

Form and Fact

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Abstract

According to Mary Poovey's *A History of the Modern Fact*, in the nineteenth century, statistics came to encapsulate what is characteristic of the "modern fact." Expressed as arithmetical descriptions, as measurements, or in statistical form, numbers appeared to be a guarantee of impartiality and transparency in the production of knowledge in the modern world. This paper further develops Poovey's own alignment of the modern fact with the construction of a stylistic convention, in which numerical representation has a privileged position. It is not only number that is at stake here, but the graphical arrangement of such numbers as a whole. Central to this concern is how these statistical figures are read and interpreted as a graphic configuration. In this sense, we are looking at the emergence of a new "figure-ground" relationship, that is to say, a "ground" that has the capacity to treat "facts," the sources of knowledge, as "figures." The paper will present the basic elements that were required for this "figure-ground" relationship to be read, from the nineteenth century onwards, in the space of the printed page: the printing press and its connection with graphic form; the emergence of the category of man and of the social body as objects of study; the role of statistics in the representation and administration of the social body; the rise of statistics as a science; and finally, numbers and their relationship to style. The methodology consists in applying analytic elements of art criticism to the history of the "modern fact."

Keywords: modern fact, statistics, graphics, figure-ground.

The nineteenth century was the moment at which graphical conventions such as tables and cartographic representations became indistinguishable from a particular form of reasoning that favors numerical data and facts. In this paper we will be coming to grips with a particular function of graphical display: rather than merely describing or representing data, graphic form has become a means through which to collect, classify, enumerate, and disseminate knowledge in the modern Western world.

The relationship between statistics and administration, the centrality of “facts” and the development of statistical forms, are an important condition of this investigation, but the objects of its enquiry work at a different level. Our concern is not so much with “statistics” as with the *form* this knowledge took. When one reads statistics, one takes for granted the form in which numerical figures come to be represented. Our enquiry will focus on this acceptance, bearing on the history of ideas but giving emphasis to the *display* of statistics.

Let us begin with the graphic arrangement of a page from an 1838 article by social reformer J.P. Kay (Fig.1).¹ The page is organized into two zones, one for printed text and the other for numerical figures enclosed in a box. Unlike the customary left-to-right horizontal movement for reading sentences and paragraphs, this box classifies and enumerates data that are read at the intersection of axes. The first thing to acknowledge is that a table containing numbers is separated from the printed text. Obviously, as the account book and the calendar show, the table is not a nineteenth-century invention. The second aspect to acknowledge—and this is specific to the nineteenth century—is the actual nature of these numbers. The title of the article suggests that the category under discussion is a social group called “pauper children.”² It quantifies the degree of literacy of “pauper children” aged between 2 and 16 years. The data are also divided according to gender. With this table, one can easily read that the number of girls from 2 to 9 years old who can read well (30) is considerably lower than the number of boys in the same category (70). Therefore,

¹ James Phillip Kay, “On the Establishment of County or District Schools, for the training of the pauper children maintained in Union Workhouses,” *Journal of the Statistical Society of London* 1 (1838), 14–27.

² Mary Poovey, *Making a Social Body: British cultural formation, 1830-1864* (Chicago: University of Chicago Press, 1995), 11.

in order to “read” this table, a social group, as exemplified by the pauper children, is already a recognizable entity represented in statistical figures. In being organized in a matrix, coordination and interpolation of the numerical information on this “population” becomes possible.

16 *On the Establishment of Pauper Schools.* [May,

The following Table shows the state of the instruction of the children in the workhouses, even after some improvements had been effected in the schools; and an idea of the state of the children before these improvements were in progress, may possibly be in some degree realised from an attentive consideration of these facts.

	Youths from 9 to 16.	Boys from 2 to 9.	Girls from 9 to 16.	Girls from 2 to 9.	Total.
Number who can Read well	206	70	173	30	479
„ who can Read imperfectly	217	149	207	186	759
„ who cannot Read	62	267	38	225	592
„ who can Write well	122	6	47	1	176
„ who can Write imperfectly	138	56	97	33	324
„ who cannot Write	211	398	262	407	1278

There are some slight inaccuracies in this Table, which do not, however, impair the general statement.

It is difficult to perceive how the dependence of the orphan, bastard, and deserted children, and the children of idiots, helpless cripples, and of widows relieved in the Union Workhouses, could cease, if no exertion were made to prepare them to earn their livelihood by skilful labour, and to fit them to discharge their social duties by training them in correct moral habits, and giving them knowledge suited to their station in life.

It may be important to consider what is the usual training of an agricultural labourer's child under his father's roof, and in what respects it may be proper to imitate that training in educating the children who are necessarily maintained in workhouses.

The child of a labourer reared beneath its parent's roof is early trained to labour. At a very tender age the lad follows his father a-field; he rides the horses home or to water; he is employed to scare the crows from the recently sown corn; by-and-by, he assists his father when thrashing in the barn; he drives the plough-team. At hay-time the whole family, both boys and girls, find constant work; at harvest they are very early employed in gleaning, and at seed-time they work at wheat-dropping. The boys thus become gradually initiated in the duties of husbandry, until, assisting more or less in ploughing, harrowing, thrashing, milking, and the charge of horses, they take their station in some department of husbandry, commonly first as team-men; and afterwards are gradually employed in those departments of labour requiring greater skill, and implying more confidence in their integrity and industry. This is the industrial training of a labourer's boy when resident under his father's roof.

The girls do much work a-field. I have already alluded to their services in the corn and hay harvests, and at wheat-setting. They are also employed in carrying their father's provisions to the field, in stone-gathering, in hoeing, in turnip-topping, and other agricultural work which is not deemed too laborious to be performed by a female in the

Figure 1. Page 16 of Volume I of the *Journal of the Statistical Society of London*, 1838. Reproduced with permission from the Royal Statistical Society, London.

So, let us take the convention of the table, but let us approach it not merely as a statistical tool but as a *printed form* for displaying material that is both numerical and statistical. We shall name this form *statistical layout*, thereby referring to a particular graphic arrangement that emerged in the nineteenth century as a “ground” that is able to support facts as “figures.” In other words, we are dealing with the rise of a figure-ground

relationship, which starts to formally organize a way of reasoning in the nineteenth century, one that favors statistical “figures.”

Clearly we need to be aware that there are two interconnected senses in which the term “figure” arises. Firstly, as an obvious arithmetical figure, a convention of quantitative notation; but secondly, as a formal entity, referring to the formal sense of “figure.” This ultimately leads us to consider this “figure” as part of a figure-ground relation as it is described in studies on art. The graphic space of the page is a way of organizing “figure” and “ground.” For the *fact* to be brought out as a statistical figure, it needed a “ground” to make the “figure” emerge. This relation of “figure” and “ground” does not exist as a self-sufficient entity, “it had to be ‘read’ as being there.”³ What then are the necessary conditions for *statistical layout* to be read within the space of the printed page? Over the following paragraphs we will sketch out an answer to this question.

1. *The arrangement of printed matter*

At the end of the fifteenth century, printing with moveable type had opened up a particular mode of reading and writing. Within this shift, the replacement of manuscripts by mechanically reproduced text, the emergence and the availability of the modern book, and the effect of the printing press on the circulation of ideas, is well documented.⁴ Furthermore, the technology of printing allowed not only for image and text to be mechanically reproduced, but allowed for greater systematic visual representation across a wide range of areas of knowledge. For example, Daston & Galison explain how the mechanical reproduction of images in nineteenth century science helped to create what they call an “objective view:”⁵ the fantasy of a representation of nature uncontaminated by the scientist’s interpretation (fig. 2). Meanwhile, in the field of architecture, Carpo explains how the printed images of the five orders of architecture in the treatises of the sixteenth century themselves

³ Mark Cousins, “Second Site,” in Museo de Arte Contemporaneo de Monterrey, Catálogo Antony Gormley (MARCO: Mexico D.F, 2008), 49.

⁴ Elizabeth L. Eisenstein, *The printing revolution in early modern Europe* (Cambridge: Cambridge University Press, 1993), 42-91.

⁵ Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2010), 81-128.

came to function like moveable type (fig. 3), that is, printed types that the reader-architect could use, reproduce, and modify.⁶ Our concern, however, lies in the rise of a series of printed marks that reorganize, from a formal point of view, ways of reasoning in the modern Western world.

In *The Order of Things*, Foucault pointed out a connection between form and knowledge. For example, the “table” is the way in which animals and plants are organized in eighteenth-century natural history with its herbariums, zoological collections, and botanical gardens. This table formalizes the relations of plants and animals not just in forms, but through a layout that establishes the relationship between what is seen and what is named in natural history. It is the space from which plants and animals can be both seen and described and it is different from the way that the Renaissance organized animal oddity in a “show”: fairground spectacles, tournaments, real or fictitious combats, and bestiaries.⁷ For Foucault, the diagram in which knowledge is organized—whether table or show—is central to the problem of knowledge itself. In one case, this partakes of the age of theatre, in the other case, the age of the catalogue.

⁶ There are disagreements over the role that printed treatises of architecture in the Renaissance played in fixing the canon. See Michael J. Waters, “A Renaissance without Order: Ornament, Single-sheet Engravings, and the Mutability of Architectural Prints”, *Journal of the Society of Architectural Historians*, Vol. 71, No. 4, (December 2012), 488-523.

⁷ Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences* (London and New York: Routledge, 2002), 143.

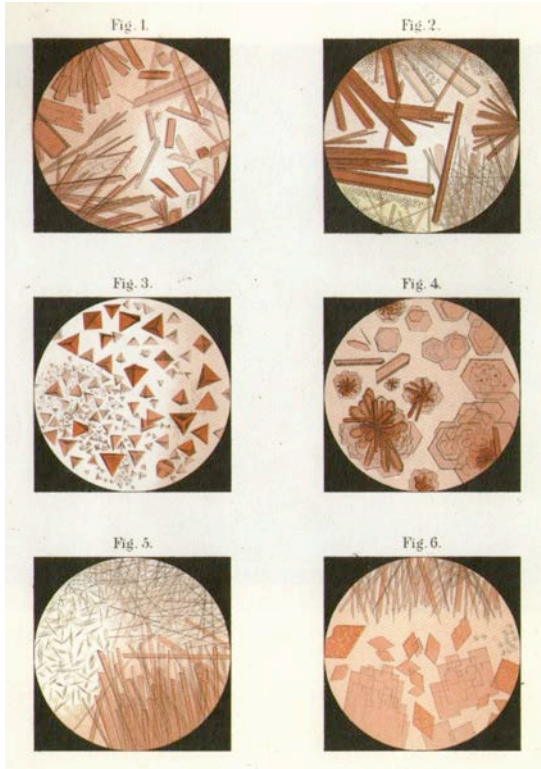


Figure 2. Drawing of blood crystals as seen under the microscope. Plate reproduced from Otto Funke, *Atlas der physiologischen Chemie*. [electronic resource] *Zugleich als Supplement zu C. G. Lehmann's Lehrbuch der physiologischen Chemie*. 2. gänzlich neu gezeichnete Aufl. Leipzig, Engelmann, 1858. 14, [38] p. 18 pl.

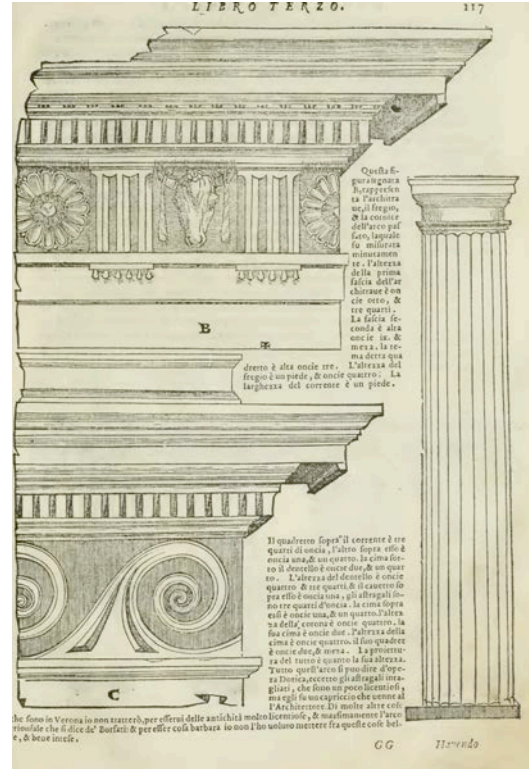


Figure 3. Page from Serlio, Sebastiano, *Tutte l'opere d'architettura. Libri 3 Il terzo libro* : [electronic resource] nel qual si figurano, e descrivono le antichità di Roma, e le altre che sono in Italia e fuori d'Italia ... / di Sabastiano Serlio Bolognese. De le antichite In Venetia : Impresso per Francesco Marcolino da Forli, MDXXXX [1540] clv, [ij] p. : ill. (woodcuts) ; 36 cm. (fol.) Imprint and date from colophon.

Can we name our era the age of statistical layout? A table such as the one in Kay's article breaks with the left-to-right horizontal movement for reading sentences and paragraphs that had been stabilized since the invention of moveable type print in the mid-fifteenth century. The tabular array prescribes less that the reader follow a horizontal order of print types, and more that he or she reads the statistical data at the intersection of axes, coordinating, comparing or interpolating samples of data. Here is what is at stake: this form of reading, when related to statistical data, became a precondition for the performance of modern administration. When Ian Hacking writes of an "avalanche of printed numbers," (in reference to the increase in the printed output of statistics between 1820 and 1840), he is not

simply pointing to quantities per se as evidence, but to “a change in our feeling about the sort of world in which we live.”⁸

2. *Reorganization of knowledge and the figure of man*

Foucault also argues in *The Order of Things* that a reorganization of knowledge that took place in the nineteenth century made “man” possible as a category of study and analysis, and most importantly for us, as a category that is subject to a particular form of representation, that of statistics. The emergence of man as a category of knowledge is the second condition for *statistical layout*. Prior to this emergence, knowledge was all of a piece, held together by the systematic relationship between words and things, between representation and what is represented.⁹

This unified space of knowledge, which is coextensive with a general theory of representation, broke down at the end of the eighteenth century into separate domains of knowledge. Biology, Economics and Linguistics withdrew from a general space of representation into the singularity of their own systems of concepts, their own internal rules and objects of study. The fact that these new categories established their own specificity did not mean that they would remain unconnected. A space in which to form questions that connect one domain to another emerges in this reorganization of thought: it would be known as the “figure of man.”¹⁰ The emergence of the sciences of man in the nineteenth century is related to this restructuring of thought. Psychology, anthropology, sociology, and history are domains that have “man” as a fundamental problem; they investigate the effects that language, life, and production have on man. This “figure of man” is an epistemological space that reflects upon the general implications of knowledges that have withdrawn from one other.

⁸ Ian Hacking, "Biopower and the Avalanche of Printed Numbers," *Humanities in Society* 5 (1982), 282.

⁹ Foucault (2002), *op.cit.*, 339.

¹⁰ Mark Cousins & Athar Hussain, *Michel Foucault. Theoretical Traditions in the Social Sciences* (London: Macmillan, 1984), 49-55.

The specialized domains of knowledge relied on a new institutional framework, partly based on the reform of the university and the emergence of the notion of “disciplines.” This reform assisted the process of construction of sociology, anthropology, history, and psychology as disciplined knowledges. The university promoted the sense of disciplines with their own autonomy, but also promoted a discourse about “man” that can be brought into public discussion. This required that the different knowledges employ a general language through which to communicate, produce, and disseminate this public discourse. Statistics thus became one of the tools for the production of a public discourse about “man.”

3. The social body and its statistical representation

Knowledge of the social body was made possible in practical terms in the nineteenth century through statistics. It is well known, however, that this knowledge was far from being neutral or innocent.¹¹ The classification and enumeration of people allowed for a representation of disparate elements of society in what Poovey has called a single “imagined community” that could be administered.¹² Of course, not only Poovey, but Foucault, Hacking, and Porter have explored how statistics became crucial elements for government, social reformers, and political economists.¹³

The census is a primary example of a classified and enumerated society. Although it had existed since antiquity, only in the nineteenth century did the practice of counting

¹¹ Mary Poovey, *A History of the Modern Fact: problems of knowledge in the sciences of wealth and society* (Chicago: University of Chicago Press, 1998), 317-325; Ian Hacking, *The Taming of Chance* (Cambridge: Cambridge University Press, 2005).

¹² Following a slightly different line from Foucault, but using some of his ideas—especially those of disciplinary regimes and their techniques of power in *Discipline and Punish*—Poovey’s *Making a Social Body* is also concerned with how techniques of representation, such as the classification and enumeration of people, operated as a means of their observation and control, how the separation of the social and the economic domain, the institutionalisation of protocols, and the emergence of an image of a single social body, constituted initial forms of what later became known as “mass culture.” Mary Poovey (1995).

¹³ Michel Foucault, *Security, Territory, Population, Lectures at the Collège de France, 1977-78*, ed. Michel Senellart, New York: Palgrave Macmillan, 2007; Ian Hacking, *The Taming of Chance*, Cambridge: Cambridge University Press, 2005; Theodore M. Porter, *Trust in numbers: the pursuit of objectivity in science and public life*, Princeton: Princeton University Press, 1995.

people acquire a proper statistical form.¹⁴ Nations started to count, tabulate, and classify people by age, sex, marital status, income and occupation, place of residence, religion, and so on. States began to quantify and chart how people behave and how this is distributed over space and time.¹⁵ Tabulation, analysis, and comparisons of this vast stock of information revealed tendencies and trends, which then became a basis for policies, further research, and further calculations. Indeed this form of administration was radically strengthened when Adam Smith said in 1776 that the wealth of nations depends upon the labor of the population.¹⁶ If the workforce is an engine for the economic growth of the nation, then the question of meeting its social needs in terms of housing, food, rest, hygiene, and conditions for reproduction becomes a political but also a technical problem for government. It has become a commonplace to say that to administer is to deal with the needs of this social body in order to render it productive. Questions were raised as to the quality of the physical environment and the health of the population, and as to whether the quality of housing affected the ability to work.

These became everyday issues for those who first set about managing the “social body” in nineteenth-century England. Particularly in the early decades of the century, the poor became the central interest of the administration.¹⁷ Efforts to understand and represent this segment of the population pointed to the way in which the “social body” would eventually be understood as a group that can be differentiated, segregated, and quantified within a totality of the population. Indeed, inspection, quantification, and calculation were the techniques for the administration of liberal government over the poor.

¹⁴ See Hacking, (1982) *op.cit.*, 279-295.

¹⁵ The first census conducted in England occurred in 1801, but it took another thirty years for statistics to be recognized as a legitimate practice in the country. Poovey notes that institutions such as the Board of Trade (1832), the British Association for the Advancement of Science (1833), the Manchester Statistical Society (1833), and the Statistical Society of London (1834) are evidence of the fact that statistics was well established by the 1840s. See Poovey (1998), *op. cit.*, 307-328.

¹⁶ For Adam Smith’s relationship to numbers and statistics see *Ibid.*, 234-248.

¹⁷ By the time of Adam Smith’s publication *Wealth of Nations* in 1776, there were two competing notions. The *great body of the people*, by which Smith referred to the mass of laboring poor, and the *body politic*, which indicated the political subjects of English society, that is, the members of Parliament and the “gentlemen.” In the early nineteenth century the image of the social body was added. The term social body was used in two ways: as the poor in isolation from the rest of the population, and British society as an organic whole. Poovey signals this ambiguity as crucial. By treating one part of the population as a special problem, social analysts addressed the interests that, at least in theory, integrated all components of the social whole. Social analysts used statistics as the means for comprehending these issues. See Poovey, (1995), *op.cit.*, 8.

Kay's 1838 plan for the establishment and administration of district schools for "pauper children" is a good example that illustrates the problems of the nineteenth-century administration of the "social" by means of classification and enumeration. Kay argued that the existing union workhouses—the institutions where pauper children would be subject to a disciplinary regime—did not help to make pauper children useful members of society. He thought instead that instruction in work skills in district schools would enable pauper children to become part of the labor force and thereby contribute to the economic prosperity of the nation. The Poor Law of 1834 focused on the conditions of the pauper, or indigent, a segment of the poor identified as a "malfunctioning" component of the system. Pauperism, then, was a condition that was thought to affect moral and physical health; it linked morality and health to economic situation.¹⁸ We do not need to include Kay's full proposal here; for what we need to recognize is that the social body, as exemplified by the pauper children, is already both a recognizable entity represented in statistical figures and a target of government administration: pauper children are classified according both to their capacity to read and write, and, (as exemplified in Fig. 4) to the cost they represent to the state. In this sense, statistics permitted an analysis of social class interpreted in an arithmetical array. The very notion of an empirical social fact came to mean something that could be represented as a statistical fact, one that is positive and comparative.

¹⁸ The category was defined as the "state of a person unable to labour or unable to obtain in return for his labour the means of subsistence." In David Englander, *Poverty and Poor Law Reform in Britain: from Chadwick to Booth, 1834-1914* (London: Addison Wesley Longman, 1998), 78.

SAMFORD HUNDRED.

Years.	Bound into large Towns out of the Hundred.	Number of Years for all.	Premiums.	Bound into rural Districts out of the Hundred.	Number of Years.	Premiums.
			£. s. d.			£. s. d.
1820	7	27	63 0 0	3	20	15 0 0
1821	9	37	90 0 0	4	16	30 0 0
1822	10	38	92 0 0	7	35	45 0 0
1823	23	101	281 0 0	7	26	67 0 0
1824	28	124	278 0 0	12	59	123 0 0
1825	32	156	375 0 0	5	26	65 0 0
1826	22	123	222 0 0	5	32	58 0 0
1827	24	105	259 0 0	6	30	57 0 0
1828	21	108	234 0 0	7	39	76 0 0
1829	44	234	476 0 0	13	87	132 0 0
1830	23	119	256 0 0	8	58	94 0 0
1831	22	108	229 0 0	4	26	44 0 0
1832	34	152	353 0 0	4	18	42 0 0
1833	19	99	201 0 0	3	19	41 0 0
1834	13	72	162 0 0
1835	15	78	164 0 0	7	43	55 0 0

346 Bound into large Towns.
 95 " " rural Districts out of the Hundred.
 And 59 " " within the Hundred.
 In all 500, averaging 33½ yearly.

c 2

Figure 4. Table showing the incorporations of the county of Suffolk, in Volume I of the *Journal of the Statistical Society of London*, 1838. Reproduced with permission from the Royal Statistical Society, London.

4. *Statistics and the modern fact*

According to Poovey, by the third decade of the nineteenth century, “truth” was to be found in the generalization of “facts.” This entity, the “fact,” was thought to be free from any kind of arbitrariness or value judgment, and statistical figures came to be the characteristic form through which the fact was expressed.¹⁹

Certainly, the measurement of the human body and the quantification of populations and social and economic phenomena through statistical figures were now key tools for producing knowledge. In the British case, it was this belief in number that made statistics officially part of the British Association of the Advancement of Science. Its president, Adam Sedgwick, went on to say in his acceptance speech: “Can then statistical inquiries be made compatible with our subjects, and taken into the bosom of our society? I think they unquestionably may, *so far as they have to do with matters of fact, with mere abstractions, and with*

¹⁹ The nature of “facts” was far from being a field of wide consensus. The history of this debate in the first decades of the nineteenth century can be found in Poovey (1998), *op.cit.*, 307–328; Mary Poovey, “Figures of Arithmetic, Figures of Speech: The Discourse of Statistics in the 1830s,” *Critical Inquiry* 9 (1993), 256–276.

numerical results...”²⁰ It is the capacity of statistics to deal with “facts” and to produce numerical results that allows it officially to enter scientific domains.

Moreover, following the British case, Lawrence Goldman explained that the emergence of statistics was closely bound up with an interest in making induction the methodological basis for economic and social analysis,²¹ which at the time stood in opposition to the deductive method employed by Ricardian political economy. The contention was that deduction had a tendency to draw conclusions from hypothetical theory and a priori assumptions. Only through induction, which establishes that general principles and theories are derived exclusively from “facts,” could political economy arrive “at principles that are truly comprehensive.”²² Just how relevant statistics became in the first decades of the nineteenth century, despite the controversy, is clearly appreciable. The assessment of credibility, the use of evidence, and the making of decisions, were very much based on statistical *figures*.

5. *Number as figure*

Interestingly enough, a considerable portion of the credibility assigned to numbers was based on *style*.²³ Poovey explains how the style of writing adopted in double-entry bookkeeping,²⁴ a system of writing for merchants in use by the sixteenth century, produced the effect of what “facts” apparently do, that is, to reveal things that actually exist through a language that seems transparent to that reality.²⁵ Double-entry bookkeeping comprises four books: the *inventory*, the *memorial*, the *journal*, and the *ledger*. Poovey identifies a process of abbreviation from the inventory to the ledger, in which only those details regarded as indispensable remain on the page. The process of translating only relevant data from one

²⁰ Author’s italics. Quoted in Poovey (1998), *op.cit.*, 312.

²¹ Lawrence Goldman, “The Origins of British ‘Social Science’: Political Economy, Natural Science and Statistics, 1830- 1835,” *The Historical Journal*, Vol. 26, No. 3 (September 1983), 587-616.

²² *Ibid.*, 596.

²³ For other notions of style, see Arnold I. Davidson, “Styles of Reasoning: From the History of Art to the Epistemology of Science,” in *The emergence of sexuality: historical epistemology and the formation of concepts* (Cambridge, MA. and London: Harvard University Press, 2001), 125-141; Ian Hacking, “‘Style’ for Historians and Philosophers”, in *Historical Ontology*, (Cambridge, MA. and London: Harvard University Press, 2002), 178-199.

²⁴ Poovey (1998), *op.cit.*, 29-65

²⁵ For a complete account see *Ibid.*, 29-91.

book to another also reveals that which is inessential, namely extensive descriptions. This removal of narrative details also causes numbers to stand out in this system of writing. Although it did not reflect the real transactions of merchants, the double-entry bookkeeping system created the effect of being accurate because, firstly, it was written with numerical figures—which ultimately followed arithmetical norms—and secondly, because it was a precise system, that is to say, transparent not to reality, but to its own rules. Certainly, the double-entry books were account books, not rhetorical arguments. These books recorded transactions, amounts, and prices, which have a defined place within the space of the page. In them, number is not only a figure amenable to arithmetical calculation, it is also a figure equated with a style that is concise.

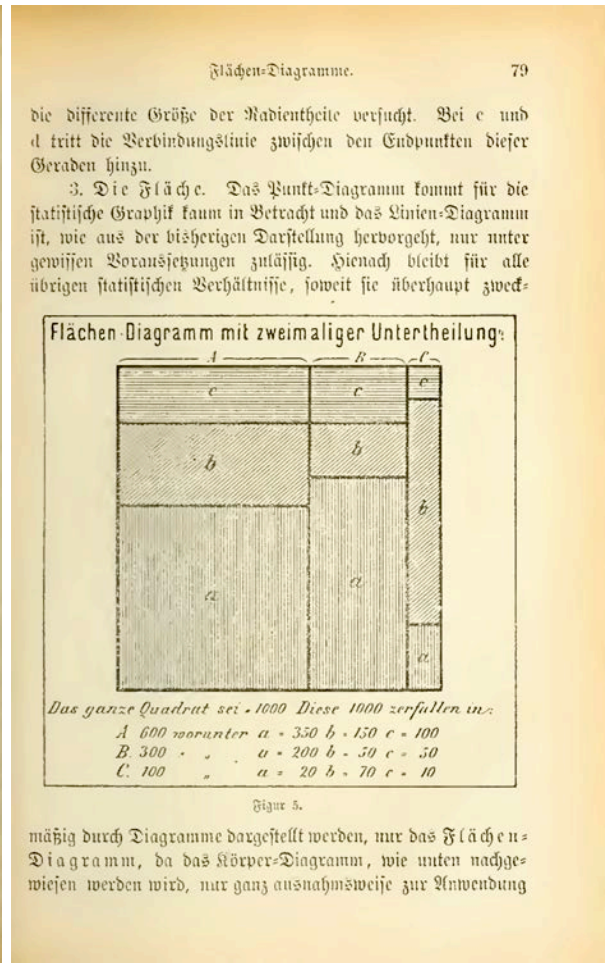
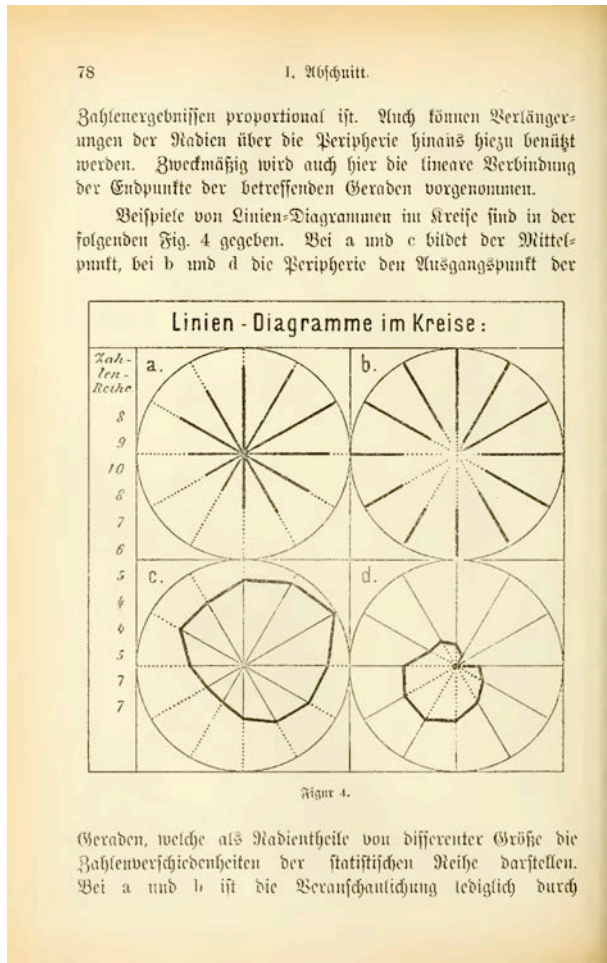
At this point, we are further developing Poovey's own alignment of the modern fact with the construction of a stylistic convention, in which numerical representation has a privileged position over extended narratives. It is not enough to say that the stylistic convention should consist in the use of number, or arithmetical figures. What is at stake is how those figures are read and interpreted. This depends not so much on its arithmetical character but on how arithmetical figures are configured in a layout, on how the “figure-ground” is identified as such in the space of the page. Consider this extract from the introduction to the first volume of the *Journal of the Statistical Society of London*:

The Statist commonly prefers to employ figures and tabular exhibitions, because facts, particularly when they exist in large numbers, are most briefly and clearly stated in such forms, and because he is not satisfied with giving deductions, which admit of question, but supplies the material which each individual may himself examine and compare.²⁶

These words do not show merely the Statistical Society's interest in elevating the use of numerical figures; they equate this material with a certain layout, an array in which numerical figures are displayed and from which certain operations—examination and comparison—can be performed by the reader. Of course, such a layout is not exclusively tabular. Triangular and circular layouts proliferated in the second half of the nineteenth

²⁶ Introduction. *Journal of the Statistical Society of London*, Vol. 1, No. 1. (May, 1838), 3.

century.²⁷ Four pages selected from the publication of German bureaucrat Von Mayr display a variety of printed forms as part of the “language” of statistical graphs (Fig.5). Here a relationship between form and statistics has been established, one that the modern eye can recognize and the modern mind can internalize.²⁸



²⁷ See Gilles Palsky, “Les prémisses de la sémiologique graphique,” in *Des chiffres et des cartes: la cartographie quantitative au XIXe siècle* (Paris: Ministère d’Enseignement Supérieur et de la Recherche. Comité des travaux historiques et scientifiques, 1996), 247–279.

²⁸ Listing specific instances that demonstrate how statistical layout operates in different forms of knowledge would exceed the scope of this text but a series of examples elucidating our treatment of this issue can be consulted in Valeria Guzmán-Verri, “Imagery of Numerical Figures,” *The International Journal on the Image*, Vol.2, No.3 (2011), 21-38; “Pensar con figuras numéricas,” *Revista Reflexiones* 90 (2). Universidad de Costa Rica, (2011), 145-164.

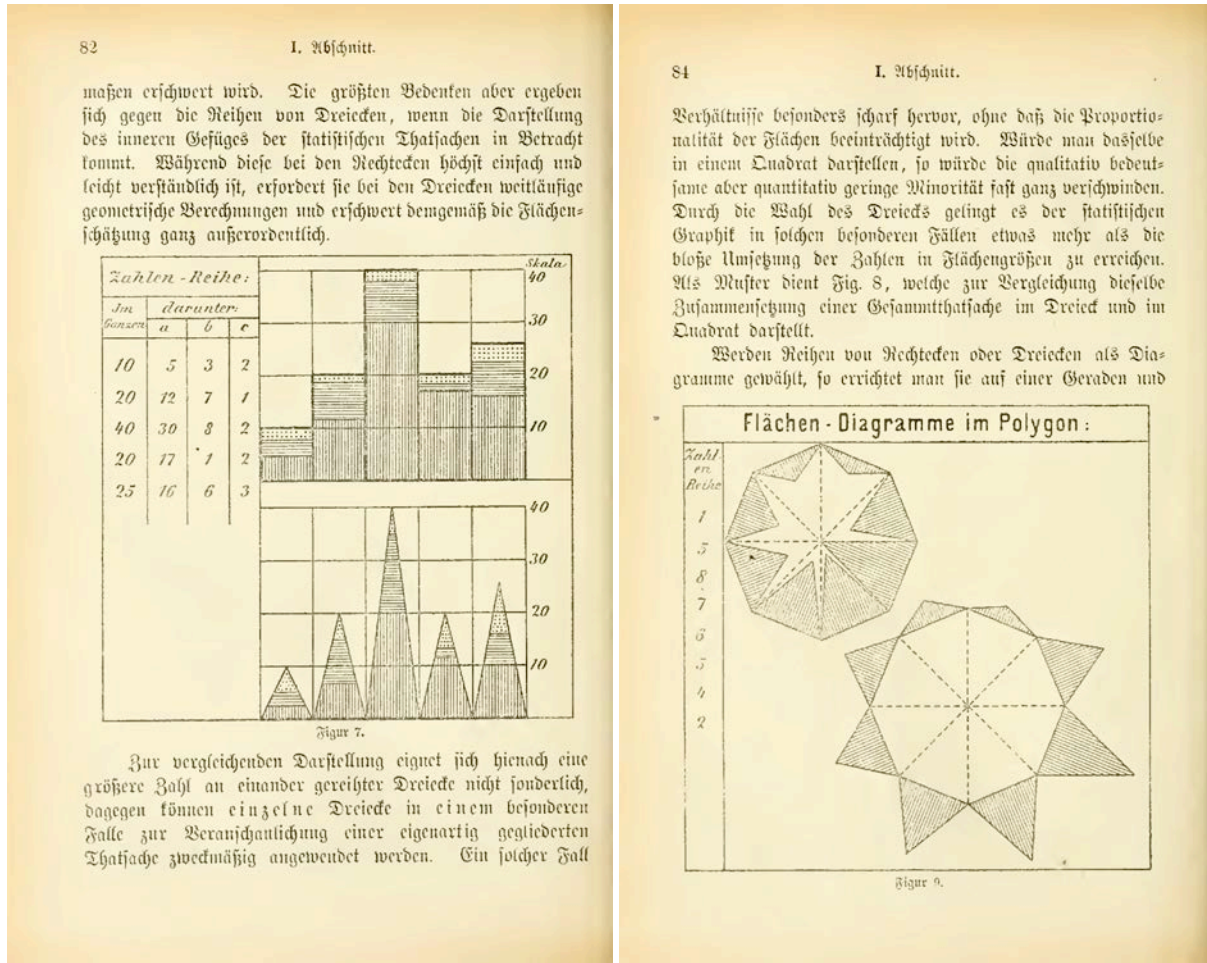


Figure 5. Pages 78, 79, 82 and 84 from Georg von Mayr, *Die Gesetzmäßigkeit im Gesellschaftsleben, statistische Studien*, München: Oldenbourg, 1877.

Thus far we have identified five conditions for *statistical layout* to be read within the space of the printed page: the graphical arrangement of printed matter; the reorganization of knowledge and the figure of man; the rise in the nineteenth century of statistics as a fundamental means of representing and administering the social body; number and its relation to the modern fact; and number as a style of writing. If indeed we have successfully encapsulated with these five conditions the conceptual emergence of statistical layout, we next need to take on board the implications of such an emergence by considering *statistical layout* as an agent that can organize the visual experience of “reading” and comprehending materials. The term “reading” is being used deliberately here and differentiated from “seeing.” Clearly the experience and the comprehension of a statistical table such as the one printed in Kay’s article depend upon more than pure unmediated visual experience.

Knowing how to read in the array itself depends upon prior knowledge and, in some sense, training. It is also characteristic of this extended sense of reading that the subject integrates this performance as if it were mere “seeing.” The very conditions of existence of the array tend to vanish from the subject’s awareness in just the same way as we speak a language without being constantly aware of the grammatical rules we obey.

Indeed, Elizabeth Eisenstein says in *The Printing Revolution in Early Modern Europe* that “[...] the thoughts of readers are guided by the way the contents of books are arranged and presented. Basic changes in book format might well lead to changes in thought patterns.”²⁹ This observation is an important one: thought changes, but above all else, what changes is the *form* that thought takes. What is at stake here is not simply the content of thought, but the way in which thinking occurs. Therefore, rather than simply being a representation, *statistical layout* works as an agent through which modern subjects would perform in accordance with a graphical configuration, which carries in itself a particular form of administrative reasoning. What remains clear from this introductory discussion on the figuration of knowledge is that urban planners, sociologists, economists, and administrators, with their docile compliance to the use and visualization of information, have done nothing but follow the commands dictated by *statistical layout*.

²⁹ Eisenstein (1993) *op. cit.*, 71.