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**The Treatment of Auxiliary Establishments
in Industry Classification Systems**

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The United States' Economic Classification Policy Committee (ECPC), Statistics Canada and Mexico's Instituto Nacional de Estadística, Geografía e Informática (INEGI) have joined together to develop a North American Industry Classification System (NAICS) that would produce common industrial statistics for all three countries. It was agreed that the conceptual framework for NAICS would be production-oriented, or supply based: This means that establishments having similar production processes are to be grouped together, and that establishments with differing production processes will be placed in separate industries.

In the course of determining and defining NAICS industries, it became apparent that the classification of auxiliaries, or ancillary activities, as they are called in the System of National Accounts (SNA) and in the International Standard Industrial Classification (ISIC), needed to be reviewed. Currently the three countries-- Canada, Mexico, and the United States--follow the common practice in classification of distinguishing two types of units, operating units and auxiliary units.

1. Those units that primarily produce goods or services for sale to units of other enterprises are alternately referred to as operating units, producing units, or technical units. (For the remainder of this paper, these units will be referred to as operating units). Also included as operating units are units which produce goods for use by other units of the same enterprise, that is, captive goods-producing establishments.

2. Those units that produce support services not intended for use outside the enterprise are alternately referred to as auxiliary units, or ancillary units. These are captive services-producing establishments. These units normally do not bill for the services they perform because the services are produced for other units of the same enterprise. Activities commonly performed by these units include management and other general administrative functions, such as accounting and legal services; warehousing; and data processing. They also frequently act as "purchasing" agents

for the entire enterprise handling such activities as advertising, borrowing, health insurance, etc.

All three countries currently classify type 1, operating units, to industries based on their primary activity, while type 2, auxiliaries, are classified based on the industry classification of the establishments they serve--not the auxiliaries' primary activity. To put it another way, operating units are classified strictly on the basis of what they do, while auxiliaries are classified based on for whom they do it--the classification of the industries they serve.¹ Thus, for auxiliaries, establishment ownership, which is ignored for the classification of operating units, becomes an essential component for classifying the unit. These classification principles for operating and auxiliary units are endorsed in ISIC and the SNA.

The traditional treatment of auxiliary units implies that captive services-producing establishments should be treated differently from captive goods-producing establishments. For example, an automobile producer that has a computer services establishment that performs services for its automobile assembly plants will be classified in the automobile industry. However, if it has a captive automotive hose and belting establishment, that establishment will be classified into the rubber and plastic hose and belting industry, and not into the automobile assembly industry.

Why should captive goods and services be treated dissimilarly? This is a major issue for industrial classification and for NAICS. The present paper is intended to facilitate a "fresh slate" review of the treatment of auxiliaries in industrial classifications, as part of the NAICS comprehensive review of issues that arise in industrial classifications.

The immediately following section shows that quite different classifications of auxiliaries presently exist in the three North American countries, even though they all follow the principle that auxiliaries should be classified according to the industry they serve. The second following section explains the history of the classification of auxiliaries, using primarily the U.S. record. Both sections illustrate the problems with the industry-served principle of classifying auxiliary units.

¹ In addition to classifying auxiliaries on the basis of whom they serve, the three countries also classify their auxiliaries, in a limited way, on the basis of what they do, or to say it another way, the activity performed.

Treatment of Auxiliaries in the Three North American Countries

Although the three countries all in principle classify auxiliaries to the industry served, the application of the principle is not consistent. Differences result from the following:

1. The activities regarded as auxiliary (see table 1). For example, manufacturers' sales offices are regarded as operating units in Mexico and the United States, but as auxiliaries in Canada. Biological, chemical, and other research laboratories and R&D units are operating units in Mexico and auxiliaries in Canada and the United States (with the exception of aerospace R&D units which the United States treats as operating units).
2. The criteria used to distinguish an auxiliary establishment (see table 2). For example, in the U.S. an auxiliary may have receipts or billings and still be considered an auxiliary, because it is primarily providing support services for other establishments of the same company. Thus it would be classified based on the primary activity of the industry it serves. In Mexico, no establishment with receipts is treated as an auxiliary. In Canada, if an establishment has receipts or internal billings, it is treated as an operating unit.
3. The industry detail existing in the classification system. For example, both Mexico and Canada classify auxiliaries to detailed industries. In the U.S., it is often impossible to classify auxiliary units below the industry group level, because the establishments they serve are classified into several different industries. This problem is particularly severe for large conglomerate enterprises that may have establishments that operate in several sectors of the economy.

A detailed description of U.S. guidelines for identifying and classifying auxiliary units is provided in the U.S. Standard Industrial Classification Manual and the Bureau of the Census publication, 1992 Industry and Product Classification Manual.

TABLE 1 - AUXILIARY ACTIVITIES AND COUNTRY

Table 1 is a partial list of support activities that can be performed at a separate establishment. The activities listed are treated differently by at least one of the three countries. O=operating unit, A=auxiliary unit.

Activity	United States	Mexico	Canada
Mfgr's sales offices not holding inventories	O	O	A
Goods producing establishments	O	O/A	O
Biological research facilities	A	O	A
Chemical laboratories	A	O	A
Engineering laboratories	A	O	A
Food research/testing laboratories	A	O	A
Industrial laboratories	A/O	O	A
Laboratories testing products	A/O	O	A
Research laboratories	A/O	O	A
Testing facilities	A/O	O	A
Long distance trucking, stevedoring, water transportation, or pipelines	O	A	A

TABLE 2 - DISTINGUISHING AUXILIARIES

Auxiliary Characteristics	United States	Mexico	Canada
Physical location	May be at same location as another activity	Must be a separate location	May be at same location as another activity

Sales	May have sales as well as billings to other units or companies	Absolutely no receipts	No sales or billings
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Because of the special classification treatment that is currently given to auxiliary or ancillary units, these units may affect the statistics for practically every industry in the classification system. Thus differences in the classification practices regarding these units can have a substantial impact on the international comparability of industry statistics and time series. Therefore, the NAICS goal of industry comparability across North American economics required that the classification of auxiliaries be reviewed.

History of Treatment of Auxiliaries in the United States

Understanding the present treatment of auxiliaries is facilitated by reviewing the historical precedents. Though this history may differ in other countries, we suspect that there are elements in common.

Early History.-- Prior to 1925, the Census of Manufactures industry statistics included an allocation of the personnel and expenses of central offices to each of the individual manufacturing industries. This practice was later discontinued and the central office activity was recorded only in the aggregate for all manufacturing. The SIC for the late 30's included two major groups for auxiliaries: one major group for central administrative offices and one for all other auxiliary units. According to a Census Bureau internal memo these major groups were abolished in subsequent SIC editions because of the relatively small size of the groups and because they were not considered to be very meaningful industries, at least as far as production statistics were concerned.

Prior to 1940, most U.S. economic activity occurred with a high degree of autonomy at a single physical location or operating establishment of a company, whether or not that company was comprised of one or more locations. Separate support establishments existed to a limited extent and their classification had little impact on the overall quality of

industrial statistics. Auxiliary units were typically adjacent departments or facilities of an establishment. Although differing in nature from the major activity of the establishment, these units' sole function was to facilitate the performance of that major activity.

The early U.S. SIC manual took the position that support activities performed at separate locations should be classified with the industry they served. For manufacturing industries, the 1945 SIC Manual stated: "Auxiliary units, such as power plants, laboratories, repair shops, garages, or warehouses, operated by a manufacturing establishment for its own use, are classified according to the primary activity of the manufacturing establishment. Central and district administrative offices are included with the manufacturing establishment when they are not primarily wholesale outlets" (emphasis supplied). The basic reasoning behind this treatment seems to be the notion that the collection unit should capture all the important inputs associated with production (in manufacturing). Thus the inputs of the captive power plant which provides energy for manufacturing production must be included, as is purchased energy. It should be noted that the major focus of data collection efforts during this period was on manufacturing. Some statistics, total receipts, employment and payroll, were collected for selected nonmanufacturing industries, but these were by no means comprehensive.

1950 and After.-- In the 1950's, the U.S. Bureau of the Budget reopened the question of the appropriate presentation of statistics for central administrative offices and auxiliaries because it was noted that statistics published by different government agencies were not comparable. Furthermore, the agencies expressed concern over a number of statistical problems that had become evident due to the failure of the SIC manual to state a basic concept for identifying auxiliary units. For instance, Bureau of Labor Statistics noted that if the SIC guidelines as stated in the manual at that time were followed, a label printing plant of a chemical concern could have been classified in chemicals.

The Technical Committee on Standard Industrial Classification was directed to deal with this problem for the 1954 SIC revision. The discussions focused on the classification of economic activity at an establishment totally dedicated to output produced at another location of the same company. The key questions were: Should its output be independently classified and valued, or should it be accounted for as value added in the final good produced? And, if counted as value added in the industry of the related operating establishment, was this in violation of the

stated Office of Management and Budget classification principle that "...ownership should be disregarded in the definition of the reporting unit..."? Also if the value of the auxiliary activity were not traded directly in the marketplace, should it have any economic value in the industry classification of its own activity?

Most of the subsequent discussion centered on how the employment and wages for auxiliary units should be classified. Those who believed that the classification rules for auxiliaries should not be changed argued that these establishments did not have independent status and were not thought of by the trade or industry as belonging to the industries they would be assigned if that assignment were based on the activity performed by the establishments themselves. Advocates for changing the classification rules held that in the past manufacturing, retailing, repairing, and auxiliary activities frequently were carried on at the same time at the same location. However, by the mid-20th century, companies had begun to specialize, and auxiliary activities had moved off site and assumed independent economic value. Therefore, auxiliaries that met the definition of a separate establishment should be assigned industry codes according to products made or services rendered, and without regard to ownership. These views were expressed in a Census Bureau intrabureau memorandum of December 4, 1953, from Messrs. Maxwell R. Conklin and Julius Shislin to Messrs. Howard C. Grieves and Morris H. Hansen entitled "Classification and Tabulation of Central Administrative Offices and Auxiliaries Recognized as Separate Establishments."

The final decision was to leave the basic treatment of auxiliaries unchanged, but to clarify the definition and criteria for classifying the establishments. Although the establishment as the classification unit had originally been chosen to eliminate ownership as a factor in compiling and reporting industry statistics, the classification of auxiliaries would continue to be based on ownership. This inconsistency seems to have created problems from the very start.

The 1957 and subsequent SIC revisions continued to refine the rules for auxiliary classification without changing the initial decision to classify auxiliaries in the industry of the establishment they served. For clarification, it was specified that auxiliaries were non-goods producing establishments. Thus, separate units engaged in a manufacturing activity would not be treated as auxiliaries, but should be coded on the basis of the activity performed. The 1957 SIC Manual included a separate section on auxiliary units and how they should be coded.

Recent Factors Complicating the Identification and Classification of Auxiliaries.-- As production activities have become more diverse, complex, and integrated, the classification of auxiliary operations has taken on more and more qualifiers. For example:

- If the activity was a construction or manufacturing operation, producing an intermediate product for its own company's consumption, it was counted as an operating establishment and classified according to its own output. Thus a captive automobile stamping plant was classified in the automobile stamping industry.
- If the activity was essential to the final product but it did not produce a physical component of the final product, it was counted as an auxiliary and classified in the industry of the final product. Thus a parts distribution warehouse for an automobile manufacturer was classified in the automobile industry.
- If there was auxiliary-type activity distinct from the manufacturing or mining activity at the same location as the operating establishment, two establishments were enumerated, one as auxiliary and one as operating, but both were classified into the industry of the operating establishment. Thus the headquarters or central office located at an automobile assembly plant was treated as a separate unit and was classified in the automobile assembly industry.

For establishments where distinct and separate economic activities were performed at a single physical location (such as construction activities carried out at of the same physical location as a lumber yard), each activity was treated as a separate establishment, rather than a secondary product. This treatment also applied to a unit that performed auxiliary activities at the same physical location as an operating unit. The two units were considered separate establishments if all of the following conditions were met:

- (1) Separate reports can be prepared for each unit on number of employees, wages or salaries, sales or receipts, or other types of establishment data; and
- (2) the unit that performs auxiliary activities serves other establishments of the same enterprise; and
- (3) employment is significant for both units.

Another recent phenomena that has complicated classification was the emergence of a new type of economic activity called "central

management." These establishments were unique. The type of personnel employed and the service performed were generic and could transfer from servicing a manufacturing operation, to a retailer, to a government operation with little or no conversion costs. The geographic locations of central management units tended to be similar, usually appearing in or near large cities, and unrelated to the location of the activity serviced. As a result, for example, users of the U.S. economic censuses are typically surprised to find mining industries employment in Washington, D.C., which has no mining activity.

With the emergence of diversified companies and conglomerates, where the auxiliary establishment provided support to several, totally unrelated, outputs of the company, the problem of coding the auxiliary to a specific 4-digit SIC industry became further complicated. Because of these problems, Census decided to classify and publish auxiliary data at a 3- or 2-digit SIC level only. Even this is a problem for conglomerate corporations that spread across several sectors of the economy.

As the goods-producing economic activities in the economy became more complex, so did the statistical problems. The cost of inputs which were not production-worker related and not materially part of the output were becoming more significant. These costs were reflected in the value of the product shipped whether performed at the same establishment or not. However, when these costs were incurred at the location where the good was produced, the specific expenses associated with the costs, i.e. employment and payroll, etc. were included in industry statistics for the expenses of the operating establishment, as published in the Census of Manufactures. When these costs were incurred at separate locations--which was true for large companies where the trend was for these auxiliary or support-type activities to occur at locations physically separated from the operating establishment--the costs, i.e. employment and payroll were not included in the expenses of the operating establishment. This omission became a statistical problem and an attempt was made to include the payroll employment of manufacturing auxiliaries in the manufacturing industry statistics. Classification at the 4-digit SIC level was often impossible.

Still more statistical complications occurred as auxiliaries, which historically had no receipts, found themselves in the position where some offices were able to exploit their auxiliary function capabilities by selling their services on the open market, after the intra-company needs were accommodated. Now the units were not only engaged in support services but were providing services in the market as well. The Bureau of the Census compared employment and payroll to receipts to determine

if these establishments were operating or auxiliaries. A high ratio indicated that the units employment was primarily engaged in support operations. According to Census Bureau data for 1987, auxiliaries had \$64 billion dollars of receipts from customers outside their parent company. By 1992, the receipts of auxiliaries had grown to \$141 billion dollars, making these support establishments one of the fastest growing services providers in the economy.

For data users, there can be inconsistencies in published statistics due to differing treatments of auxiliary data especially if more than one data source is used in the analysis. In the U.S., the BLS publishes wage and employment information by SIC for all industries excluding agriculture and public administration. The published industry statistics include data for both operating and auxiliary establishments classified to a particular 4-digit SIC. Separate wage and employment data for operating establishments only, or for auxiliaries only, are not tabulated. In contrast, the Census Bureau, which publishes receipts and expenditures information by SIC for all industries excluding agricultural services, railroads, and public administration, follows a different rule. The Census Bureau's published industry statistics do not always include data for both operating and auxiliary establishments.

As a result of the difficulties in classifying auxiliaries, substantial differences exist in BLS and Census data. (See table 3). For example, in manufacturing Census reports over a half million more workers in auxiliaries than does BLS (1 1/3 million workers in Census data, 3/4 million in BLS). We do not know if those half million workers are classified by BLS into operating units in manufacturing, or into some other industries. For FIRE and for Services, for example, BLS counts of auxiliary employment exceed those reported by Census. Overall, Census reported 3.3 million workers in auxiliary units, BLS reported 2.4 million. Because the two agencies classify auxiliaries on the basis of different information, and because information on the industry served is not always the best quality (response rates to auxiliary questionnaires are relatively poor, for example), the distribution of differences in the two agencies' classifications are probably complex. These differences contribute to overall differences in employment reported by the two agencies and may even account for a substantial portion of the difference.

Table 3. Comparison of Census and BLS Auxiliary Data

The statistical implications of the differences noted in these tables are difficult to assess. However, the data support the notion that the dual criteria classification technique and implementation procedures in general can lead to inconsistent industry data because consistent implementation is difficult.

Table 3a. Number of Auxiliary Establishments by Industry

	1994 Census Establishments	1994 BLS Establishments
Mining	1136	589
Construction	417	2206
Manufacturing	11611	7811
Transportation	2817	3576
Wholesale Trade	5718	6533
Retail Trade	16057	12323
FIRE	1432	5289
Services	9534	13207
Total	48,722	52,230

Table 3b. Comparison of Census and BLS Auxiliary Employment by Industry

	1994 Census Employment	1994 BLS Employment
Mining	85275	17102
Construction	19468	38768
Manufacturing	1303701	723278
Transportation	173796	171799
Wholesale Trade	329591	173946
Retail Trade	845487	499180
FIRE	73558	283321
Services	459984	507828
Total	3290860	2415222

Issues and Options Regarding the Treatment of Auxiliary (Ancillary) Units in NAICS

--In revisiting this issue, it was felt that the following pertinent facts needed to be taken into account:

1. In the United States, there is a long history of problems associated with the current treatment of auxiliaries which have not as yet been resolved.
2. In the three North American countries differences in the application of the "industry-served" principle create non-comparable data.
3. The needs for statistics today are different from what they were in the 1950's. In an earlier day, statistics on manufacturing were regarded as primary. Today, most advanced economies are services economies, and the "industry-served" treatment of services auxiliary units has the effect of hiding part of the shift to a services economy.

For NAICS, it was agreed that the classification system would be based on a production-oriented or supply-based conceptual framework. According to ECPC issues paper #1 on conceptual frameworks (Federal Register, July 26, 1994), production units are to be grouped according to similarities in their production process.

Five treatment options for auxiliary units were subsequently identified:

1. Status Quo--Each country would continue defining and classifying auxiliary units as is their current practice.
2. Designate a unit as an auxiliary only when it has neither receipts nor billings.
3. Keep current treatment, but have a three country agreement as to what activities would be considered auxiliary.
4. Keep current treatment, but have a three country agreement as to what activities would be considered auxiliary (as in option 3) and add a NAICS industry for Head Offices.
5. Classify all units on the basis of the activity performed.

For NAICS, the key question that needs to be considered in regards to auxiliaries is: What treatment for these

establishments is most consistent with the economic concept for NAICS?

The five treatment options for auxiliaries each has advantages and disadvantages. These are:

1. Status Quo--Each country would continue defining and classifying auxiliary units as is their current practice.

a. Advantages-No additional work required. Industry time series would not be affected.

b. Disadvantages-(1) A consistent classification principle is not used throughout the whole system. Goods producers are classified based on what they do, even if they produce only for other units of the same company; service producers are classified based on what they do if they sell to others, but on whom they serve if they only supply other units of the same company. (2) Based on current practices, the scope of certain NAICS producing industries would not be comparable among the three countries, i.e. research and development, trucking, wholesale trade industries. (See earlier table 1.) (3) Within the United States, statistical inconsistencies between agencies in regard to classifying these units would continue. For data users, this would further complicate achieving North American comparability. (See earlier table 3.)

2. Designate a unit as an auxiliary only when it has neither receipts nor billings.

a. Advantages-(1) This change would improve comparability among the three countries somewhat because it would move the United States in the direction of Canada and Mexico. Currently, in the United States, over 14% of the units classified as auxiliaries have receipts, or sales. These units accounted for 20 percent of the employment in auxiliaries. According to the 1992 Census, the receipts of auxiliaries were \$141 billion dollars. (2) This change would not require imputing output when there are no receipts.

b. Disadvantages-The U.S. statistical system is not centralized. Agencies independently classify units. Under the current system, the Bureau of Labor Statistics does not

currently have the necessary information to classify according to receipts, though it could possibly obtain it in the future, and probably could not obtain information on intra-company billings. For this reason, the U.S. might have difficulty following this rule, though Canada can.

3. Keep current treatment, but have a three country agreement as to what activities would be considered auxiliary.

a. Advantages-NAICS producing industries would be consistently defined between the three countries. Time series changes would occur only for those cases where units are being redefined between auxiliary and operating.

b. Disadvantage-(1) The U.S. experience indicates that consistent definitions for auxiliary activities and producing industries do not necessarily lead to comparable statistics. In the U.S., both the Bureau of the Census (Census) and the Bureau of Labor Statistics (BLS) follow the SIC guidelines for classifying units, however, their data are not consistent. (See earlier table 3.) (2) The current practice requires that auxiliary units be coded based on the classification for the industry they serve. The U.S. Census does not classify auxiliaries to 4-digit SIC because many of these units serve many SIC's. Force classifying such units will cause distortions in the statistics for industries. (3) A consistent classification principle is not used throughout the whole system. Goods producers are classified based on what they do, even if they produce only for other units of the same company; service producers are classified based on what they do if they sell to others, but on whom they serve if they only supply other units of the same company.

4. Keep current treatment but have a three country agreement as to what activities would be considered auxiliary (as in option 3) and add a NAICS industry for Head Offices.

a. Advantages-(1) Since Head offices often serve establishments in more than one industry, the creation of a separate NAICS industry for them would eliminate the need to force code a large segment of auxiliaries. (2) The inclusion of an industry in NAICS for Head Offices improves industry geographic statistics. Under the current practice, the State of Delaware is shown as a large chemical producer because the chemical producer's headquarters units are located there.

b. Disadvantages-(1) As for option 3, the U.S. experience indicates that consistent definitions for auxiliary activities and producing industries do not necessarily lead to comparable statistics. In the U.S., both the Bureau of the Census (Census) and the Bureau of Labor Statistics (BLS) follow the SIC guidelines for classifying units, however, their data are not consistent. (See earlier table 3.) (2) Creating a Head Office industry in NAICS while still maintaining the auxiliary activity distinction in the classification system is a problem. All NAICS classifications are for producing units. Are Head Offices to be considered producing units? If so, the concept of support verses producing activities becomes very blurred when you make this leap. (3) This treatment would have a significant impact on time series. (Table 4 shows the impact of the change on U.S. employment statistics). Manufacturing employment would show the most significant decline, 1.2 million using the Census statistics. The decline would be only 1/2 as great, or .7 million, using BLS statistics. Service industries (including CAO's) and the transportation industries would both show increases in employment.

Table 4a and b-Table 4a shows the impact on United States sector employment statistics if all auxiliaries were classified on the basis of what they do, rather than whom they serve. This table shows the number of employees by sector at auxiliary establishments as reported by Census. The second column of figures shows employment redistributed based on the primary activity. The last column shows the net impact of the change on sector employment. The employment of CAO's is shown separately.

Table 4a - 1992 Census Employment in the United States Related to the Classification of Auxiliaries
(Employees)

Sector	Present	Activity	Net Change
Minerals	117299		-117299
Construction	17787		-17787
Manufacturing	1253623		-1253623
Transportation	121977	361509	+239532
Wholesale	337390		-337390
Retail	893487		-893487
FIRE	64412		-64412
Services	423718	263847	-159071
CAO & Other		2604337	+2604337

Table 4b. Census Auxiliary Employment by Industry and CAO Activity, 1992

	All	CAO's
Mining	117299	91307
Construction	17787	15284
Manufacturing	1253623	761407
Transportation	121977	102768
Wholesale Trade	337390	202818
Retail Trade	893487	564362
FIRE	64412	60970
Services	423718	335010

	3229693	2133926
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5. Classify all units on the basis of the activity performed.

a. Advantages-(1) Simplifies classification and requires less information. (2) Improves the likelihood that the scope and content of an industry will be the same even though different agencies or countries may be classifying the unit. (3) Easy to explain and understand-there is one principle for classifying all units. (4) Statistics produced are clearer and more meaningful. The labor figures that this revised classification treatment would provide would more closely reflect the activities performed in the economy. The current figures are a mixture of activity and ownership principles with neither portion being independently discernible.

b. Disadvantages-(1) Time series will be affected. (See table 4). (2) A procedure for measuring or imputing output would need to be provided in order to compute averages, etc; imputations would be larger and more difficult than under option 4.

Summary and Conclusions

In the historical sequence of spinning off--or contracting out--business services from goods producing units (or from any other economic producing units), one may distinguish four distinct stages, corresponding to the level of development of the enterprise and of the economy.

In the first stage, the function or service is performed internally within the manufacturing (or other) unit. Bob Cratchet sits in the unheated back of Scrooge & Co.'s offices performing its accounting, bookkeeping, and computational services. XYZ Mfg. Co. employees, who may have other duties as well, carry out storage and inventory control for this small company. Though these activities provide essential service inputs for the operation of the enterprise, no specific or separate unit exists that can be classified in an industry classification system, and no separate records are kept that describe the inputs into and outputs from an economic producing unit.

In the second stage, the companies grow larger and the economy more complex, with increased specialization of economic functions. Scrooge & Co. and the XYZ Mfg. Co. have prospered. Bob Cratchet has an accounting department. The XYZ Mfg. Co. sets up a storage and inventory control branch, under the guidance of

a separate manager. But still, no separate records are kept of these activities, and intracompany users are not charged separately for these services. Again, no separate units exist that can be classified, and no separate records exist that would link the inputs and outputs of these economic activities into producing units.

In the third stage, Scrooge & Co. Ltd, PLC and the XYZ Mfg. Corp. have become large multi-establishment enterprises, perhaps diversified into different industries. Scrooge & Co. has established a separate accounting and data services unit, under Bob Cratchet, Vice President; the XYZ Mfg. Corp. has long since set up a separate chain of warehouses to provide storage, inventory control, and other logistics services for its manufacturing establishments, and also as well for its wholesale distribution and growing chain of retail outlets. Statistical surveys identify these units, and call them "auxiliaries." These separate auxiliary units may bill other parts of the corporation for their services, and Cratchet, for example, has discovered that the same efficiencies of his unit that have been so responsible for Scrooge & Co.'s success can now produce services that can be sold to other enterprises, though his unit still provides captive services to Scrooge & Co., Ltd. Cratchet's unit is a profit center in the Scrooge industrial empire, and has not only internal billing records for the services it provides to other parts of Scrooge, but also revenue from outside the company. At this point, separate production units exist also for the auxiliary warehouse establishments of the XYZ Mfg. Corp. Though substantial imputation for output might have to be made for some of these establishments, records and data on sales exist for others.

In the fourth stage, increased economic specialization leads enterprises to contract with separately-owned accounting and data processing firms, or to contract for storage, inventory control, and other logistic services with independently-owned warehouses. Scrooge & Co. spins off Data Services, Scrooge and Cratchet as a separate corporation. The United States, for example has private warehouses, contract warehouses, and public warehouses, all of which may do the same thing, but the private warehouse serves only its owning enterprise, whereas the others deal with enterprises other than their own. Because these independently-owned establishments sell their services on the market, all industry classification systems would treat them as, respectively, accounting establishments, or data processing establishments, or warehouse establishments.

It is quite clear that neither stages 1 nor 2 can or should be classified in an industry classification system separately from

the user of the services. There is no disagreement on that. Also, everyone agrees that stage 4 establishments should be classified to the industry of their own activity.

The real issue to be faced by industry classification systems is: Where should an industry classification system first recognize accounting, or data processing, or warehouse, establishments, and classify them according to their own economic activity?

The traditional view of classification systems, and of the SNA, seems to be: Only draw the line at the division between stages 3 and 4. That is, only draw the line when ownership of the producer of the services differs from the ownership of the using establishment.

The question we pose in this paper is: Why not classify these establishments separately when they move to stage 3, the first stage that these auxiliary services are provided by a separate establishment, and the first stage where separate records can be obtained to impute or measure their sales receipts?

Our argument for drawing the line between stages 2 and 3, rather than between stages 3 and 4, has four parts.

One, for an industry system based on an economic concept, all classification units must be treated equivalently according to the concept. The production concept adopted for NAICS requires that establishments that have similar production processes be placed in the same industry. It makes little economic sense to put some warehouses in the retail trade industry because they are owned and provide services to grocery store chains, to put other warehouses in the manufacturing sector because they are owned by and provide warehousing services to manufacturers, and to put other warehouses (which may also provide services to grocery stores and to manufacturing enterprises) in a separate warehousing industry solely because they are not owned by their clients. We want the manufacturing sector of the economy to describe manufacturing activities, the retailing sector of the economy to describe retailing activities, and the warehousing sector in NAICS to describe warehousing. The economic activities that actually exist in the economy are best depicted if auxiliary establishments are classified to the industry of their activity, and not the industry of their clients.

Second, the major reason why we in the United States (and, we believe, in the rest of the world) now classify auxiliaries to the industry served is historical. The practice began long ago, when it was thought that only manufacturing (or primarily manufacturing) mattered, and data collection on service

industries were fragmentary and somewhat of an afterthought to the main program of industry statistics. (And historically, coding auxiliaries of manufacturing enterprises to manufacturing assured that data would be collected on them, since there was little systematic collection of services industries.) That time has long since passed. It was probably not even current in the early 1950's, when the question of auxiliaries was last seriously discussed in the United States. Whatever the historical reasons for the present practice, they do not apply to a modern economy, nor to a modern statistical program.

Some opposition to changing the treatment of auxiliaries arises out of reluctance to break historical time series. Though we recognize that preserving time series has its own value, that is not the basic issue here. The four-stage scenario depicted above inevitably generates a natural break in time series at some point, as business services of the type provided by auxiliaries are in the process of being spun off and contracted out--that is, as the economy changes from conditions of the "old days" when these services were performed within the plant. Drawing the line between stages 2 and 3 picks up these real economic developments sooner than would be the case if the line were drawn between stages 3 and 4. The time series is broken naturally, in any case. We believe it is more realistic to pick up the emerging services activities between stages 2 and 3 (or in other words as early as they can be recognized as separate activities), rather than (as would be the case by drawing the line between stages 3 and 4) as late as possible.

We have also heard the argument that one should not advance the line from the present stage 3/4 to the position we advocate, namely stage 2/3, because one cannot go even further. One should not classify auxiliaries into their own industry, it is argued, because some of those same activities will still remain in manufacturing and other industries. This argument seems to us misconceived. There are always activities--secondary products, production of inputs for own use, and so forth--carried on within economic units that are not their primary activities. A foundry industry, for example, is not intended to capture every casting made in the economy, it is intended to group together the economic activities of establishments that are primarily foundries. Similarly, an accounting industry, or a data services industry, is not intended to capture every piece of accounting that is done in the economy, or every single calculation that is executed. Nor is a warehouse industry intended to capture every bit of storage that takes place in an economy. An accounting industry groups establishments that are primarily accounting establishments, and a warehouse industry groups establishments that are primarily warehouses.

Our third argument in favor of drawing the line between stages 3 and 4 is that the past attempt to classify auxiliaries to the industry served has shown itself increasingly unworkable in a modern economy. This is detailed in the paper. Even within one country's statistical establishments, the "industry served" rule for classifying establishments has created inconsistent data. It is hard for us to believe that any less inconsistency is created by applying the same rule across the statistical systems of different countries. These inconsistencies created by the industry served rule are pragmatic reasons for abandoning that rule.

Fourth, the major problems created by classifying auxiliaries to their own industry arise when data on receipts are either missing, or account for too small a part of the establishment's total activity to be considered representative, or where internal billing for intracompany use of auxiliary services is either not the enterprise practice or transfer prices are not realistic valuations. We recognize these problems, and that they are substantial. We do not believe they are substantially greater than the problems in imputing the value of captive goods producing establishments (which imputations are performed routinely), aside from the fact that measuring services is, in general, more difficult than measuring goods.

In conclusion, we believe that the economic arguments justify classifying auxiliaries to the industry of their own activity, and that the major reason why statistical systems classify them to the industry served arise from historical conditions that no longer apply to a modern economy.