CHAPTER 7

Publication

THE physical output data, whose generation in the enterprise and confluent upward progress through the various hierarchies we have observed in the preceding chapters, eventually become consolidated and tabulated at the higher or highest levels in the central offices of *TsSU*, the regional statistical administrations, and the statistical bureaus of the ministries or *sovnarkhozy*. It is these consolidated statistics at top levels that presumably constitute the main source of the *published* output data, including the various statistical handbooks, as well as of the confidential materials that were circulated to some institutions and individuals during the years when no statistical handbooks were published for general use.[1] Some of the published data undoubtedly come to us not directly from the files of the statistical apparatus, but *via* such confidential materials. This is probably especially true of the isolated figures that used to be published sporadically in articles, speeches, and books before the publication of handbooks was resumed in 1956 and that constituted an important part of the statistical information on the Soviet economy that was available to outside observers for two decades before that year.

Two questions suggest themselves at this point:

1. Is there *numerical distortion* at publication? Are the published data numerically identical with the figures in the consolidated statistics and the confidential materials from which they are drawn? Or are they sometimes (or usually, or invariably) numerically falsified before revelation to the world at large?

2. Is there *descriptive distortion* at publication? That is to say, disregarding any numerical falsification, are the categories so described, or are the data presented in such a context, or with such ambiguity, as to mislead the reader?

[1] Such confidential materials are mentioned, for instance, by B. Martschenko ("Soviet Population Trends, 1926-1939," mimeographed in Russian, Research Program on the USSR, New York, 1953) in the passage quoted on pp. 113f. below. But even in the absence of such evidence, we could safely assume that a considerable amount of confidential information was circulated for use in planning, control, and economic administration. Nor need we doubt that confidential materials have continued to be circulated after the resumption of publication of statistical handbooks in 1956, as the latter clearly do not contain all the data, and in all the detail, necessary for planning, control, and administration.

I shall discuss the first question at some length; but the answer to the second question may be given immediately because it is so well known and obvious: there *is* patently a great deal of descriptive distortion (including ambiguity) that enters Soviet statistics at the time of publication.

Numerical Distortion at Publication

First of all, it is this question, i.e. the likelihood and extent of numerical distortion of Soviet statistics *at publication*, rather than at other stages of data flow, that is apparently typically raised by Western students when they ask "whether Soviet statistics are falsified" and that they usually answer in the negative.[2] I use the word "apparently" advisedly, for by and large the authors have not explicitly distinguished between the various stages in the flow of data at which distortion may take place. The possibility that the data may be distorted before they ever reach the "top," as we have seen a very real possibility indeed, has not received its due attention (except in Berliner's work, where however the problem of statistical accuracy is not central).

Bergson's concept of "falsification in the sense of free invention under double bookkeeping"[3] seems to refer to what I call "numerical distortion at publication." He is of the opinion that Soviet statistics—he is concerned here with more than just industrial physical output data—are not "generally" so falsified and that therefore they are not devoid of meaning. Most other Western students of the Soviet economy have at one time or another expressed similar views,[4] although of course they do not mean that presumptive ab-

[2] With the notable exception of Naum Jasny who has steadfastly asserted that Soviet statistics *are* falsified; see his works listed in the bibliography. But while he has shown in numerous specific instances that Soviet statistics (whether in value, index, or physical terms) are exaggerated, ambiguous, or nonsensical, and while falsification at *some* stage may well be involved in some of these instances, I am not aware of his having established (admittedly a very difficult thing to do) any specific instance of *numerical* falsification *at publication* of currently compiled (as against retrospectively estimated—see p. 116) physical output data.

[3] Abram Bergson, "Reliability and Usability of Soviet Statistics," *The American Statistician*, June-July 1953, pp. 21f.; and *idem*, *Soviet National Income and Product in 1937*, New York, 1953, footnote on pp. 7-9. By "double bookkeeping" he seems to mean the keeping of two sets of statistical compilations: one for the use of the Soviet authorities, and the other for release to the world at large. The term thus should not be confused with "double entry bookkeeping," a confusion that may also arise because Bergson discusses the problem in the context of his work on Soviet national accounts.

[4] E.g. Alexander Gerschenkron, "Reliability of Soviet Industrial and National

sence of falsification *in this sense* is sufficient to place a stamp of veracity and usability on all Soviet statistics.

Bergson arrives at his conclusion both a priori and empirically. In brief, his a priori reasons are: (1) "the probable difficulties of operating a double bookkeeping system on a national scale without detection," and (2) the withholding of data, amply practiced by the Soviets, as an alternative to double bookkeeping. Empirically, (1) he observes that "the data have withstood tolerably well a great many checks for internal consistency . . . [which] might be administratively difficult of attainment under double bookkeeping," as well as checks against other Soviet information and the reports of foreign observers, and, (2) he refers to Turgeon's collation of revealed data with those in the secret 1941 Plan, to which I shall return presently.

Bergson's a priori reasons have considerable plausibility, but, of course, cannot be conclusive by themselves. The second argument is, perhaps, the more cogent one, since it refers to something observable—the great elaborateness exercised in the withholding and selection of data, both in the large and in small (but not unimportant) detail. Innumerable instances of the withholding and selection of data at publication could be cited, but a single case, that of footwear statistics, will point up the problem sufficiently. Table 1 gives the annual percentage increase in footwear output for each year since 1949, as published currently in the regular annual plan fulfillment announcements by *TsSU*. The figures for the years 1949 through 1955 were presumably released at the time without anticipating an early publication of statistical handbooks, and are therefore of particular interest here. In addition, the table gives in parentheses changes in footwear output that were not revealed in the annual announcements, but which can be computed from the statistical handbooks that have been published since 1956. Table 2, while not central for the present argument, is offered to complete the picture. It reproduces the various planned targets for footwear output, and the actual output figures that have appeared

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Income Statistics," *The American Statistician*, April-May 1953, pp. 18-21. On the other hand, Naum Jasny (for example in "Soviet Statistics," *The Review of Economics and Statistics*, February 1950) has persistently objected to this formulation of Bergson's. However, his actual use of Soviet data does not seem to be essentially different from that of Bergson and most other Western (non-Communist) scholars. Bergson's reply to Jasny may be found in Bergson, *Soviet National Income, 1937*, footnote on pp. 7-9.

TABLE 1

Annual Percentage Increases in Footwear Output, 1949-1958

	1949	1950	1951	1952	1953	1954	1955	1956[a]	1957[b]	1958[b]
Leather footwear[c]	22	24	17	(−1)	(0.7)	7	(6)	(5)	10	12
Leather footwear— Ministry of Consumer Goods Industry only					4					
Rubber footwear	28	18	11	(0.6)	(−9.5)	3	(13)	8	(4)	(5)
Felt footwear							(−10)	(−1)	8	8
Footwear of all kinds[c]							7	(6)	(9)	(10)
Footwear[c]							(5)	5	(10)	(11)

SOURCE: Annual plan fulfillment announcements. Figures in parentheses are computed from data in Table 2.

[a] Based on old series (see Table 2).

[b] Based on new series (see Table 2).

[c] For definition of these terms, see text.

since 1956 in the statistical handbooks, all in absolute terms (i.e. million pairs).

To begin with, the term "leather footwear" is misleading since the category includes not only footwear made wholly of natural leather, but also that made of artificial leather, or only in part of natural or artificial leather, and often with canvas uppers. The cryptic categories "footwear of all kinds" and "footwear" appeared first (at least in postwar practice) in early 1956 in the fulfillment of the 1955 plan and the announcement of the Sixth Five-Year Plan, respectively, and were unclear to outside observers at the time. Since then the publication of the statistical handbooks has permitted them to be deciphered: "footwear" apparently is the simple summation (in pairs) of "leather footwear" and felt (or matted) footwear (*valianaia obuv', vkliuchaia fetrovuiu*); "footwear of all kinds" is a summation of "leather," felt, and rubber footwear.

Table 1 shows clearly how information was at the time withheld where a decline or an insignificant increase would otherwise be shown, and how categories were shifted to show the largest increase among the several alternative aggregates, at times with what appears to the outside observer as a deliberate extension of ambiguity. The decline or fractional percentage increase in the output of "leather footwear" in 1952 and 1953, of rubber footwear in 1952 and 1953, and of felt footwear in 1955 and in 1956 were passed over in

TABLE 2

Absolute Data on Footwear Output, 1948-1958
(million pairs)

	Leather Footwear	Rubber Footwear	Felt Footwear
1948, actual	134.0	71.1	
1949, actual	163.6	91.8	
1950, 4th FYP target	240	88.6	
1950, actual	203.4	110.4	22.4
1951, actual	239.7	122.5	
1952, expected actual as of Oct. 1952[a]	250	125	
1952, actual	237.7	123.2	
1953, actual	239.4	111.8	
1954, plan[b]	267		29.0
1955, plan[b]	318		33.5
1954, actual	257.8	115.8	27.2
1955, actual	274.3	131.4	24.5
1956, actual	289.8	141.2	24.2
1956, actual, new series[c]	286[d]	145[c]	
1957, actual, new series	317[d]	150.7[e]	26.4[e]
1958, actual, new series	355.8[e]	158.7[e]	28.5[e]

SOURCE: Except as otherwise indicated, actual figures are from *Narodnoe khoziaistvo SSSR* [The National Economy of the USSR], Moscow, 1956, pp. 58f.; *Promyshlennost' SSSR* [Industry of the USSR], Moscow, 1957, pp. 43, 351; and *Narodnoe khoziaistvo SSSR v 1956 godu* [The USSR National Economy in 1956], Moscow, 1957, p. 64.

[a] Malenkov's report at the XIXth Party Congress.

[b] Targets for the "new course" (*Pravda*, Oct. 28, 1953). The indicated target for leather footwear for 1955 is the same as the original Fifth Five-Year Plan target for that year.

[c] In 1957 the series for leather footwear and rubber footwear were revised, seemingly transferring some output from the former to the latter category. The revision has not been explicitly publicized, but retroactive adjustment of the two series appears in *Narodnoe khoziaistvo SSSR v 1958 godu* [The USSR National Economy in 1958], Moscow, 1959, pp. 228 and 273. The felt footwear series was apparently not affected.

[d] *SSSR v tsifrakh* [The USSR in Figures], Moscow, 1958, p. 125.

[e] *Narodnoe khoziaistvo 1958*, pp. 228 and 273.

silence by the annual plan fulfillment announcements.[5] For 1955, 1956, 1957, and 1958, generally only the highest percentage increases were published in the yearly announcements. And for 1953, with "leather footwear" production increasing by less than 1 per cent, the authorities chose to announce only the respectable 4 per

[5] In fact, felt footwear was not mentioned at all in the announcements before 1957, although its output must have increased in some year(s) between 1950 and 1954. The reason for this is not clear. Perhaps in those years in-

cent increase in the output of "leather footwear" by the enterprises of the Ministry of Consumer Goods Industry alone.[6] We may recall that this announcement came at the height of the "New Course" with its policy of rapid expansion of consumer goods production. And we may note that in 1957 the leather footwear and rubber footwear series were redefined without warning.

Similar instances are doubtless known to anyone acquainted with Soviet statistics. Suffice it to recall the sharp cutback in published physical output data for industry in the late thirties, and again (though less sharp) in 1951. The subsequently published statistical handbooks have confirmed what was suspected at the time, namely, that the disappearance of the information was accompanied by declines in production. In short, the Soviet record of suppression of production data and juggling of published categories does indeed suggest that these devices are employed as alternatives to outright numerical falsification at publication, although, needless to say, this certainly does not preclude the possibility of such falsification.

Turning to Bergson's empirical reasons, the first—the fact that the data have withstood checks of consistency (especially of rigorous internal consistency)—is perhaps of less importance for our purposes than it was for his. Financial data based on double entry bookkeeping, on which Bergson largely based his national income studies, are more amenable to tests of internal consistency than are data on the physical output of industry. It is true that for a number of commodities, especially since the resumption of publication of statistical handbooks, the national production total can be checked against regional totals, although without further study it is difficult to say how conclusive such a check would be in a particular instance. *Ex post* balances may be constructed in the few cases where independent production, consumption, and foreign trade data are available. This can be done for steel for most of the thirties, and perhaps for a number of other commodities, such as some building materials, for certain years. In quite a few cases the data can be

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creases in the output of this traditional and "nonprestige" article were not considered worthy of publicity.

It should be noted that since the report for 1955, admission of decline in the output of an individual industrial commodity has been somewhat more frequent.

[6] The Ministry's predecessor was responsible in the 1941 Plan for only three-fourths of the national target for this commodity. (*Gosudarstvennyi plan razvitiia narodnogo khoziaistva SSSR na 1941 god* [The State Plan for the Development of the USSR National Economy for 1941], Moscow, 1941, p. 72).

checked with reference to certain posited input-output relations, but usually only broadly so because the input-output ratios may vary beyond narrow limits, or because there exist major alternative uses of the commodity (where the commodity in question is an input for purposes of the consistency check), or because the commodity (regarded as the output) can be produced by alternative processes, and so forth. Needless to say, we must avoid begging the question of changes in input-productivity when conducting consistency checks involving input-output relations. Further, output can be checked against production capacity if this is independently known, which is not often.[7] However, independent knowledge of capacity can at best give us upper limits of plausible production if we dispose of fairly certain maximum capacity utilization norms; by itself, it cannot give us a lower limit other than zero output. In a number of cases production data can be broadly checked against statistics of freight and cargo haulage, remembering, of course, that both output and freight statistics may be simultaneously overstated, as we have already seen. Even more loosely, production data can be checked against fragmentary external appearances: availability of consumer goods in stores; the clothing, etc., worn by or in the possession of individuals; the amount of construction going on; the industrial equipment or military "hardware" that can be seen; and so forth. Lastly, trends in retail prices may be suggestive of the supply of consumer goods.

In short, it is possible to conduct consistency tests for some industrial output data, but very few of them are likely to demonstrate the absence of inconsistency with reasonable conclusiveness. I should add that I know of no instance where a Soviet industrial *physical* output datum has been clearly demonstrated to be inconsistent with other information.

[7] In this connection I wonder whether Gardner Clark succeeded in conducting "a test of the reliability of Soviet statistics" when he found (*The Economics of Soviet Steel*, Cambridge, Mass., 1956, Appendix G) that, for 1940 and for 1948, the Soviet data on pig iron production, blast-furnace capacity, and blast-furnace productivity are mutually consistent within reasonable margins of error. It seems to me that the values of the nation-wide index of blast-furnace productivity are most likely directly derived from the corresponding values of pig iron production and blast-furnace capacity, and are not independent, as they properly should be for a consistency test. If Clark has shown anything about the accuracy of Soviet statistics, it is only that productivity figures inconsistent with the revealed or inferable output and capacity figures were not published, at least for those years. However, his calculation may have established—which, perhaps out of author's modesty, he did not mention—that his extrapolation of capacity to 1948 may have been quite accurate.

Bergson's other empirical argument rests on Turgeon's collation[8] of certain data in Voznesenskii's public speech on the 1941 Plan[9] and the corresponding data in the confidential version of the plan which has since become available in the West.[10] Of the 19 items compared, 15 are identical or diverge only to the extent of rounding; and while the other four[11] diverge substantially, the differences can be explained by the inclusion or exclusion of the recently annexed territories. Turgeon concludes: "It would be difficult indeed not to regard this close correspondence between published and confidential Soviet data as strengthening the position of those Western economists who believe, however misleading may be the way in which Soviet statistics are presented, they are not based on sheer invention, but have meaning and significance."[12]

Turgeon would have been more exact, however, if he had concluded that the published *plan targets* are substantially the same as the unpublished confidential ones. No definite inference can be drawn from this with regard to *statistics of accomplishment*, though one may add that the absolute 1941 Plan targets do not seem to be obviously inconsistent with the corresponding published achievements claimed for 1940.

There being hardly any positive evidence on the question of numerical fidelity at publication—Turgeon's useful experiment apart, some first-hand testimony is particularly welcome. It comes from B. P. Martschenko, one of the ablest émigré economists, who was formerly active professionally in the Ukraine, both under the Soviets and under the German occupation. In defending the reliability of the published data of the 1939 population census, he writes:[13]

"The primary processing of census data on population numbers was conducted in 1939 by the *oblast'* statistical administrations, and thus the *oblast'* totals were known to some of the personnel of *oblast'*

[8] Lynn Turgeon, "On the Reliability of Soviet Statistics," *The Review of Economics and Statistics*, February 1952, pp. 75f.

[9] N. A. Voznesenskii, *Khoziaistvennye itogi 1940 goda i plan razvitiia narodnogo khoziaistva SSSR na 1941 god* [Economic Report on 1940 and the Plan for the Economic Development of the USSR in 1941], Moscow, 1941.

[10] *Gosudarstvennyi plan 1941.*

[11] These are: total crop areas, gross grain harvest, turnover of state and retail trade, and number of elementary and secondary school children.

[12] Turgeon, *op.cit.*, pp. 75f.

[13] Martschenko, *op.cit.*, pp. 2f. My interpolations (in square brackets); his emphasis.

statistical administrations, though, of course, they were not subject to publication. In June, 1939, *TsUNKhU* published the census totals with breakdown by union republic, and specifically giving the figure of 30.96 million for the Ukrainian SSR. While the official publications did not break down this figure by *oblasti* of the Ukrainian SSR, beginning with 1940, and acting on the request of the scientific institutes of the UkrSSR, the statistical administration of the UkrSSR began passing on [to the institutes—G.G.] data on the population of the 16 *oblasti* (including the Moldavian Autonomous Republic) and the two cities of republic subordination (Kiev and Kharkov), expressed in millions to one decimal place. In 1941, shortly before the outbreak of the war, the statistical administration of the UkrSSR had printed a statistical compilation, entitled *Soviet Ukraine*, which was not placed on sale, but was distributed to various central and *oblast'* offices of the Party and Government, and was kept by these in their secret files. This compilation contained the same *oblast'* breakdown of the population of the UkrSSR.

"During the German occupation, 1941-1943, it became possible [for Martschenko] to check the authenticity of these official data by discussion with the former leading personnel of the Kiev Municipal Statistical Department and of the Statistical Administrations of two *oblasti*.[14] The [secret] data, which were passed on in 1940 by the Statistical Administration of the UkrSSR and were later incorporated in 1941 into the printed compilation put out by the Statistical Administration, did indeed correspond to the *oblast'* totals obtained by addition [of the returns] during the first few weeks after the census date. These totals were inclusive of the so-called "contingents," i.e. the numbers of prisoners in prisons and camps, broken down by *oblasti*, supplied by the *NKVD*. This leads us to conclude that the data on the 1939 census for the Ukraine, a republic which suffered one of the worst population deficits [due to collectivization of agriculture], were not falsified in the *central* statistical agencies. Hence, there is also reason to hold that the data are correct for the USSR as a whole, too.

"It must also be noted that the falsification of census data in the course of their processing in the *oblast'* statistical administrations would have been too unwieldy an operation, which would have inevitably become known to many persons in the statistical administrations, and could not have been concealed."

[14] As far as I remember, Kamenets-Podol'sk and Dnepropetrovsk [B. M.'s note].

A few paragraphs further, Martschenko seems to equivocate as to whether the same conclusion should be extended to economic statistics in general.[15] But on two later occasions, both, incidentally, in talks before less than completely receptive émigré audiences, he defended the nonfalsification thesis without reserve. Quoting again:[16]

"To postulate that the data of *TsSU* . . . are fictitious [in the sense of falsification at publication] would amount to postulating that there is duplicate planning in the USSR and a duplicate set of figures—one of which is intended for publication in newspapers and the specialized literature and the other printed somewhere else in earnest to guide economic administration in their work. But this cannot be assumed. Duplicate planning would be too unwieldy in practice, and besides could not be concealed from the eyes of the uninitiated. Soviet statistics resort to other means of inducing confusion and misinterpretation of data, which are more refined than the publication of simply invented absolute figures or percentages."

What does this evidence on the question of numerical distortion at publication add up to? We have Bergson's two a priori arguments of considerable, but not conclusive, cogency. They are supported by the opinion of a person of Martschenko's experience and by our own observations (as in the footwear example). We have Martschenko's recollection that secret population figures were identical with the published ones. We have Turgeon's experiment, which shows the near identity of officially released data and those not intended for publication, though for a plan rather than for statistics of performance. In general, it must be noted that (to my knowledge) no actual instance of substantial divergence between figures for public and for internal (official) use has yet been brought out, though perhaps that fact is of little weight considering the paucity of opportunity for this hitherto. And lastly, on the negative side, we must again note the limited possibilities of conducting rigorous consistency tests for industrial output statistics in physical terms.

The evidence is thus far from conclusive. But, while it certainly does not rule out numerical falsification of industrial physical output data at publication, it perhaps points to a mild presumption that

[15] Martschenko, *op.cit.*, p. 4.

[16] *V Konferentsiia* [Fifth Conference], Institute for the Study of the History and Culture of the USSR, Munich, April 25-27, 1955, pp. 219f. See also *VI Konferentsiia* [Sixth Conference], Munich, July 28-30, 1955, p. 120.

these published figures (with the exception to be noted in the next paragraph) are the same, though maybe numerically less precise, as those in the unpublished statistical compilations in the hands of the Soviet authorities. For reasons examined in the preceding chapters, this naturally need not mean that the released data are a faithful representation of the actual events; there is many a statistical slip 'twixt the production of goods and the publication of statistical handbooks. Nor should we assume that the statistical and governmental authorities themselves believe all their figures to be accurate—we know that they do not—or that they desist from publishing statistics of whose reliability they entertain serious doubts.

One more point should be mentioned before the subject of numerical distortion at publication is put aside, that is, retroactive estimates of magnitudes that were not compiled at all, or not in the desired form, at the time. Retrospective estimates of this sort, of course, do not pass through the channels of data flow that were described above, but are presumably made somewhere at the "center." They may well be made to prove a point—the point usually being, of course, that output in the earlier years was low compared to more recent production. Again footwear statistics may be used as an illustration. During the thirties Soviet statistical handbooks gave data on the output of large-scale industry only, which gave the impression of rapid growth. The commodity designation at its most precise was "footwear, except that of felt or rubber," which seems to correspond to what is now called "leather footwear." The first line of Table 3 reproduces the data in *Sotsialisticheskoe stroitel'stvo*, 1936 (see the reference in footnote b to additional production of rebuilt shoes for 1933 and 1934, and for those years only). The second line of the table reproduces the data in *Promyshlennost' SSSR*, 1957, which purport to cover all industry, i.e. including small-scale establishments. Note that nearly identical upward adjustments of over 28 million pairs were made in the latter source for 1928 and 1929, presumably to account for the output of small-scale establishments. (These adjustments may, however, be too small considering the relative importance of such establishments in the shoe industry at that time.) For 1930 and 1931, what was formerly given as the output of large-scale industry is now presented as the output of *all* industry, and for 1932 only a very small upward adjustment has been made (probably for reasons other than the inclusion of small-scale establishments). For 1933 and 1934, the figures now purporting to represent the output of all

TABLE 3

Output of Leather Footwear, 1928-1935
(*million pairs*)

	1928	1929	1930	1931	1932	1933	1934	1935
As given in 1936 for large-scale industry[a]	29.6	48.8	75.4	86.7	84.7	80.3[b]	75.5[b]	85.5[c]
As given in 1957 for all industry[d]	58.0	77.0	75.4	86.7	86.9	90.3	85.4	103.6

[a] From *Sotsialisticheskoe stroitel'stvo SSSR* [Socialist Construction in the USSR], Moscow, 1936, p. 206.

[b] In addition, output of rebuilt footwear was given in source as 10.0 mill. pairs in 1933 and 9.9 in 1934.

[c] Preliminary.

[d] From *Promyshlennost'*, 1957, p. 351.

industry are identical with the totals of newly produced and rebuilt shoes, but for large-scale industry only. And for 1935, again, a substantial (though perhaps inadequate) upward adjustment has been made, presumably to include small-scale establishments.[17]

Descriptive Distortion at Publication; Ambiguity

As we noted early in this study, the line between numerical and descriptive distortion is not a precise one, and in some respects, such as the passing off of the output of large-scale industry as that of all industry, the case just discussed illustrates descriptive distortion at publication as well. Many other forms of descriptive (including contextual) distortion in published Soviet statistics are known to students of the Soviet economy: unheralded changes in definition; comparisons of incomparable categories; no allowance for territorial change; biased selection of the base year and other standards of comparison; presentation of plan targets for past years as actually attained magnitudes;[18] and others. It would be futile to attempt to list all the pitfalls in the interpretation of Soviet statistics, even of only the industrial physical output data. In the final analysis, each figure must be tested separately and on its own ground for possible descriptive distortion, always bearing in mind what it is

[17] A similar critique of footwear statistics is given in Naum Jasny, *The Soviet 1956 Statistical Handbook: A Commentary*, East Lansing, 1957, pp. 81f.

[18] Again with regard to footwear, see *V.E.*, 1953, No. 8, p. 25, where the output of footwear in 1952, as foreseen in Malenkov's speech at the XIX Party Congress in October of that year, is represented as the actual output for 1952. As we now know, the actual output was smaller.

that the statistics are "trying to prove." But a few generalizations may be ventured.

Thus, obviously, the more direct the statement, the less the likelihood of descriptive distortion. For example, absolute figures are generally preferable to percentages, since the latter require probing into the meaning of the numerator as well as of the denominator, and into the comparability of the two. Also, the shorter the period spanned, the lower the chances of an intervening definitional change.

All detail and nuances of description and definition should be heeded. The chances are that the detail has been transferred from unpublished data, where it may have meaning and purpose. For illustration I refer back to the data on footwear in Tables 1 and 2 earlier in this chapter. Quite clearly, the Soviet statements at the time did not necessarily mean "leather footwear" when they said "footwear" *tout court*, but it is amazing how many Western commentaries of the Sixth Five-Year Plan assumed that the latter must stand for the former. Another example is the transition in the late forties from the term *zhilaia ploshchad'* (dwelling area) to the phrase *zhilye doma obshchei ploshchad'iu* (dwellings with a total area of), which (as we now know) was associated with a change in the basis of measurement of aggregate housing space.[19]

Finally, the exact location of the datum in the body of the handbook, plan fulfillment report, speech, and so on, should be carefully noted, for it may not only yield a clue to the meaning of the datum, but also, by indicating its origin, shed light on its reliability. This is so because the statistical compilations from which the published statistics are drawn are standardized in two senses. The statistical categories (designations of commodities and commodity groups) and the units of measurement are at any one time standardized, necessarily so because of the elaborate planning and reporting system. A corollary of this is the fact that (short of sheer invention, of course) the figure(s) for only the standard category or categories, and in the specified units, that happen to exist in the statistical compilations can be published for any particular period or point of time. Further, judging by the published plans, fulfillment announcements, and major speeches, the unpublished compilations are very likely organized in a certain sequence of subjects which changes.

[19] In this connection, one wonders whether the sudden change in usage in the late forties from *narodnyi dokhod* (people's income) to *natsional'nyi dokhod* (national income) was not more than a change in wording.

little from year to year. Topics and items succeed each other with a set regularity, and it is a fair guess that when the speaker finishes the discussion of industry he will turn to agriculture, then to transportation, then to capital construction, and so forth. That is to say, there is a definite sequence of contexts in the materials from which the published data are drawn.

The classic example concerns the perplexing parallel existence of "small" and "large" wage funds. Wiles has pointed out[20] that the two have tended to appear in different contexts, the former in relation to living standards and the latter in relation to anti-inflationary considerations, which suggests differences in derivation and thus provides a clue to the difference in coverage and meaning.

But one of the most bothersome problems in the interpretation and handling of Soviet physical output statistics is likely to be insufficient descriptive precision, in other words, ambiguity, especially the ambiguity of commodity designations. In the plans, fulfillment announcements, statistical handbooks, and similar documents, the commodity designations are very broad. Not only are such categories as "equipment for the petroleum industry (in tons)" or "steam locomotives, main-line (in units)" or "knitted outer garments (in million units)" highly heterogeneous, but even such seemingly "simple" commodities as pig iron, coal, cement, and (as we have seen) electric power are not entirely homogeneous, and in most cases are quite heterogeneous.[21] To complicate matters further, certain commodities are assimilated into the specified commodity items by means of conventional conversion coefficients. Thus, ferroalloys enter into the pig iron figure, building stone and similar materials apparently often enter into the structural brick figure, and so forth. Indeed, Tseitlin points out that in the law on the Fourth Five-Year Plan (which listed targets for well over fifty industrial

[20] P. Wiles, "Average Wages in the USSR," *Bulletin of the Oxford Institute of Statistics*, September 1953, pp. 327ff. See also A. Bergson, "A Problem in Soviet Statistics," *The Review of Economic Statistics*, November 1947, pp. 234-242, for a statement of the wage fund problem.

[21] Thus, for most years Soviet statistics simply give a global figure for the output of "rolled steel (in tons)." Until the mid-thirties a breakdown into about two dozen types was also published (see *Sotsialisticheskoe stroitel'stvo*, 1936, p. 135). *Promyshlennost'*, 1957, gives a breakdown into 14 types, but only for 1940, 1950, and 1955. On the other hand, rolling mills have to report, apparently daily, their output of rolled steel broken down into 34 types, and many more subtypes (see Ia. D. Kats, *Promyshlennaia statistika na predpriiatiiakh chernoi metallurgii* [Industrial Statistics in Iron and Steel Enterprises], Moscow, 1957, pp. 35-37).

commodities) only a few industrial items—such as electric power, petroleum, natural gas, and most processed foodstuffs—were expressed in "truly" physical units (which, of course, does not yet mean that they are strictly homogeneous commodities). He goes on to say:[22]

"Iron and steel products, the larger number of items of producer equipment, agricultural machinery, and even forest products and building materials, are expressed [in the Fourth Five-Year Plan] only nominally in physical units. Actually they are expressed in conventional units; in part in 'conventional physical' [*uslovno-natural'nye*] units, and in part in 'conventional statistical' [*uslovno-uchetnye*] units. Examples of conventional physical units are the unit of measure of soap [i.e. in terms of solid household soap of 40 per cent fat content—G.G.] and the 'conventional can' for canned goods. Examples of conventional statistical units, i.e. indicators not related to the utility [*potrebitel'skaia otsenka*] of the product, are the measurement of pig iron by weight, as well as many others. It is clear that these two concepts are not mutually exclusive, but that one is subsumed under the other; i.e. conventional physical units must be regarded as a variety of conventional statistical units."

The problem of ambiguity in commodity designation, like the problem of descriptive distortion, must be analyzed and (if possible) resolved separately in every individual case. Needless to say, each case will have its own pattern and dimensions of heterogeneity, including its specific problems of product mix. Consider the commodity "woolen fabrics," which is given in meters with no breakdown for most years. By type of cloth, its composition (in per cent of the total) was as follows for different years:[23]

[22] M. A. Tseitlin, "O natural'nom izmerenii promyshlennoi produktsii" [On Measuring Industrial Output in Physical Terms], *Nauchny zapiski* [Scientific Notes], Leningrad, 1955, p. 53. The reference to pig iron presumably alludes to the inclusion of ferroalloys in the pig iron category at certain conversion coefficients, and perhaps to the fact that these coefficients in some sense do not properly express the relative "utility" of pig iron and of the various kinds of ferroalloys. On the other hand, it is not quite clear why the author apparently does not regard number (as, for instance, the number of motor vehicles—be they trucks, passenger cars, or buses) as a "truly" physical unit of measure.

[23] The first four columns are from A. M. Korneev, *Tekstil'naia promyshlennost' SSSR i puti ee razvitiia* [The USSR Textile Industry and Ways of Its Development], Moscow, 1957, p. 149; the last three columns are from

	1913	1927/28	1932	1940	1940	1950	1955
Worsted	53.0	41.9	14.2	30.6	30.0	39.5	39.6
Fine woolens	21.5	33.4	47.4	37.7	43.0	38.1	43.5
Coarse woolens	25.5	24.7	38.4	31.7	27.0	22.4	16.9

The percentage of real wool (though apparently not necessarily virgin wool) in the fiber changed as follows during the First Five-Year Plan:[24]

	1927/28	1933
In the production of worsted	98.1	85.0
In the production of fine woolens	45.3	19.4
In the production of coarse woolens	66.4	33.4

I have no information on the average width of a meter of woolen fabric in the earlier years, but from 1940 to 1955 it declined slightly: from 128.5 cm to 126.6 cm.[25] From these data alone, and without considering the many other aspects of the commodity "woolen fabrics," it is quite clear that the average quality or value of a meter of the commodity fluctuated greatly over time, and that it declined sharply during the First Five-Year Plan. (If other aspects of quality could also be taken into account, the decline in average quality may well be even greater.[26]) It is also clear that the global figures for woolen cloth in meters, which is all that we have for most years, are a very crude approximation of the output of the woolen textile industry.

The situation is similar for many other commodities. For instance, to refer briefly once again to footwear statistics, "leather footwear," as we have seen, is in fact footwear other than that made of rubber or felt, and contains in varying proportions not only natural leather (which in itself is not of uniform quality) but also artificial leather, canvas, and perhaps other materials. Further, in type, the footwear

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Promyshlennost', 1957, p. 330, and pertain only to the USSR Ministry of Light Industry.

[24] Korneev, *op.cit.*, p. 149.

[25] *Ibid.*, p. 277. These figures are said to refer to *finished* woolen fabrics.

[26] Korneev (*ibid.*, pp. 142f.) points out that while the output of woolen fabrics in linear meters (i.e. disregarding product mix and quality) rose by 38 per cent from 1928 to 1940, the official index of the output of the woolen textile industry (including wool washing) rose by 154 per cent in the same period. After mentioning the increase of primary processing of wool by factory industry (which enters into the index), and quality changes, he says in a footnote that "an explanation of the reasons for the disparities [between the physical increases and the rise in the official indexes of various branches of the textile industry] would require a separate inquiry which we cannot now undertake because the materials are not available."

may vary from heavy, knee-high, traditional Russian boots, to the lightest of sandals or slippers. It can be men's, ladies', or children's footwear. As we have seen, it can be entirely new or rebuilt. And, of course, it can (and does) vary greatly in quality; much is substandard judging from complaints in the Soviet press. But it still enters the statistics as pair for pair.[27]

Since it is often a shortage of the raw material that contributes to the deterioration in quality and in the product mix, perhaps the tentative generalization can be made that, in the short run, changes in quantity of output and in average quality tend to be positively correlated. Thus, for certain commodities the uncorrected physical output series may tend to overstate the production in the "poorer" years in comparison with the adjacent "better" years. Of course, which years are which can be ascertained only by a careful study of the industry in question.

[27] Actually, this is not always the case. There may be some writing up in this respect, even apart from the recording of *brak* as valid output. "An Odessa shoe factory was producing ladies' shoes of above-average quality. Yet every pair of ladies' shoes was entered in the records not as such but as two pairs of children's shoes, which would have required the same amount of leather. This was done to evade payment of the turnover tax, since children's footwear is not subject to it" (*Finansy* SSSR, 1958, No. 6, p. 48).