gradually to move away from the monographic description of

[76] Born in 1846 in a wealthy family of liberal convictions, Gottlieb Schapper-Arndt devoted all his life to social investigations, first as an independent researcher and member of the *Verein für Sozialpolitik* and, later, as a professor at the newly established Academy for Economic and Social Sciences in Frankfurt. His investigations in the Taunus district started in 1877 and led to his "social-statistical investigation of small peasantry, cottage industry and people's livelihood (*Volksleben*)". He spent the entire spring and fall of 1881 living in the villages to complete his observations. "Reports on the conditions of the people in the cottage industries, especially by Karl Marx, awakened in me the desire to see the truth by myself", he wrote in the introduction. The first part of the study contained a detailed analysis of economic activities and their material foundations (*Der Erwerb und seine Grundlagen*). The second part focused on people's living conditions (i.e. housing and the physical environment, food, clothing, health and physical development, social and moral conditions, social protection). The most elabourate part of the study was an appendix over 100 pages long. It included, among other things, two family monographs with detailed income and expenditure budgets, and an inventory of all possessions of the family. The first monograph dealt with a nail-maker who worked in the family workshop with his two sons. It was designed to illustrate a "typical" cottage industry

single families, toward the investigation of whole communities.[77] In the new framework that gradually emerged at the end of the nineteenth century, family monographs became constituent parts of larger social surveys and were mainly used as "case studies" designed to illustrate "typical" situations encountered in the community or the social group considered.[78]

With the development of large-scale inquiries on family income and expenditure (see Annexes 2 and 3), monographs also lost their importance as primary sources of statistical information on household budgets. A number of prominent statisticians in Europe rejected monographs outright, describing them as useless, and potentially misleading, analytical tools that by no means could be regarded as a substitute for well-designed statistical surveys. While acknowledging the primacy of statistical approaches, other economists and social scientists stressed that well-documented family monographs were a useful, and indeed a much-needed complement to mass surveys encompassing a large number of representative households.

In 1899 the American economist R. Mayo-Smith, a professor of political economy and social science at Columbia University, made a critical evaluation of the different methods that could be used to collect data on household consumption.[79] They were divided into three broad categories, which were presented and assessed as follows:

> The first is the so-called extensive method, and consists in sending out circulars to a large number of families, and asking that they be filled out and returned. This is altogether inadequate, for it is found that very few circulars are returned and that these are generally very imperfectly filled out. A modification of this method is that pursued by the United States Department of Labour, namely, to collect a large number of returns, made, however, under the supervision of expert agents. They must, however, remain for the most part mere estimates of expenditure of incomes.The second method is that of Le Play, namely a detailed study of the whole life of the working man's family by some one who will live with them, or near them, and acquaint himself thoroughly with their circumstances. This is the intensive method, and gives us the most vivid and detailed picture of family life. It requires, however, great skill and tact on the part of the investigator, as well as great expenditure of time and energy.The third method is the family account system, that is, to

situation. The second monograph described the condition of a road worker who owned no property and who, to a large extent, depended on the earnings of his five children. Two boys of 16 and 15 worked with their father at road building and a nine-year-old daughter made filet lace (Schnapper-Arndt, 1983:245–295).

77 At the end of the nineteenth century, this new trend in social research was best represented by a dissenting group of Le Play's followers who, in 1885, broke with the more traditional disciples associated with *La réforme sociale*, the official Le Playsian journal. The "dissenters" not only founded a journal of their own, entitled *La science sociale*, but also organized field surveys and courses of instruction in theory and method. The foundations of the new theory were laid by Henri de Tourville (1842–1903) who, in his "nomenclature of social facts", developed a general scheme for the analysis of the social system. One of the first empirical inquiries to have made extensive use of Tourville's newly developed nomenclature is a survey by Robert Pinot, a young French scholar, carried out in a district of the Bernese Jura mountains in Switzerland. The field work was conducted in 1885. For more on the approach developed by *La science sociale* group and its application to empirical analysis, see Champault, 1913 and Roux, 1914.

78 In the nineteenth century, Booth and Rowntree were among the first scholars to combine monographic descriptions of family conditions (in the form of case studies) with large-scale inquiries. In the first half of the following century, several prominent social scientists in the rapidly expanding field of empirical investigation followed Booth's and Rowntree's example, e.g. Robert and Helen Lynd in their monumental survey of Middletown in the state of Indiana (R.S. Lynd and H.M. Lynd, 1929); D. Gusti in his numerous monographs of Romanian villages (Gusti, 1935); and Paul Descamps, a sociology professor at the University of Coimbra, in his descriptions of the various regions and industries of Portugal around 1930 (Descamps, 1935).

79 Mayo-Smith, 1899:48–49. A detailed presentation of the various methods of budget data collection is found in Chapin, 1909:1–23. (In this book Chapin also analyses the results of a budgetary survey of 391 families in New York.) More recent methods were presented and discussed in Chapin, 1920:98–132.

> persuade some working man or his wife to keep an exact account in a book provided for that purpose of all the expenditures as well as the sources of income for the family, for a period of at least a year. According to Engel and Landolt, this third method is the most desirable, and at the same time the most practical. It does not give us the number of cases of the extensive method, but it gives more exact information, and if the families are chosen with care, they will be typical of large numbers of others.

The twentieth century was to provide statisticians and social scientists with ample opportunities to test, combine and effectively apply (with varying degrees of success) each of the methods outlined in Mayo-Smith's synthesis.

Annex 2 — Carroll D. Wright and the Development of Family Budget Inquiries in the United States

The name of Carroll D. Wright is closely associated with two institutions that played a remarkable role in the development of social statistics in the United States. The first was the Massachusetts Bureau of Labour Statistics; the second was its counterpart at the federal level, the US Bureau of Labour.

The Massachusetts Bureau was established in June 1869 through a special resolution of the Massachusetts legislature "to collect, assort, systematize and present in annual reports to the legislature statistical data relating to the commercial, industrial, social, educational and sanitary conditions of the labouring classes". The first five years of existence of the new institution were extremely difficult and, in fact, the Bureau (which initially had been created as a concession to the labour vote) came close to being abolished. It would probably have disappeared in 1873 but for the energetic intervention of the Governor of the Commonwealth of Massachusetts at that time, Emory Washburn, who, in a decisive statement to the legislature, stressed that "the remedy for complaint must be sought not in discontinuing the investigations but in lifting them to a broader and higher level, making them more thorough and conducting them with larger aim".[80] After consultation with the director of the US Bureau of the Census, Francis A. Walker—a respected economist, future MIT president and long-time chairman of the American Statistical Association[81]—Washburn selected Carroll D. Wright for the job. At the age of 33, Wright, a young lawyer who had just been elected to the Massachusetts Congress, became the new chief of the Bureau.

After a thorough review of all investigations carried out in the United States and abroad, Wright came to the conclusion that the best way to obtain relatively accurate and unbiased information was to conduct a thorough field inquiry. It was decided that, to be realistic, this inquiry should include an equal number of skilled and unskilled workers of various ethnic groups, that both prosperous and recession-stricken industries should be considered, and that local communities of all sizes should be equally represented. The focus of the inquiry was on family earnings, savings, debts and expenditure. However, in an approach reminiscent of Le Play's method, other types of questions were asked, including data on the composition of the family, housing conditions, the provision of basic amenities and such replies to miscellaneous questions "as the parents would choose to give", including the distance of the home from work, the amount of time lost and the consequent loss of earnings.

[80] A comprehensive description of Carroll D. Wright's involvement in the development of social statistics and the labour reform movement in the United States is found in J. Leiby (1960:22–142), from which the above information is taken.

[81] According to the *Dictionary of American Biography*, Francis A. Walker played a key role in the reorganization of the Census Bureau after 1870. While directing the census of 1870, he had to work under conditions established by a Congressional Act of 1850, which gave him inadequate authority and "in practice substituted party patronage for intelligence as the guiding principle of census-taking" (ibid., p. 342). A decade later, as superintendent of the tenth census, he managed to extend the scope of the inquiry to 24 quarto volumes—according to the above-mentioned biographical dictionary, "almost an encyclopaedia of population, products and resources".

The mailing of questionnaires—a procedure that had been tried by Wright's predecessor—was considered inefficient and discarded in favour of a more costly but more effective way of obtaining the desired information, namely visits by specially trained agents who were responsible for filling out "schedules" of questions during one or several interviews with the families.[82]

Altogether, data on 2,041 persons in 397 families were collected during the year 1874. The results were presented in the sixth annual report of the Massachusetts Bureau of Labour Statistics issued in 1875.

The analysis of household income and outlays showed that, in the majority of cases, Massachusetts workingmen were not able to support their families with their individual earnings alone. Fathers relied, or were forced to depend, on the additional income provided by children and, to a lesser extent, by their wives. Younger children under 15 years of age supplied by their labour from one eighth to one third of all family earnings.

Savings (which, on the average, amounted to 3 per cent of total household income) were found in practically every branch of occupation investigated. However, only one half of all families managed to save money; slightly less than one tenth were in debt; and the remainder more or less managed to balance their budget. Without children's assistance, the vast majority of families would have been in poverty or in debt.

About three quarters of the workingmen's homes were found to be in good condition, as judged by location, regards locality, basic amenities and sanitary provisions. However, only a small minority of the better-paid workers were able to own their houses—less than in other parts of the United States. Furthermore, nearly one half of the unskilled workers lived in inferior tenements.

As shown by the table below, for the vast majority of families more than 80 per cent of total household income had to be allotted to basic subsistence. In line with Engel's expenditure law, food was a decreasing function of income. However, as a proportion of total outlay, even in the higher income groups, it never went below the 50 per cent mark.

[82] In the fourth part of the Massachusetts Labour Bureau report, Wright provided information on both the results and the methods used to collect the data. With reference to the latter, he pointed out that the system used showed "plainly the superiority of personal investigation, inaccuracy and uniformity of information secured, over the voluntary reply circular system" (Bureau of Statistics of Labour, 1875:202). The families considered for study were those of workers who, with comparatively few exceptions, had children dependent on them for support.

Table 4: Percentage composition of budgets of Massachusetts workingmen's families

Income group *(dollars)*	Budget shares				
	Food	Rent	Heat and light	Clothing	Others
300–400	64	20	6	7	3
400–600	63	15.5	6	10.5	5
600–750	60	14	6	14	6
750–1200	56	17	6	15	6
1200 and over	51	15	6	19	10

Source: Sixth Annual Report of the Bureau of Labour Statistics, Boston, 1875, as quoted in Stigler, 1956:207.

The type of analysis conducted by the Massachusetts Bureau of Labour Statistics, with its background of a complete budget of income and expenditure, its discussion of savings and home ownership, and its orientation toward both practical and theoretical conclusions, immediately placed household budget investigations in the United States on a scientific level which had been achieved by few empirical investigations at that time.

In 1885 Wright was appointed Commissioner of the newly created Bureau of Labour in the US Interior Department. He relinquished his Massachusetts post three years later to complete the eleventh population census and to direct a large-scale investigation on wages and labour conditions of salaried workers in selected industrial sectors of Europe and the United States. The survey resulted in the submission of two reports. The first one, issued in 1890, gave detailed information on 3,260 family budgets for workers employed in the iron, coal, steel and allied industries. The second report, published one year later, was collected from 5,300 families the heads of which were employed in the cotton, wool and glass industries.[83] In 1893 these two reports were discussed at the annual session of the United Kingdom Royal Statistical Society and were referred to as "monuments in the history of statistics" which should serve as models for all future inquiries to come.[84]

In 1901 the Labour Bureau completed another, larger investigation, this time covering 25,440 workers' families located in the principal industrial centres of the United States. In addition to manual workers, the scope of the inquiry was extended to include low-salaried employees, tradesmen and a few categories of professionals whose earnings were under $1,200 per year. Analysis was made according to country of birth, home ownership, and types and amounts of expenditures. Schooling, housing, composition of households and unemployment were also studied carefully. A group of 2,500 families who had provided the most reliable information was selected for more in-depth investigation—particularly with respect to food consumption,

[83] The purpose of these few multinational inquiries (which had been mandated by the US Congress) was not to compare living conditions in the countries under scrutiny but more prosaically to provide data on "the cost of producing articles, at time dutiable in the United States, in leading countries where such articles are produced" (Higgs, 1893:267). For more information on these two inquiries and the main conclusions derived from them, see Mayo-Smith, 1899:28–30.

[84] "In ability of conception, and industry and thoroughness of execution, the US Department of Labour report is a monument in the history of statistics" (Higgs, 1983:258).

which was reduced to the adult male equivalent according to a newly developed scale devised by Wright.[85]

After Wright's retirement from public duties in 1905, budget investigations—which until then had been focused on the lower- and middle-income segments of the urban salaried population—were progressively extended to other social groups, such as farmers, civil servants and professional families.[86] These investigations were carried out by a broad variety of public and private research bodies, which all greatly expanded the pioneering work of Wright and the Bureaus of Labour Statistics he had directed.

[85] According to Frank H. Streightoff, the author of a comprehensive study on the "standard of living among the industrial people of America" (and also one of the first estimators of national income in that country), the US Bureau of Labour inquiry was a remarkable achievement which was characterized as follows: "The physical immensity of the task made it impossible to draw distinctions between large and small cities and also to include many other desirable tabulations. Yet enough was done to make the report the most complete work on the subject ever published-thoroughly scientific and comprehensive-intensive enough to allow many specific deductions" (Streightoff, 1911:10–11).

[86] It was not until 1923 that the US Department of Agriculture, in conjunction with a number of land grant colleges, particularly Minnesota and Iowa, began to make a series of farm budget studies that were highly suggestive, although of an uneven statistical value (Douglas, 1934:76–77 and ILO, 1926:64). During the same interwar period, various attempts were made to construct index numbers of the cost of living for various social groups. The budgetary inquiries that were undertaken in this connection are described in an ILO study published in 1936 (ILO, 1936:817–831).

Annex 3 — Family Budget Inquiries and the Analysis of Household Expenditure in Europe 1795–1940

The first part of this annex presents the results of empirical inquiries into family budgets that were conducted from the end of the eighteenth century to 1907, the year during which an extensive survey of household expenditure was conducted by the German Imperial Statistical Office. The second part contains an overview of developments from 1907 to the outbreak of the Second World War.

In order to facilitate a comparison between the results of these surveys—and also to follow the classification of expenses generally used throughout the nineteenth and early twentieth century—household expenditures have been classified under the following five main headings: food; rent; heat and light; clothing; and miscellaneous—a residual category containing all expenses not included under previous categories.

To provide an overall picture of consumption structures, a distinction has been made between different expenditure levels depending on whether these relate to the lowest income groups of the social category considered (hereafter referred to as group A), to the intermediate group (group B) or the highest group (group C).

In conformity with usual practices, expenditures are expressed as budget shares—i.e., in percentages. Tables are listed in chronological order starting with the budgets compiled by Sir F.M. Eden in his famous *State of the Poor in England*.

Table 5: Percentage composition of budgets

Income groups	Budget shares				
	Food	Rent	Heat and light	Clothing	Others
Agricultural workers in Great Britain, 1795					
A	69.6	6.3	4.9	11.2	8.1
B	75.3	3.1	4.1	9.7	7.8
C	76.6	4.3	3.6	9.5	6.0
Non-agricultural workers in Great Britain, 1795					
A	68.9	8.8	7.4	6.0	8.8
B	78.6	5.2	6.5	1.6	8.2
C	73.3	6.0	3.8	6.2	10.7
Working-class families in Belgium, 1853					
A	70.9	8.7	5.6	11.7	3.1
B	67.4	8.3	5.5	13.2	5.8
C	62.4	9.0	5.4	14.0	6.1
German farm workers, 1876					
A	65.2	6.8	6.9	18.5	2.6
B	62.1	6.6	7.1	17.4	3.8
C	67.4	7.0	6.6	15.3	3.7
Belgian workers, 1891					
A	66.3	11.5	5.1	12.2	5.0
B	66.3	10.1	5.0	14.1	4.5
C	64.9	8.8	5.4	15.7	6.1
Danish urban workers, 1897					
A	48.4	13.3	4.4	11.8	4.3
B	53.2	12.8	4.9	11.9	2.9
C	45.8	13.5	4.5	11.8	5.0
German lower-income workers, 1907					
A	54.6	17.1	5.5	9.8	13.0
B	50.3	17.4	3.8	11.7	16.8
C	52.1	14.4	3.7	13.0	16.8

Sources: Great Britain: Eden, 1797, as synthesized by Stigler, 1956:201. Belgium: Ducpétiaux inquiry of 1853, Stigler, 1956:204. Germany: 1876 inquiry of the German landowners' association, Zimmerman, 1932:88. Belgium: official inquiry of 1891, as presented in Zimmerman, 1932:88. Denmark: official inquiry of 1897, as presented by the Director of the Statistical Bureau of the Kingdom of Denmark, M. Rubin, in Rubin, 1903:21–57. Germany: official inquiry of 1907–1908, as reflected in Halbwachs, 1913:252–283.

The German official inquiry of 1907 referred to above was the largest and the best organized budgetary survey organized in Europe before the First World War. It was organized by the central statistical office of the German Empire (*Statistisches Reichsamt*). In this survey the Statistisches Reichsamt was assisted by the statistical bureaus of 14 cities, 33 health insurance units and various welfare organizations, unions and clubs. The inquiry covered mainly working-class families, plus a number of lower-grade employees and teachers whose wages did not exceed DM3,000 per year.

Families were asked to keep detailed records of income and expenditure for a period of one year. Altogether 4,100 account books were distributed, of which approximately one quarter were kept for the analysis. Ultimately, the main body of the survey was based on 852 accounts, kept for the whole year of 1907. An appendix gave data on 118 accounts kept for more than six months but

less than one year. In the tabulated results, income and expenditure data were given for each family, as were averages for each industrial district and for Germany as a whole.[87]

In the 15 years that elapsed between the end of the nineteenth century and the beginning of the First World War, many budgetary inquiries were conducted by private or public organizations in Europe.[88] Some of them involved as many as 500 family budgets or more.[89] However, they were generally limited to one particular geographic area, usually a large- or medium-sized city, and were focused on manual workers and low-income categories of salaried employees.[90]

The situation changed drastically after the end of the First World War, when the need to establish precise cost of living indices prompted many governments, particularly in the newly independent states of Europe, to undertake relatively comprehensive household budget surveys. Work was co-ordinated by the newly established ILO Conference of Labour Statisticians, which acted both as a clearing house for the exchange of information and as a centre for the formulation of appropriate methodological guidelines.[91] From 1925 onward (when the first series of recommendations concerning the organization of inquiries was formulated by ILO labour statisticians) until the outbreak of the Second World War, a number of important studies were published by ILO experts. These synthetic studies still provide the most valuable source of information on the surveys conducted in the various ILO member countries and the main findings contained therein.

From 1921 to 1931, seven important surveys were organized by the statistical offices of the newly independent states of Europe. They all indicated that more than 50 per cent of household expenditure in medium- and lower-income groups in urban areas was allotted to food. Housing expenses varied between 5 and 9 per cent of families' income—much less than in the more industrialized countries of Western Europe.

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87 One of the best descriptions of the German inquiry of 1907 is provided by Halbwachs in his book on working-class conditions and living standards, referred to in Annex 4 (Halbwachs, 1913:136–254). See also ILO, 1926:56–57.

88 Until 1914 the number of official (nationwide) inquiries was limited to the five following countries: Denmark (1897), France (1913), Germany (1907), Sweden (1913) and the United Kingdom (1904). However, it should be pointed out that the United Kingdom inquiry was focused on food and rent expenses. The French inquiry was initiated in 1913 but was interrupted by the war. The results (which were published in 1919) were regarded as unsatisfactory and never used in practice. More details on the French inquiry can be found in Halbwachs, 1921:50–59. See also ILO, 1926:56–76 and, for Sweden, Cederblad, 1926:489–507.

89 A good illustration of this type of investigation is provided by the inquiry conducted by the Russian statistician S. Prokopowitsch in Saint Petersburg. The inquiry was sponsored by the Imperial Technical Society of Russia and encompassed 570 budgets of working-class families. The families were grouped according to total expenditures, which ranged from 200 to more than 1,200 rubles per year. Incomes were not known accurately, but it was judged that expenditure was on the whole 20 per cent higher than income. The inquiry was conducted by means of the technically unsatisfactory method of questionnaires. For more details on this investigation, the first of its kind in Russia among industrial workers, see Prokopowitsch, 1910:66–98.

90 These inquiries were usually conducted by municipalities, welfare organizations or trade unions which often co-ordinated their efforts, as shown by the Dutch example. An inquiry was made in 1911 by the *Socialistische Studieclub* concerning the expenditure of 70 working-class families in different parts of the country. During the war, the labour inspection directorate conducted a cost-of-living survey in the city of Amsterdam during a period of four weeks in February and March 1917. In order to allow comparability of results with those of 1911, the investigation in 1917 focused on the same class of family that was the subject of the earlier inquiry. The names of household heads were obtained from the offices of different socialist trade unions (ILO, 1926:71–72).

91 These guidelines were published in 1926 in the "Studies and Reports" (Series N, No. 9) of the ILO under the title *Methods of Conducting Family Budget Inquiries*. As an annex to the report, the ILO secretariat prepared a summary of the investigations carried out in Europe and other ILO member countries.

Table 6: Composition of total expenditure per family in the newly independent states of Europe
(percentage of total expenditure)

	Food	Housing	Heat and light	Clothing	Miscellaneous
Czechoslovakia					
1928	55.6	7.0	4.9	13.0	19.5
1930	56.6	9.0	5.7	14.4	14.3
Estonia					
1925	57.9	14.3	---	18.2	9.6
Finland					
1921	62.5	6.4	4.9	15.6	10.6
1928	50.3	16.7	3.9	13.7	15.4
Ireland					
1922	57.1	5.4	7.0	17.5	13.0
Poland					
1928	63.2	6.6	4.6	12.9	12.7

Source: International Labour Office, 1933:654; 1934:237; and 1935:393.

Important budgetary surveys were also carried out in several countries of Western and Northern Europe including Belgium, Denmark, Germany, the Netherlands, Norway and Sweden.[92] All these countries had already conducted nationwide inquiries either before or during the First World War. Thus, building on accumulated experience, it was possible for them to improve the design and expand the scope of the investigations.

A good illustration of these improvements is provided by the household survey conducted in 1927–1928 by the German *Statistisches Reichsamt*—20 years exactly after the first nationwide inquiry had been undertaken by that institution. While the first investigation had been restricted to manual workers and a limited number of low-income employees, the 1927–1928 survey included three well-defined social groups: workers; employees; and officials. These three classes were distributed as follows: 896 families in the first group, 546 in the second and 498 in the third. In 1907, only one adult equivalent scale had been used to define consumption units. In 1927–1928, the Reichsamt statisticians adopted two different scales—one for food expenditure, the other for other categories of outlays.[93]

The 1927–1928 survey also included an analysis of the main income and expenditure trends that had been omitted from the preceding inquiry. Thus, in their presentation of the main results of the survey, the Reichsamt analysts noted that increase in family income was associated with: a decline in the percentage of the total earned by the head of the family; an absolute increase in income from other earnings, for example, interest on capital; and an increase in age and number of children. Referring to the various "consumption laws" known at that time (and reflected in Annex 5), the statisticians concluded that Engel's law held for consumption of food, consumption and luxuries, and Schwabe's law for expenditure on rent.

[92] A summary of these studies is provided in the above-mentioned report (ILO, 1926:55–78). For the Netherlands and Sweden, see also Cederblad, 1926:489–507 and Van Maarseveen, 1999:46–49.

[93] A summary of the budget inquiry is found in the journal *Wirtschaft und Statistik*, published by the German Statistical Office (*Statistisches Reichsamt*), 1929:818–825; and, in a more abbreviated form, in ILO, 1930:525–532.

Annex 4 — Engel's Laws and Their Influence on the Development of Consumption Studies in Europe

In the field of study of households' consumption and expenditures, one theory attracted attention above all others—the so-called "Engel's law", or series of laws. In two major articles, published in 1857 and 1895 respectively, Engel gave his principles of the distribution of expenditures under conditions of increasing or decreasing incomes. These were formulated as follows: "The poorer a family, the greater is the proportion of the total expenditure which must be used for food. The proportion of households' expenses used for food, other things being equal, is the best measure of the material standard of living of a population."

In other words, Engel (who was considerably influenced by Malthus) attempted to lay down a law in which, under conditions of increasing income, food expenditures change at a very slow rate and "sundries" (which included all types of consumption other than rent, heat, light and clothing) at a more rapid rate. A specific statement, in which he used the geometrical versus arithmetical comparisons, so familiar to Malthus, is found in his 1857 study with the following formulation: "the law with which we are dealing maintains that expenses for food bear a geometrical relation to well-being". As a basis for his assertion, he provided the first numerical computations in which the share of food in total household expenditure is related to the estimated total annual income of a "typical" family.

Table 7: Share of expenditure on food related to total annual income

Annual income of a family *(in francs)*	**Food expenditure** *(percentage of total family income)*
200	72.96
500	68.85
1,100	63.75
1,400	61.30
1,700	59.79
2,000	58.65
2,300	57.84
2,600	57.30
3,000	56.90

Source: Engel, 1857, Table 8, based on Ducpétiaux's and Le Play's household budgets.

A rapid calculation shows that food expenditure, expressed as budget shares, follows a geometric progression defined by the equation Yt = Art – 1, where r, the common ratio of the geometric progression, is equal to 1.02 (Berthomieu, 1966:67–71).

As a natural follow-up to his 1857 study, Engel went further and tried to generalize his theory into a complete measure of the standard of living of a population. He associated with food the other "costs of physical maintenance". In his general theory he implied—but never demonstrated explicitly—that the variations in expense for secondary necessities (mainly clothing, washing, housing, heat and light) are approximately synchronous in rate and direction

of change with food expense and are of the same nature. This set of hypotheses laid the groundwork for numerous empirical investigations carried out in Europe (mainly Germany) and, under the influence of Carroll D. Wright, in the United States.

In 1875, based on the Massachusetts Bureau of Labour investigations and the tables found in Engel's pioneering article, Wright reformulated the latter's famous law around four distinct propositions. These propositions were:

1. that the greater the income, the smaller the relative percentage of outlay for subsistence;
2. that the percentage of expenditure for clothing is approximately the same, whatever the income;
3. that the percentage spent for lodging or rent, or for fuel and light, is invariably the same, whatever the income; and
4. that as income increases in amount, the percentage of outlays for "sundries" becomes greater.

In Germany, the work of expanding the Engelian hypotheses to include other types of households' expenditures was initiated by Heinrich Schwabe, editor of the Berlin Statistical Yearbook. In 1867 surveys were undertaken in Berlin by the official Bureau of Statistics to determine the relations between income and the amount paid for rent. Two classes of families were studied: those of 4,281 government officials, both state and communal, with salaries of less than 1,000 Thalers; and those of 9,741 other citizens, also with income of less than 1,000 Thalers. Incomes were divided into 20 classes and the results tabulated. From the tabulated results Schwabe concluded that "mathematically speaking, the poorer a person, the greater must be the part of his income used for house rent".

Schwabe then continued his investigation of families with incomes of more than 1,000 Thalers, to discover the proportion spent for rent with increasing incomes. He held that his law on rent costs was absolute (i.e. irrespective of social classes) and not relative.

Following Schwabe's pioneering work, numerous inquiries were undertaken to test the validity of his conclusions. In 1875, Laspeyres, a foremost statistician of that time, demonstrated that Schwabe's law was relative and not absolute. Based on new data, he attempted to show that the percentages spent for rent applied within social classes, but not between them. Because of different class standards of living, one could not compare a clerk with a manual worker of the same income group. Each class has its own social standards and, within it, the same general principle of declining proportions of rent with higher incomes holds.

In a later analysis, the results of which were published in 1912, another statistician (G. Albrecht) tested the theories of both Schwabe and Laspeyres, utilizing extensive household budget inquiries conducted in 1907–1908. Although he found a number of irregularities, he finally reached conclusions that can be summarized as follows:

- For high-income classes (above DM5,000), social considerations were most important in the budget shares allotted to rent; but income was also a factor. Each subgroup (e.g. entrepreneurs, officials, *rentiers*) had its own standards.
- For lower income groups (in the DM1,200–1,500 range), social considerations were important; but within social classes, rental proportions declined as incomes grew. Income was a more important factor than for the higher income class.
- For the lowest class (under DM1,200), no law could be established.

Building on the Engelian hypotheses and considerable empirical data provided by the 1907 German surveys of household expenditure (see Annex 3), Maurice Halbwachs, a French sociologist who was also a prominent member of the Durkheim school, developed a general theory of consumption. In a first monograph published in 1913, Halbwachs attempted to interpret the living standards of the working class based on the official German investigation of 1907–1908. A second monograph, issued after the war, studied the satisfaction of needs of the working classes in Western countries during recent periods (Halbwachs, 1913 and 1923).

In the second essay, the author dealt almost entirely with the preceding 50 years in Europe and America and found a constant movement toward a higher standard of living in the Engelian sense. Percentage of expenditure for basic necessities of life decreased, and that for all other needs increased markedly. Furthermore, people became accustomed to, and hence expected, certain items of consumption. Although there is no particular part of household expenditure that could not be reduced, the general tendency was for all parts to resist reduction. Thus, there was a "rhythm" in the evolution of needs of the working class, which ran through periods of expansion in prosperity to those of consolidation in depression.

Concerning specific trends in consumption, Halbwachs's findings corroborated those of Laspeyres and Albrecht about the role played by social class inside given income groups. Thus, in a comparison of manual workers, white-collar employees and minor officials of the same economic groups, he found that:

- manual workers spent more per unit for food than employees, but less per unit for rent than employees and officials;
- officials spent a great deal more per unit for clothing than employees, who, in turn, devoted a larger share of their resources to this item than workers; and
- employees spent more than both officials and manual workers for the "diverse needs" category.

After 1910, the study of relations between income and household expenditure was influenced by the development of new methodological tools. In 1912 the Italian economist Gustavo del Vecchio demonstrated how recently developed statistical analysis techniques could be applied to a large amount of budgetary data, to calculate an "index of elasticity of consumption" relating family expenses to income. Del Vecchio borrowed his techniques from his compatriot Corrado Gini who, in an article published a few years earlier, had used them in an analysis of statistical relations between food expenditure, income size and other categories of expenses.[94]

[94] A summary of Corrado Gini's and Del Vecchio's methods and conclusions is found in Stigler, 1964:209–213, on which the above presentation is based.

Six years after Del Vecchio's pioneering contribution to the analysis of income elasticity—and apparently unaware of the latter's work—the American sociologist, William Ogburn, showed how recently developed correlation and curve-fitting techniques could be applied to 200 family budgets gathered in the District of Columbia in 1916. Various categories of expenditure entering these budgets were related to total family income, and corresponding "income elasticities" were computed by means of regression. The ensuing analysis showed that income elasticities varied widely—from 0.51 to 1.90—and that household outlays could be ranked according to their degree of response to income change as follows:[95]

Table 8: Income elasticities of household expenditure

Expenditure category	Elasticity coefficient
Alcohol and tobacco	0.51
Food	0.67
Fuel and light	0.73
Medical care	0.88
Housing	0.93
Life insurance	0.95
Clothing	1.36
Religion	1.67
Education	1.87
Recreation	1.90

Ogburn compared his data with Wright's expanded version of Engel's law and found that the second and third laws (relating to clothing and housing expenditure, respectively) were not corroborated by his findings.

Neither Del Vecchio's nor Ogburn's investigations received much attention at the time of their publication. However, they provided the fertile ground on which modern analysis of household demand and budgetary expenditure could develop during the interwar period.

[95] Ibid., p. 210.

Annex 5 — National Accounts and Income Distribution Estimates in Victorian England: R.D. Baxter's Contribution

In 1868, Robert Dudley Baxter presented a paper before the Royal Statistical Society on *National Income of the United Kingdom*. According to Studenski, the historian of national accounting theories and practices in the world, this study was characterized by "a careful choice of figures, lucidity and close reasoning", and constituted a unique achievement at the time of its publication.

In the introduction to his work, Baxter used a picturesque comparison to describe the magnitude of the task involved in estimating national income and its distribution:

> There is in the Atlantic an Island—the Peak of Tenerife—which rises from the sea in a pyramidal form to a height of 12,000 feet. ... An inhabitant is scarcely aware of its real proportions: for if he lives at its foot, he sees chiefly the lower eminences which rise immediately above him; and if he climbs the height he is apt to lose sight of the broad base below. ... I have often thought that such an island is a good emblem of a wealthy state, with its long low base of labouring population, with its uplands of the middle classes, and with the towering peaks and summits of those with princely incomes. The difficulty is to ascertain the relative dimensions of these mountain zones. ... We must sail in the offing, till we can see the island as one grand whole, and realize its true proportions.

Baxter started his exploration by estimating the total number of income recipients in the United Kingdom and distributing it among broad social categories and income groups. The resulting estimate for the year 1867 was as follows:

Table 9: Estimated number of income recipients in the United Kingdom by social group and category, 1867

Social group and income category	Number of income recipients
Upper and middle classes	
a. Very large incomes (£5,000 and above)*	8,500
b. Large incomes (£1,000 to £5,000)	48,800
c. Middle incomes (£300 to £1,000)	178,300
d. Small incomes (£100 to £300)	1,026,400
e. Incomes below income tax (under £100)	1,497,000
Total	**2,759,000**
Manual workers	
f. Higher skilled labour	1,345,000
g. Lower skilled labour	5,087,000
h. Unskilled labour (including agricultural workers)	4,527,000
Total	**10,959,000**

* The very large income category also included undistributed profits of 400 companies. These profits were estimated at £30 million.

Based on income tax data, census figures and various published sources on average earnings in different occupations, Baxter arrived at the following estimates of the amount of income available to each category of income recipient:

Table 10: Estimated average income by category of recipient, United Kingdom, 1867

Income category	Estimated total income *(£ millions)*	Average income (£) per income recipient category
A	126.2	14,847.00
B	83.3	1,707.00
C	87.7	492.00
D	110.9	108.00
E	81.3	54.30
F	66.4	49.30
G	160.6	31.60
H	97.6	21.50

For the upper and middle classes as a whole (classes A to E), the average income was estimated at £177.40 per year. The corresponding figure for manual workers (classes F, G and H) was £59.30—approximately one third of the former group.

According to Baxter's estimates, the £324.6 million accruing to manual workers consisted almost exclusively of wages. The total estimated income of £489.4 million for the upper and middle classes was broken down according to its sources as follows:

- Capital income = £280.0 million
- Salaries and mixed (entrepreneurial) income = £209.4 million

Out of a total distributed income of £814 million, 59 per cent was estimated to have been generated by material production activities, mainly agriculture, manufacturing and mining. The remaining 41 per cent was distributed among service and service-related activities, including retail trade, transportation of people and housing (24 per cent), and government services, professions and domestic services (17 per cent).

Baxter ended his computations with the following income figures for the three constituent parts of the United Kingdom:

Table 11: Estimated income figures for England and Wales, Scotland and Ireland, 1867

	Number of income recipients *(millions)*	Total income *(£ millions)*	Average income (£) per income recipient	Average income (£) per head of population
England and Wales	9.8	662	68	32.0
Scotland	1.4	74	53	23.5
Ireland	2.5	78	31	14.0

Source: Studenski, 1958:116.

In the introductory part of his study, Baxter clearly outlined the innumerable difficulties facing the national income estimator.

> The materials for such an inquiry are abundantly ample; but their enormous mass renders it difficult to present them clearly and in small compass. The long catalogue of occupations can only be appreciated by those who have endeavoured to reduce them to order. Minute accuracy is unattainable, and we are obliged to work by general averages. The great object is to render those averages trustworthy and simple, and that they should not be undigested masses of figures, or mere lists of unconnected totals, but coherent and lucid. Nor ought important facts to rest upon mere assertions; the authorities for the facts, and the reasons for the calculations, ought in every case to be given, so that the reader may refer and verify by himself.

Baxter clearly demonstrated how hard work, statistical skills and ingenuity made it possible to combine the vast amount of available economic, demographic and social information into a coherent whole. Thirty years later, his work was continued and greatly expanded by A.L. Bowley, J. Stamp and other pioneers of the new social accounting science in the making.

Annex 6 — Nutrition Inquiries in the Interwar Period: The British Food, Health and Income Survey

The development of modern nutrition science goes back to the end of the nineteenth century when, building on the discoveries of the German scientists Voit and Rubner, the American biochemist Atwater for the first time managed accurately to measure the caloric content of various kinds of food. This important discovery soon led to the development of dietary standards in which a number of basic nutritional requirements were defined and reflected in "scales", corresponding to the specific needs of various population groups.[96]

The discovery of vitamins (the existence of which was established in 1911) introduced a new era in the study of nutrition. Indeed, for a long time research workers themselves did not fully realize the importance of the discovery. When, however, it became evident that diets frequently did not contain a sufficient amount of these substances, which had been proved to be essential for health, nutrition began to be studied from a new point of view. The centre of interest moved from the energy-supply function of food to other more "qualitative" aspects of nutrition, and the different constituents of the human diet were studied to ascertain their influence in maintaining health. In these new studies, it soon became evident that foodstuffs might be deficient in mineral salts as well as in the newly discovered vitamins.[97]

By the early 1930s, the new knowledge gained from investigations along this line was reflected in the new dietary requirements that were elaborated at that time. From 1930 onward, vitamins A and D, and such minerals as calcium, phosphorus and iron became part of the prescribed lists of essential food constituents. Since the newly discovered constituents were present only in the more expensive types of foodstuffs, such as meat, milk, fruits and vegetables, it soon appeared essential to examine the adequacy of the diet of the population in the light of the new dietary requirements.

The United Kingdom is the first country in Europe to have undertaken a comprehensive (nationwide) survey of the food, health and income conditions of its population. The survey was conducted in 1935. It was entrusted to a well-known research institute—the Rowett Research Institute, which had been set up a few years earlier in Aberdeen, Scotland, to investigate a variety of problems relating to human (and animal) nutrition. The purpose of the inquiry (which was financed by one of the main branches of the food industry) was to collect and analyse all the facts, quantitative and qualitative, concerning the diet of the people and the main sources of food supply, and to report on any changes that might appear desirable in the light of modern advances in the knowledge of nutrition.[98]

As the inquiry focused on the adequacy of food consumption in relation to new dietary requirements, the starting point of the investigation was a detailed examination of the socio-

[96] For an overview of theories relating to income (and price) elasticity measurement in the interwar period, see Schultz, 1937:105–135.

[97] The main stages in the development of nutrition sciences and their influence on the determination of dietary standards at the beginning of the twentieth century, as described in Lusk, 1928:17–46 and 61–75.

[98] For more details, see Orr, 1937:15–17.

demographic structure of the population, as reflected in income distribution and household consumption data. The analysis of family budgets was carried out on the basis of consumption per head, in groups of families which were defined by the average per capita income in the household, i.e., "the total family income from all sources divided by the number of persons, irrespective of age and sex, supported by that income". Classification of the population into groups according to income was based on income tax returns, wage statistics and data relating to unemployment, old age pensions and other forms of social income, combined with a sample investigation of the 1931 population census designed to yield information as to the size of families and the ratio of earners to dependents in different occupation groups. In addition to information provided by census data and other administrative sources, 12 surveys comprising 2,640 family budgets were examined—ranging from very poor families, spending less than 2s. per head weekly on food, up to families with an income of £2,000 per year, spending 15s. or more per person per week on food.

Analysis of income distribution data and family budgets showed that the total population of England, Wales and Scotland could be classified by income group and average weekly food expenditure per head in six classes as follows.

Table 12: Income group and average per capita weekly food expenditure, England, Wales and Scotland, 1931

Group	Income per head per week	Estimated average expenditure on food	Estimated population of group	
			Numbers	Percentage
I	up to 10s.	4s.	4,500,000	10
II	10 to 15s.	6s.	9,000,000	20
III	15 to 20s.	8s.	9,000,000	20
IV	20 to 30s.	10s.	9,000,000	20
V	30 to 45s.	12s.	9,000,000	20
VI	over 45s.	14s.	4,000,000	10
Average	**30s.**	**9s.**	**---**	**---**

Source: Orr, 1937:27.

The analysis also indicated that the number of children per family was closely related to the income group considered. Thus, children of and below school age were estimated to constitute 49 per cent of persons in the lowest income group (group I), 35 per cent of those in group II, 25 per cent of those in group III, 14 per cent of those in group IV and approximately 12 and a half per cent of those in groups V and VI.[99]

Data on the food consumption of each income group were derived from market supply estimates and family budget inquiries. Altogether, 24 categories of foodstuffs were considered, encompassing the quasi totality of food consumed by the population of England, Scotland and Wales.

In order to assess the adequacy of the diet of each population group, different categories of food were converted into specific nutrients—proteins, fats, carbohydrates, minerals (calcium,

[99] Ibid., pp. 5–9.

phosphorus and iron), vitamins (A and C)—and compared to the standard requirements defined by nutrition experts. The general conclusion that emerged from the analysis was that "on the standards taken, in the lowest income groups the average diet was inadequate for perfect health". Indeed, the diet of the poorest group, comprising more than 4 million people, was found to be grossly deficient in every constituent examined. The second group, encompassing 9 million people, was adequate in proteins, fats and carbohydrates but deficient in all the vitamins and minerals considered. The situation of the third group, comprising another 9 million, was definitely better but was considered deficient in several of the important vitamins and minerals. Complete adequacy was almost reached in group IV, and in the still wealthier groups the diet had a surplus of all constituents considered.

The nutrition survey was followed by a review of the state of health of the people in the different income groups. The review indicated that, as income increased, children grew more quickly, adult stature was greater and general health and physique improved. The results of tests on children also showed that improvement of the diet in the lower groups was accompanied by a lower incidence of deficiency and infectious diseases and by an increased rate of growth, which approached that of children in the higher income groups.

Therefore the challenge was "to make the diet of the poorer group the same as that of the first group whose diet was adequate for full health, i.e., group IV". The achievement of this objective would involve increases in consumption of the more "protective foodstuffs", such as meat, milk, butter, fruit and vegetables, varying from 12 to 25 per cent depending on the income group and the kind of foodstuffs considered. Since the more protective foodstuffs also happened to be the more expensive ones, bringing them within the reach of the poorer segments of the population raised a number of important economic and political problems that "went well beyond the sphere of any single department of state".

In 1936, the main findings of the investigation carried out by the Rowett Research Institute were summarized in a 72-page publication, the preparation of which was entrusted to John Boyd Orr, an eminent physiologist and nutrition expert who had supervised the project and was also the head of the institute. In subsequent publications, Orr dwelled on some of the main implications of the study, including health and nutrition education, which he considered to be "the first step towards an improvement in national health and physique". He also stressed that the marketing boards, which had been set up in 1931–1932 to cope with the agricultural crisis, should be "developed on a national basis for the good of the whole community, instead of on an agricultural basis in the financial interest of the farmers". Under the new scheme, the restructured marketing boards would be given a new and more challenging objective—"to make available at a price within the purchasing power of every household sufficient health foods to bring the diet up to the standards which science says is necessary for health and physical fitness".[100]

[100] Ibid., p. 65.

With the outbreak of the Second World War, the search for appropriate nutrition policies took on a new (and possibly unexpected) dimension, which Orr explained at length in a new book on food policies in wartime conditions. This book was published at the beginning of 1940—a few weeks before the German onslaught on the Western front. Orr's views played an important role in the framing of the fair, equitable and reasonably efficient food policies that were implemented in Britain both during and immediately after the war.[101]

Orr also participated in discussions that led to the creation in 1945 of the United Nations Food and Agricultural Organization, of which he became the first Director General. He held this position until his resignation in 1948—one year before being awarded the Nobel Peace Prize.[102]

In 1950, like all other Western nations, the United Kingdom entered an era of fast income (and consumption) growth, during which most of the poverty-related nutrition problems identified by the Rowett Research Institute were progressively solved. The prosperous societies of the Western world also saw the emergence of new forms of ill-nutrition arising from overconsumption of certain types of foods and from wrongly directed technological change. These challenges would probably require comprehensive investigations along the lines initiated in Scotland more than 65 years ago by Orr and his colleagues.

[101] The measures advocated by Orr were summarized in a separate publication (Orr and Hill, 1937:27–29).

[102] According to the *British Dictionary of National Biography* (1971–1980), "Orr's views were at the base of national food policy in the war of 1939–1945. He advised Lord Woolton, then Minister of Food, and was asked to attend meetings of the relevant Cabinet Committee" (ibid., p. 644). In 1940 he set out his views on food policy under wartime conditions in a book he co-authored with David Lubbock (Orr and Lubbock, 1940:46–83).

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