

the need for it was generated, and an impressive amount of experimentation in urban design, which combined political, social, and cultural factors, was carried out in the colonies. In that spatial/political experimentation is to be found, I believe, the emergence of a new attempt to articulate space, power, and knowledge.

NOTES

1. "Questions on Geography" in *Power/Knowledge: Selected Interviews and Other Writings by Michel Foucault, 1972-1977*, ed. Colin Gordon (New York: Pantheon, 1980), pp. 69-70.
2. Hubert Dreyfus and Paul Rabinow, *Michel Foucault: Beyond Structuralism and Hermeneutics* (Chicago: University of Chicago Press, 1982).
3. "Questions on Geography," pp. 69-70.
4. "The Eye of Power" in *Power/Knowledge*, p. 148.
5. *L'Impossible Prison*, ed. Michelle Perrot (Paris: Editions du Seuil, 1980), p. 49.
6. Alexandre Le Maitre, *La Métropolitée* (Amsterdam: B. Boekhilt, 1682).
7. The essential historical material, a bibliography, and photos can be found in *Richelieu, ville nouvelle*, by Philippe Boudon (Paris: Dunod, 1978).
8. A good architectural and urban history of Nantes is Pierre Lelievre's *L'Urbanisme et l'architecture à Nantes au XVIII^e siècle* (Nantes: Durand, 1972).
9. Dr. Ange Guépin, *Histoire de Nantes* (Nantes: Editions Sebire, 1839). See also Dr. Ange Guépin and E. Benamy, *Nantes au XIX^e Siècle, Statistique, Topographie Industrielle et Morale* (Nantes: Editions Sebire, 1835).

BIOPOWER AND THE AVALANCHE OF PRINTED NUMBERS

Ian Hacking

Long ago, in *Les Mots et les choses*, Michel Foucault taught that Life, Labor, and Language are not eternal objects of thought but arise as self-conscious topics only at the end of eighteenth century. Of these three, it is of course Life that is at the heart of his more recent work on sexuality, although the other two are curiously carried in train throughout his research of the past ten years. Life became not only an object of thought but an object of power: it was not merely individual living persons who might be subjected to the orders of the sovereign, but Life itself, the life of the species, the size of the population, the modes of procreation. Such power, Foucault writes, "evolved in two basic forms" that constituted "two poles of development linked together by a whole intermediary cluster of relations." One pole centered on the body as a machine. It was disciplined by procedures of power that he calls an *anatomo-politics of the human body*. The second pole "focused on the species body" that serves as the "basis of the biological processes: propagation, births and mortality, the level of health, life expectancy and longevity." This was a *biopolitics of the population* "that gave rise to comprehensive measures, statistical assessments, and interventions aimed at the entire social body or at groups taken as a whole."

One may speak of *bio-power* to designate what brought life and its mechanisms into the realm of explicit calculation and made knowledge-power an agent of transformation of human life.¹

Biopolitics is, of course, less fun to study than anatomo-politics. The numerical manipulations of the body politic are and always were dusty, replete with dried up old books—the "Blue Books" of the British parliament, for example—books of ciphers. They offer no appeal to the voyeur. (John Fowles, who works Victorian prostitution statistics into *The French Lieutenant's Woman*, brought a little statistical voyeurism to the page and the screen, but he was actually faking the statistics.) Yet these very interminable countings and tabulations beautifully illustrate the manifold ways in which knowledge is, and is not, power. They neatly display the *overt* and the *subversive* ramifications of knowledge.

Overt statistical study of populations comes to amass gigantic quantities of data that are seldom effective in controlling or altering the populations of study in the ways intended. Although data collectors often tell why they collect this or that bit of information, why fear the census-taker, we might ask. The census will never be able to use what it finds out about you anyway. The fetishistic collection of overt statistical data about populations has as its motto "information and control," but it would more truly be "disinformation and mismanagement."

Yet there is a quite unintended effect of enumerating, and I call this subversive. Enumeration demands *kinds* of things or people to count. Counting is hungry for categories. Many of the categories we now use to describe people are byproducts of the needs of enumeration. What could be more inevitable than the class struggle about which Marx hectored us? Yet the social classes are not something into which a society is intrinsically sorted. On the contrary, it is the early nineteenth-century counting-bureaucracies that designed the class structure in terms of which we view society. After 1800, there was a radical shift in the ways in which people were classified in terms of occupation. You might say that came because new occupations arose with the new industrialization. Of course. But that they should be classified in the ways in which we group them was not some inevitable feature of the organization of factories. On the contrary, bureaucrats—even the very Factory Inspectors or people from the Board of Trade—designed easily countable classifications into which everybody had to fall—and thenceforth did.

Nothing was left untouched by the statistician. Nothing is as certain as death and taxes, and though you readily grant that tax brackets are an artefact, ways to die, you will think, are a part of nature. On the contrary. It is illegal to die, nowadays, of any cause except those prescribed in a long list drawn up by the World Health Organization.² This is inherited from the nosology of William Farr, who throughout the middle of the nineteenth century ran the Registrar-General's Office for England and Wales, the dominant fact-gathering institution of its day. As for taxes: taxation was among the earliest motives for counting a people, but if individuals are not to be taxed equally by a poll tax, distinctions must be made. In the beginning it was deemed impossible to number the people. Only the permanent fixtures of their dwellings would stay still long enough to be counted, and so hearths and windows were the basis of taxation—incidentally, a far more "progressive" mode of taxation than modern income tax, for the rich were soaked vastly more than the poor. Hearths and windows were for long not only the basis of taxation, but also the most reliable estimator of the

size of the population. One can tell the story of biopolitics as the transition from the counting of hearths to the counting of bodies. The subversive effect of this transition was to create new categories into which people had to fall, and so to create and to render rigid new conceptualizations of the human being.

There is a longer and a shorter story of biopolitics. The longer story gradually assumes a definite form in the mid-eighteenth century, and it continues today. Whereas Foucault's early books talked of sharp transformations, his research on sexuality directs itself not to mutation and revolution but to evolution in the longer term. There is no inconsistency in this: the world knows both revolution and evolution. At present the dictates of fashion will encourage some of Foucault's admirers to mimic mindlessly each turn in the master's writings, so we shall expect that ruptures in the history of ideas will be less and less commonly brought to our attention, while smoother trajectories will be given to the development of ideas. So it will be salutary if some of us go on noticing mutations within the more gradual expansion of the biopolitical empire. I think there is a sharp change that I will locate in the two decades 1820–1840. It is sufficiently abrupt that even the student of overt biopolitics will see it at once. For example, long ago Harald Westergaard, in a sober review of all statistical history, dubbed the period 1830–1850 the *era of enthusiasm* for statistical data-collection.³ Actually, I believe 1820–1840 is the time to look at, for by 1840 everything had been set in motion, and most of the impetus arose in the 1820s. It is that period that I call the avalanche of printed numbers. I am not disagreeing with Westergaard about dates: he is noticing the fulfillment of a fetishism for numbering, while I study its inception. Before we stop toying with dates, note that his "1850" is too neutral, too decimal a date to mark the end of the era of enthusiasm. The era of enthusiasm, as Westergaard labels it, began with the revolutions of 1830 and ended with those of 1848, which takes us back to overt biopolitics.

Statistical enthusiasm, then, bracketed the two years of revolution. It represented an overt political response by the state. Find out more about your citizens, cried the conservative enthusiasts, and you will ameliorate their conditions, diminish their restlessness, and strengthen their character. Statistics, in that period, was called moral science: its aim was information about and control of the moral tenor of the population. The motives were genuinely philanthropic, but that, as we have come to realize, means that they aimed at the preservation of the established state. As I began by saying, the overt political strategy of moral science—of bureaucratic statistics—did not work, and enthusiasm waned after the next wave of troubles, in 1848. But enthusiasm

had put in place a large number of bureaucracies which could go on functioning in their own, unenthusiastically perhaps, but with a certain inevitable growth. Equally important was the subtler, subversive influence of the new group of human categories coming from this avalanche of numbers.

During the years 1820–1840 the rate of increase in the printing of numbers appears to be exponential whereas the rate of increase in the printing of words was merely linear.⁴ After the 1840s, both proceeded at about the same rate. However, an anecdote will better illustrate the avalanche of numbers than any tabulation of figures, for the avalanche is not merely a quantitative fact but a change in our feeling about the sort of world in which we live.

In England, as in many other industrializing countries, working men found themselves in need of mutual support so they formed small groups for purposes of self-insurance. Their weekly contributions gave some security against disease and death. These “friendly societies,” as they were called, were regulated by a 1793 act of Parliament, an act that

encouraged persons to form and to establish one or more societies of good fellowship for mutual relief and maintenance of all and every member in old age, sickness and infirmity, or for the relief of widows and children of deceased members.⁵

By 1815, some 925,429 such societies had registered under the Act. Evidently they were small and did not fare well. One reason was size: they were too small for any law of large numbers to be effective. They had more practical difficulties too, for they usually met in public houses; the secretary was commonly the landlord, who was not averse to seeing society funds spent on drink rather than savings. But the fundamental problem was simply that no one knew how much to charge by way of weekly contributions. The premium tables were usually signed by

petty schoolmasters and accountants whose opinion upon the probability of sickness and the duration of life, is not to be depended upon.⁶

Yet the schoolmasters were hardly to be blamed:

It is remarkable that until a very few years ago no *data* were collected whereon a calculation of the average occurrence of sickness at the several ages of man could be formed with tolerable accuracy.⁷

Thus runs the preamble to a report by a Select Committee of the House of Commons, first meeting in 1825 and continuing in 1827. It had other worries than actuarial rates, for it was widely supposed among the governing class that the friendly societies served as a cloak for illicit combinations, i.e. trade unions. The Select Committee among other things scotched that idea for lack of evidence. It was an excellent Committee and treated its witnesses hard, besides trying to get information from abroad. “Have you any tables of sickness formed upon actual observation?” wrote the Secretary on April 28, 1825, to Baron Delessert, in charge of the corresponding French *Sociétés des Prevoyances*. “No” was, in substance, the prompt reply. Similar negatives came from elsewhere—with one exception, Scotland.

The Scots taught a lesson that could not, for a moment, be learned: there are indeed regular laws of the occurrence of sickness. As evidence of resistance to this idea, consider the testimony of John Finlaison, Chief Actuary in the National Debt Office, given on March 11, 1825:

Finlaison: I conceive it is totally impossible to obtain authentic materials to reduce the average prevalence of sickness to any certain law.

Question: When you say that sickness is incapable of valuation, you mean that there are no data whereon any calculation can be made?

Finlaison: I mean that life and death are subject to a known law of nature but that sickness is not, so that the recurrence of one event may be foreseen but not so the other.⁸

Moreover, looking at “the extraordinary differences of sickness among the reports” of the friendly societies, Finlaison doubts that “any conclusion” could ever be drawn.

He was wrong. The first sign of this came from the Highland Society, a highly effective organ for agricultural reform. In 1820 it had appointed a committee to study the history of Scottish friendly societies in order to determine “the average rate of sickness among mankind.”⁹ The Highland Society offered prizes for the best observations on the financing of friendly societies and was able to publish an important report by 1824—before the Select Committee of the House of Commons met in London. The report notes that,

Generally speaking, it would introduce a new idea among the members of Friendly Societies, could a belief be implanted that the schemes of these institutions are in any degree susceptible of calculation.¹⁰

Finlaison did not care to have this “new idea” implanted in *his* mind! The Select Committee presented him with the Scots report and told him to digest it and come back next day. That night he must have read expressions like this:

The Law of Sickness from 20 to 70 years of age [. . .], the quantum of sickness which an individual on an average experiences each year, from 20 to 70 years of age.¹¹

Finlaison did not believe in such laws or such quanta. He would argue instead that:

It would on the whole seem, that the army quartered in England ought to present Sickness at a minimum among mankind.¹²

After all, the army contains young men in the prime of life, inducted only if healthy, with sergeants to prevent malingering and the feigning of illness. It stands to reason that the sickness rate among soldiers stationed in England (as opposed to the lethal barracks of the West Indies) must be less than among indifferent and probably idle or dishonest Scotch workers. Yet he found that the sickness rate in the British Army stationed at home in "*more than thrice the quantum of Sickness among benefit societies*" in Scotland. Such an absurd anomaly shows simply that the Highland Society is living in fantasy-land and that there do not exist laws of sickness. Or so Finlaison thought.

On April 22, Finlaison was given a very bad time by the Select Committee. It thought he must be wrong and the Scots must be right. We now know that Finlaison had made a startling and important discovery: the best way for a young Englishman to sicken and die was to join the peacetime standing army and sicken in a barracks. This scandal went on for half a century. Everyone knows how Florence Nightingale joined the good fight against military incompetence. By the time she got into the act it really was incompetence amounting to malice, for ten years after Finlaison had testified, the numbers were in and understood: everyone except the commissioned officers knew that the army barracks at home were deadly.

That is the first half of the anecdote. In 1820 there began the first systematic study of sickness rates, and that only by one of the most advanced groups of intellectuals in Europe, the gentlemen farmers of the Highland Society. In 1825 the leading professional actuary was sure that there were no laws of sickness, not merely for lack of data, but because the very existence of such laws made no sense. For the second half of the anecdote we need wait only ten years after the Select Committee had yielded up its 1827 report. In 1837 the hero will be William Farr, about to be appointed compiler of abstracts to the newly founded Office of the Registrar-General of England and Wales. For forty years thereafter he was the effective head of this Office (the titular head was a patronage appointment). The Office set the style of official statistics for many other nations.

At the start of his career, in 1837, Farr could publish papers with titles such as "On a method of determining the danger and duration of diseases at every period of their progress"¹³ or "On the law of recovery and dying in Small Pox."¹⁴ He was also able to produce tables for the various regions and occupations, providing just the laws of sickness that Finlaison had said could not possibly exist. Nor did he have to collect new data in every case. Much of it was simply lying about in records that no one hitherto had thought of using. That is an important fact: in 1820, you might say, there was no point in analyzing available data because a law of sickness was well-nigh a conceptual impossibility. By 1837 the concept was unproblematic and laws were known. For example, the East India Company had long kept ledgers of the daily employment of its vast London work force, showing the days in which each employee was absent for sickness. One could also extract information from other offices of government. Thus the numerous Factories Enquiries were not only the foodstuff of Marx's *Capital*. They could also provide, in Farr's words of 1837, items like this:

A large volume containing a list of 2,461 labourers employed in the month of April 1823, with a statement of the number of days illness experienced by the labourers one by one, year by year, for the ten succeeding years [i.e. until 1833], also the date of every death and the date when any labourer ceased to be employed, by being superannuated and pensioned, dismissed, or by voluntarily leaving the service of the Company.¹⁵

Thus, in the decade separating the Select Committee and the start of Farr's career, (1) Sickness had become subject to statistical laws of Nature, and (2) an immense amount of data not only was accumulating but was beginning to be understood. The extent of these data, even by 1840, is stupendous, a stunning contrast with 1820. Moreover, we could not have (2) without (3): many new bureaucracies were created to collect information about the people and to arrange populations into a well-organized data-bank. The subversive element comes only with (4): the need to create classifications by means of which people would be counted in groups. "Checked in for work"; "Was off work for some reason or other"—those are natural enough kinds in the factory (but not, note, in a farm, where those categories are imposed by the industrial model). The kinds of sickness for which a person might be absent are a function not only of the diseases of the time but also of the approved medical lore then current. But even a classification by illness is "natural" enough, given the "knowledge" of the day. The hardline sociological realist can tell us that it was germs, not doctors, that determined who would be classified as ill on April 1, 1833. But even

such a hardliner may be moved to wonder at the sheer cascading of artefactual numbers after 1820. Let's look.

Laws of sickness furnish an anecdote that can be multiplied indefinitely. In England endless reports on the poor, the criminal, the infanticide, the mad, as well as questions of trade were churned out in the "Blue Books"—Official Papers of Parliament, printed, bound in blue, figuring in most of the novels in which a Member or a Lord was in a country estate and had to get back to work ("He picked up his Blue Books," the novel goes, while the hero or villain is meditating). The Annual Reports by the Board of Trade are a morass of figures that never existed in print before.

It was not the English but the French who started the game of annual reports. Swedes had been doing it for a while, providing the "best" statistical information for late eighteenth-century Europe but always within the framework of the parish. The Lutheran minister always had some contact with any Swedish number. *Secular* numbers are a French achievement, doubtless a Bonapartic legacy. Statistical tables for Paris and the Seine department begin in 1821. Readers of Foucault will not be surprised at what goes on in these reports—admissions to, deaths in, and releases from the great hospitals and asylums, the Charentons and the Bicêtres. There are crimes against property and crimes against the person, and the first whisper of accumulated wisdom about the new category, recidivism.

On July 23, 1824, the celebrated mentalist Esquirol could address the French medical academy, asking: "Does there exist, in our day, a greater number of mad people than 40 years ago?"¹⁶ Neither he nor anyone else knew. He is inclined to doubt rumors of *cette effrayante augmentation du nombre des aliénées qui menace la France*. The new and larger numbers are due, says this doctor-emperor, to the fact that we have better institutions and better diagnoses. When we leave his propaganda behind, we observe how few were his numbers in 1824. Within ten years there were so many numbers that every salon spoke in fear, and with full knowledge, of the *croissance effrayante* (buzzword of the day) for crime, insanity, prostitution, vagabondage, vagrancy, suicide. A chief source of the new terror is the annual set of sombre pages printed by the Ministry of Justice, begun for the year 1826. There had been ministerial minutes and abstracts of such information for some time, but they were fragmentary and essentially private. Often they were what we now call "classified" or "for your eyes only" and if they were printed, only a handful of exemplars was run off. After 1820 ministry reports were still supposed to have limited

circulation, but the sheer fact of multiple printings put them in the public domain. They were ready to be reproduced or condensed in the mass circulation police gazettes and the like. Such was the crime wave consciousness that a Parisian in 1832 was much more worried than a comparable person in contemporary Manhattan. After all, the Parisian had already experienced one revolution from below and sensed another coming; revolution had to be capped, somehow or other. And it was—but not by statistics.

It is hard to say whether the 1832 cholera epidemic more accustomed Europe to numbers than the "crime wave," but between the two of them the years 1820–1840 turned the reading public from non-numeracy to numeracy. There are pretty good grounds for speculation that the illiterate were, by gossip, made fairly numerate thirty years before general education made them literate. (Contrary to the usual claptrap of educational theorists, numeracy almost always, perhaps always, precedes literacy.)

Disease, madness, and the state of the threatening underworld, *les misérables*, created a morbid and fearful fascination for numbers upon which the bureaucracies fed. (*Les misérables* is not merely the title of Hugo's masterpiece, but a standard set of pages in statistical reports, and when the first international scientific congresses commenced—they were Statistical Congresses, of course—*Les misérables* was a regular section at which learned papers would be presented.) In emphasizing the statistics of deviancy and alienation, I do not mean to underestimate the numbers by which the globe got about its business. Of course commercial tables were also printed during this avalanche of numbers. We would be in error if we saw them simply as instruments for assessing profit and loss. Their purpose is more manifest, and on the surface, than the deviancy compilations, but even the businessmen look more at theft than trade. Social statistics, the stuff of moral science, everywhere meet the eye. In virtually every case it was the period 1820–1840 that got them moving.

Take education. The will to know the number of primary school pupils, their enrollments, their percentages of this and that, their spatial distribution: these are demanded in various French decrees of 1816, 1821, and so on. A full study was first made in 1829; the result was published in 1831 by the *Ministère de l'Instruction Publique* as *Statistique des Écoles Primaires*.¹⁷ Next step: correlate crime rates and education rates, using for data, if necessary, the third disciplinary element after education and deviancy: the army. Conscription rates for the army will tell you, department by department, educational levels. Match them with crime levels and you will get, by 1833, a lot of information which is absolutely—useless.

Or consider the *Annales d'hygiène publique et de médecine légale*. Here we find a non-chance meeting of Foucault's anatomo-politics and his biopolitics. This journal is the source of the now notorious Pierre Rivière case, exhumed by Foucault and his collaborators, a fine example of disciplining the individual by the new medico-legal establishment. The *Annales* have plenty more reports like that: Foucault does not adequately convey the sense that his report is typical of the day. Yet for all the docudrama of Pierre Rivière, the *Annales* are also a prime place for the new generation of French social statisticians to publish their work. The *Annales*, commenced in 1829, are the culmination of occasional publications that started in 1819. So swift is the avalanche of numbers that almost immediately after formal publication began, the *Annales* would require as many as six volumes a year to encompass their news.

These examples are French and British. Belgian ones would be even more compelling: one figure is dominant, Adolphe Quetelet, master statistical informant and creator of national bureaucracies and international congresses of the nineteenth century. But a phenomenon should not be illustrated by such a unique and phenomenal man who created a national discipline: better to take France and England where the greatest "hero" is Farr, who was never even promoted past the grade of "Compiler of Abstracts."

Sweden, of course, is anomalous, for that state gathered demographic data long before anyone else. Yet despite the unequalled high quality of its records and even its analyses of the data, it did not quite know what to do with this fortuitous diamond that is the hallmark of the modern state. Sweden is a parable. Here lie vast arrays of numbers garnered by icy pastors simply because the numbers were good in themselves.

As for the rest of Europe, the German states and principalities were a little slow to start but later set the pace. Petersburg was never more than a couple of years behind. The Italian countries took up statistics later but then engaged in the greatest parody of modern Europe ever conceived. The Italians took English and French statistical knowhow, combined it with Kantian *Anthropologie*, and created a criminal anthropology of which Sherlock Holmes addicts have heard a distant echo. Remember how Holmes at once identifies an ear in a box? I dare say that Conan Doyle had been looking at the pages of ears in Bertillon's *Bulletin Signaletique*.¹⁸ The echo extended beyond fiction and pages of ears, for it was heard by Francis Galton. He invented the theory of correlation and regression at the same time that he became the originator-champion of eugenics and invented—single-handed, one might say—the practice of police fingerprinting.

1820–1840 is only an episode in biopolitics, a mutation within Foucault's evolution. I emphasize a specific avalanche of printed numbers with a strong element of the surveying of deviancy. It stands within a longstanding concern with war, taxation, and profit. In the early days, counting people was hard because no one knew how to do it and anyway there were no officers to do the counting if they did know what to do.

Characteristically the first complete census in the modern Western world took place in Canada in February and March, 1666. (There had been partial censuses in some of the French colonies as early as 1605.) The Canadian census classified the 3215 inhabitants according to sex, marital status, age, and profession. Note the time of year. There was a captive population—try leaving Québec City on your snowshoes in early March. It would not have been possible to count, exactly, the inhabitants of Lyon or York that month. Why did they get counted at all? The object was clear, the same object as all biopolitics until the end of the nineteenth century, and the object of the Chinese census in the 1980s. How big is the population, and how might we influence its size? For the Canadians the dominant fear was underpopulation in the face of English expansionism. In general, a census would tell the sovereign how to tax the subjects and how many would be available for war. The immediate effect of the Canadian census was a fantastic tax incentive for large families. Like every tax incentive in the subsequent 317 years, it did not have the desired effect. The intended, overt biopolitics never worked—and *that is the rule*. But the subversive biopolitics set the stage of categorization in which we still live.

The census became a hallmark of the enlightenment, but always for what at first sight seem good practical purposes. There was a bizarre debate during the eighteenth century on the falling populations of the European countries. To lower the population was to damage efficacy in trade and war. The French re-enacted this in the late nineteenth century. One of the chief products was the Durkheimian wing of sociology, a response to "pathologically" falling birth rates in France. (Need I add that most of the "data" on which these scare stories were founded were mistaken? Need I add that the governmental measures taken had no intended effect?) Malthus is the population analyst most celebrated of after-dinner speechmongers, but he is merely the most memorable, and perhaps the most charming, of ten thousand public voices. The first enlightenment "state" is of course the United States of America, whose very name was invented by Richard Price, publisher of the work of Thomas Bayes that we now call Bayesian statistics, and also publisher of the only tolerable actuarial tables available until well into the middle of the nineteenth century. The very name of the first enlightenment state was invented by a

"statistician." I mention this not because he is such a famous figure, which he is not. I mention it because he is typical.

The idea of counting the people was so well entrenched by the time of Richard Price, and before the heyday of Malthus, that it was written into the American constitution in 1778. Ever after it would be *unconstitutional* not to count the American people. Was this some trifling bureaucratic aside? Not at all. It is written into Article 1, section 2. If you were simple-minded, as I am, you could say that the second most important feature of the American dream was that the people should be counted.

The overt purpose of the constitutional counting was plain enough. It was to determine the size of congressional districts, so as to give equal representation to all free persons. People who have not recently read their constitution sometimes think that slaves did not count. On the contrary, all the other people, excluding "Indians not taxed," were figured in at the rate of 3/5 of a person. What we call the enlightenment was nothing if not exact.

Only four questions were asked in the 1790 U.S. census. Americans were to lag behind Europeans for some time. There was no avalanche of printed numbers in America in 1820, and indeed the number of questions had not risen much above four even by 1870. But once the American bureaucrats caught on, they typically made "avalanche of printed numbers" a mild understatement. Should we speak rather of a volcanic eruption, a veritable St. Helens that covered America by 1880? In 1870, 156 questions in all were asked. In 1880, the number of questions was 13,010. The 1890 census asked only a handful of questions more but did something more important. It developed techniques for mechanical manipulation of data. A clever man saw that the "punch cards" invented by J.M. Jarquard in France, and later used in Lancashire cotton mills for the weaving of cloth, could also be used for storing and sorting other kinds of "information." So the 1890 census gave us the punch card, chief peripheral tool of early computing devices. By 1911 this census taker and statistician, Herman Hollerith, helped form the Computing Tabulating Recording Company. It later changed its name to IBM.

Nor is one to think that mechanical computation is an early-twentieth-century production of counting the people. Charles Babbage is usually given credit for having invented the idea of logic-processor which would vastly speed up handling numbers. (Yes, he was one of the chief witnesses before the Select Committee of the House of Commons on the Friendly Societies.) Babbage's analytic engine cost a fortune—both his own and that of the British Government—but for all the vast Research and Development money that went into it after 1832, it never

worked. We owe the first useful and well-used computer to the Swedish inventor, Scheutz. Scheutz's original machine was widely exhibited in Europe and did print out logarithm tables: It was bought by a Mr. Rathbone for the Dudley Observatory in Albany, New York, where it caused endless trouble and never was a cost-effective tool for astronomy. But while it was on show at Somerset House in London, William Farr, of the Registrar-General's Office, had Bryan Donkin pirate the machine by making a copy. This was itself an amazing feat as the object had 4320 pieces, 2054 screws, 364 chains, and so forth.

Here we had to do with the second calculating machine as it came from the designs of the constructor and the workshop of the engineer . . . the idea had been as beautifully embodied in metal by Mr. Bryan Donkin as it had been conceived by the genius of its inventors; but it was untried. So its work had to be watched with anxiety, and its arithmetical music had to be elicited by frequent tuning and skillful handling, in the quiet most congenial to such productions.¹⁹

This machine printed out numbers, and one of its great virtues was that it not only computed but also printed the results of computations and so avoided the errors of transcription common to clerks. Since it was real state-of-the-art technology, it is not surprising to find that "some of the pieces get deranged and print errors" or that

it approaches infallibility in certain respects but it is not infallible, except in very skillful hands.

Farr used this machine to compute and print out the new annuity tables that were based upon the census of 1851, and of course worked in all his other amazing amounts of data. Annuity tables may be thought of as a rather minor aspect of numbering, but in fact the selling of annuities was a chief source of capital for the nineteenth-century state. During the Napoleonic wars, the British government had sold annuities using rates intended by Richard Price for the selling of insurance. What is good for the insurance company is bad for the seller of annuities, so not surprisingly Price's tables served in the 1820s to bankrupt successive British governments. But following the avalanche of printed numbers came the census of 1851 and a computing machine to devise annuity tables which made the government safe, in at least that respect. It is a happy parable that the avalanche of printed numbers ends with the first real use of a computing machine to provide printouts.

I have said that there is a longer- and a shorter-term account of biopolitics. The longer-term has the traditional concern of taxation, the formation of armies, and the size of populations. I do not think these longer-term concerns had such subversive effects as occurred during the avalanche of printed numbers, 1820–1840 or thereabouts. The reason is that the long-term countings had rather little to do with the formation of new categories, new ways of conceiving the person. Evolutionary biopolitics concerns itself with long-term populations, but it is revolutionary biopower that brought into being new concepts of the person. As Frege taught us, you can't just print numbers. You must print numbers of objects falling under some concept or other. The avalanche of printed numbers brought with it a moraine of new concepts.

The prime "evolutionary" questions of a census have always been age, sex, marital status. We can use even Jefferson to introduce the new "revolutionary" categories. In 1800 he unsuccessfully urged that the U.S. census should commence a breakdown by social class. His idea was that people fall into the following groups: first of all, educated people (lawyers, doctors, artists, writers, teachers, and clergymen); then businessmen; sailors; artisans; farm laborers; other laborers; domestic servants; the poor; and finally the rest, who live on private incomes.

That categorization, although a trifle odd, is more familiar than one thirty years earlier, in pre-revolutionary France, which divided the people into the "productive class" and the "sterile but useful class." Farmers, fishermen, and miners make it into the former class, while merchants, carriers, artisans, and actors are sterile. Those words, "productive" and "sterile," will not be lost on the readers of Foucault's biopolitics.

Of course the fine categorization of people by what they "do" takes a while. By 1870 the French census would find you out in terms that Zola could only copy, never improve upon. Do you run a bath house? Or perhaps you fall under the category "*acrobates, charlatans, monteurs de bêtes et curiosités*." In France in 1872, there were 1652 such men and 785 women who in turn supported as family members 1090 males and 1804 females. These acrobats had 168 male domestic servants and 87 female ones. That may make them seem a trifle underprivileged, but consider the fact that the 351,210 male and 197,071 female permanent farm workers had between them exactly 6 male domestics and 5 female ones. At any rate, for acrobats the *nombre d'individus que chaque profession fait vivre directement ou indirectement* was 5,586.

The idea of classifying people in minute divisions according to their

"work" is already an instructive transformation that occurs in the nineteenth century. There is also a certain sort of back-bracketing, that is a putting-together of what a previous society had kept apart. Thus there is the group of *hommes de peine*, the people who do all the miserable work that no one else will do such as cleaning toilets. Surprisingly these are counted together with two formerly honorable professions: embalming and gravedigging (as opposed to *pompes funébres*, a separate category)—*ensevelisseurs* and *fosseyeurs*. There must be a Foucaultian story to tell even here about this fugue of meldings and dividings in how to count the people who literally handle bodies. The cadaver industry seems to have provided far more support for the population (208,701) than the *Chefs et directeurs* in the category of transport, credits, banks, and commission work, despite the fact that embalmers (as opposed to funeral directors) had almost no servants and chiefs in transport and banking had servants roughly one on one (but only one on one, somewhat to my surprise). These statistics are endlessly amusing and often make one feel that progress is not yet around the corner. It looks as if, in 1872, one in every 11 *patrons* in heavy industry was a woman (47,368 to 4,216). Almost as many women as men were day-by-day employees in what the census calls *attachés aux usines et fabricants*. Where did we get this fantasy that only in recent times have women joined the work force?

It is not the categories of workers that I wish to emphasize, but rather the very idea of categorizing them—albeit eccentrically—according to their role in the work force. But working is not the only basis for counting. I have mentioned the nosology of William Farr. He designed an increasingly countable list of diseases. No one would be allowed to die without a doctor signing a death certificate, but the "causes of death" had to be uniform and easily applicable, in order that the certificates could be enumerated to discover who was dying of what, in what numbers. Thus the aim was a standardized list of diseases. This nosology is ancestor of the international list of diseases published by the World Health Organization and revised every few years. These categories are as responsible to the *need to count uniformly* as they are to any interest in "correct" diagnosis.

Should anyone suppose that I am telling out-of-date anecdotes about things that cannot happen today, consider DSM-III. This is the third in a sequence of classification principles issued by the American Psychiatric Association. The acronym stands for *The Diagnostic and Statistical Manual of Mental Disorders-III*. It is only newly out. Its

predecessor, DSM-II, appeared in 1968. Its aim is to produce a nationally standardized classification of mental disorders, not in terms of their causes but in terms of the ability of practitioners from different ideologies to agree on the classifications into which patients fall.

The American Psychiatric Association is currently pressing the World Health Organization to adopt DSM-III. Then everyone in the world will have to be classified in the same way. It is illegal to die in any way except those listed in the WHO nosology, and if the A.P.A. has its way, it will become illegal to go mad except according to the classifications of DSM-III. Then we will be able to count up all the mad people in the world, suitably grouped into categories designed for ease of classification by doctors.

I think of DSM-III as the lineal descendant of that influential journal commenced in 1829, the *Annales d'hygiène publique et de médecine légale*. A diagnostic and statistical manual was just what the contributors wanted. They presented endless schemes of classification, and the people entering and leaving the French asylums were all properly checked off according to the weird array of complaints that they were judged to have. There are two vectors in the invention of categories of complaints. In this paper I have emphasized one: the fetishism for counting, which brings with it the need for easily applied categories in terms of which to count. The other vector is of course the theoretical and practical reasoning of individual professionals—doctors, say—when confronted with the bodies of individual patients. The present paper is a footnote to Foucault's remarks about biopower. A companion paper to the present one is a footnote discussing the other vector, anatomo-politics.²⁰ It shows how the medical profession invented split personalities in 1875.

NOTES

1. Michel Foucault, *The History of Sexuality*, Vol. I (New York: Random House, 1978), pp. 138–146.

2. This phenomenon was drawn to my attention by Dr. Anne Fagot, in a draft of her dissertation, *L'Explication causale de la mort* (1978). It will be published in English by Reidel in 1983.

3. Harald Westergaard, *Contributions to the History of Statistics*, London, 1932.

4. I am here counting something like what philosophers call types, rather than tokens. Thus the number of paupers in Devon in 1831, printed in a Blue Book issued by parliament, counts as "one number," rather the number of tokens that appear, in this case, the number of Blue Books containing that number that were printed. Likewise the first word in *Great Expectations* counts as one printed word, even though there were innumerable printings of that first word as successive editions rolled off the press.

5. *Report of the Select Committee to Consider the Laws respecting Friendly Societies*, 5 July, 1825, London, p. 4.

6. *Ibid.*, p. 13.

7. *Ibid.*, p. 14.

8. *Ibid.*, p. 45.

9. *Report of the Committee of the Highland Society of Scotland appointed to inquire into the State of the Friendly Societies in Prize Essays and Transactions of the Highland Society of Scotland*, VI (1824), pp. 271–560.

10. *Ibid.*, p. 312.

11. *Ibid.*, p. 420.

12. *Report of the Select Committee, op. cit.*, p. 139.

13. *British Annals of Medicine, Pharmacy, Vital Statistics and General Science* I (Jan.–June 1837), pp. 72–79.

14. *Ibid.*, II (July–Dec. 1837), pp. 134–143.

15. W. Farr, "Vital Statistics," in J. R. McCullough, *A Statistical Account of the British Empire*, London, 1837.

16. J. E. D. Esquirol, Address to Académie Royale de Médecine, *Annales*, 23 juillet 1824, pp. 32–50.

17. Jacques Ozeuf, "Les Statistiques de l'enseignement primaire au XIXe siècle," *Pour une Histoire de la statistique*, Institut National de la Statistique et des Etudes Economiques, Vaucresson, Tome I., n.d. (report of a conference of 1976).

18. Alphonse Bertillon, *Identification anthropométrique: Instructions Signalétiques*, Melun, 1885. For the ear photographs, see the *Album* for this volume, Melun, 1893.

19. W. Farr, "On Scheutz's Calculating Machine," *Philosophical Transactions of the Royal Society*, CXL (1859).

20. Ian Hacking, "The Invention of Multiple Personalities," to appear in *I & C*, Oxford, no. 9, Spring, 1983.