

CONTROVERSY IN THE U.S.A. ON TRUE COSTS

By KIYOSHI OKAMOTO

Lecturer of Accounting

I *Standard Costs As True Costs*

Which are true costs, actual costs, or standard costs? In earlier days, nobody doubted the validity of actual costs. Their prime position began to be threatened only when standard costs were introduced.¹

Proponents of standard costs insist that: "....., if the standard is set after careful investigation, standard cost is the nearest possible approach to the true cost of producing the goods finished or in process, and (that) any excess of actual over standard cost is waste and, therefore, a loss, which must not be permitted to attach itself as a part of the product cost."² Unfortunately, the American accounting profession has not yet been able to settle the problem.³ It must be pointed out here that the situation is also quite the same in Japan⁴ and that this viewpoint about standard costs lurks deep in the consciousness of Japanese accounting scholars. For example, our *Regulations of Financial Statements*, published in 1949 by the Business Accounting Deliberation Council, prescribe that any standard cost variances must be treated as non-operating profit-and-loss items. This procedure is based upon the theory that the variances are merely the result of wastes or inefficiencies, so that they cannot be considered either product costs or period costs.

Then, if standard costs are true costs, as the Council advocates, the traditional financial accounting theory based on so-called invested or actual costs must be broken down. Therefore, every person who studies accountancy must determine his attitude toward the problem. But when he begins to find a solution to the problem, he cannot help facing a big difficulty at the very outset.

II *Vague Concept of Actual Costs*

It is generally accepted that standard costs which claim to be true costs are not basic

¹ Many accountants take the position that there cannot be true costs because costs depend on the purpose to be served. It is necessary, however, for them to reconsider whether standard costs prepared for cost control are more appropriate for determination of periodic profit than actual costs, or not.

² Reprinted with permission from Schlatter, C.F. & Schlatter, W.J., *Cost Accounting* (New York: John Wiley & Sons, Inc., 1957 2nd ed.) pp. 571—572.

³ Matz, A., Curry, O.J. & Frank, G.W., *Cost Accounting* (New York: South Western Publishing Co., 1957 2nd ed.) pp. 601—606.

⁴ In Germany also, Prof. Nowak, who studied the industrial cost-accounting systems with a suspicion of standard costs being overestimated, states, "...die Plankosten doch in einem höheren Sinne die „wharen“ Kosten darstellen sollen". See Nowak, Paul, *Kostenrechnungssysteme in der Industrie*, Westdeucher Verlag. 1954 p. 101.

but current standard costs. This point presents no problem. The concept of current standard costs, of course, may utilize three types of standard costs according to their tightness: expected actual; normal; and ideal types. As to actual costs, their concept also seems to be quite clear to us, because almost all scholars agree that the actual cost concept consists of two essential elements: (1) they are measured by actual cash payments or their equivalent at the time of outlay; (2) they are computed only after completion of the production of the goods in question.⁵ If, however, we further investigate this seemingly clear concept of actual cost accounting procedures, we find the concept quite vague. Let me give one example to illustrate this:

In overhead cost accounting manufacturing expenses are sometimes charged to a product by the normal burden rate, based on activity at practical capacity multiplied by the number of actual machine hours required to produce the product. Then the question arises whether the manufacturing overhead cost of the product so applied is actual cost or not. Many scholars consider it not an actual but a normal cost, because actual cost to them must be the historical cost which is computed by the actual acquisition price multiplied by the actual quantity consumed and the price factor in the above procedure is not actual but predetermined normal.⁶ On the other hand, there are many other scholars who consider this an actual cost. To these scholars any cost is an actual cost which is calculated by the actual quantity factor, even if a predetermined price factor is used.⁷ Still further, there are other scholars who consider it a half-standard cost, because if we multiply the above-mentioned burden rate by the number of standard machine hours, we can obtain the standard manufacturing overhead cost of the product.⁸ Thus the opinions on the same cost found by the same procedure are divided into actual, normal, and even half-standard cost group and each group is divided further into two sub-groups as to true cost. For example, Professors Schlatter and Schlatter consider it a half-standard and also true cost, while Professor Watanabe considers it a half-standard, but not true cost.⁹ Then, what are the actual costs that have been criticized and attacked by standard-cost proponents?

III *Scope and Method*

As concepts and theories are of historical nature and change their form and content with the lapse of time, I shall take a historical approach. In this short article the scope of the investigation is limited to the period of the United States that covers from the end of the

⁵ Lang, T. (editor), *Cost Accountants' Hand Book* (New York: The Ronald Press Co., 1947) p. 219; A.A.A., "Report of the Committee on Cost Concepts and Standards" *The Accounting Review* Vol. XXVII, No. 2, Apr. 1952, p. 176.; Iwata, Katano, Matumoto & Bamba (editors), *Bookkeeping and Accounting Handbook* (Tokyo: Dōbunkan 1950) p. 943 etc.

⁶ Van Sickle, C.L., *Cost Accounting. Fundamentals and Procedures* (New York: Harper and Brothers, 2nd ed. 1947) p. 88. Japanese Tax Administration Agency maintains this viewpoint.

⁷ Matsumoto, M. (editor), *Detailed Explanations of Cost Accounting* (Tokyo: Shunjūsha, 1959) pp. 22—23. This view is especially dominant among Japanese and German accounting scholars.

⁸ Schlatter & Schlatter, *Ibid.*, p. 513.

⁹ Watanabe, S., "Actual Cost Accounting" in *Cost Accounting* (Tokyo: Shunjūsha, 1951, Modern Accounting Practice Course Vol. 3) pp. 97—98.

19th century to about 1920.¹⁰ Fortunately, we have a splendid work on the same subject: Professor Theodore Lang published an article on "Concepts of Cost, Past and Present" in which he deduced the following conclusion from his historical research: "The cost accountant has come a long way, gradually abandoning faith in an actual cost and going wholeheartedly over to the idea that a standard cost is really the true cost."¹¹ So we will follow step by step in his research path, comparing his historical data with ours.

IV *Limitations of Actual Costs*

Before starting our historical work it must be pointed out that Professor Theodore Lang might underestimate the characteristics of actual costs. He showed very vividly that the obtaining of the actual unit cost of finished product was not so simple as a cost accountant might have conceived from enumerating many good examples. He then summarized the limitations of actual costs into five points:

- "1. There is no unanimity as to the proper items to be included in manufacturing expenses.
2. Proration is at best a hazardous business.
3. Fluctuation in actual costs are no indication of changes in efficiency.
4. They produce high costs in periods of low volume, and vice versa.
5. They create a serious administrative problem at the end of each month."¹²

Are the first two points, however, real limitations imputable to actual costs only? For example, it is indeed a fact that there are such debatable items as interest on investment, etc. Whether they should be included in the costs of a product or not is a question. But the problem has to do rather with the general or basic concept of cost and must be considered from the accounting entity viewpoint.¹³ Even in standard cost accounting, interest is debatable item whose inclusion as a product cost is not settled. When the limitations of actual costs are to be pointed out, they should be inherent in actual costs only. The same logic can be applied to the proration of actual costs. The last three points are the real limitations which will be considered later in detail.

V *Early Standard Costs Not Considered True Costs*

Professor Masao Matsumoto metaphorically explains that standard cost accounting has its parents; the father is the scientific management movement which rose suddenly as a means of labor management at the end of the 19th century, and the mother is the theory

¹⁰ One of the important keys to the problem is, as I shall mention later, why the practical-capacity rate changed into the average-capacity rate. So the period is limited as a preliminary step to about 1920 when the latter was gradually gaining ground.

¹¹ Lang, T., "Concepts of Cost, Past and Present," in *Studies in Costing* (edited by Solomons, D., London: Sweet & Maxwell, Ltd, 1952) pp. 85—86. This is reprinted from the *NA(C)A Bulletin*, Vol. XXVIII, No. 22, section 1, July 15, 1947. Used by permission.

¹² Lang, *Ibid.* p. 82.

¹³ Paton, W.A. & Littleton, A.C., *An Introduction to Corporate Accounting Standards* (A.A.A. Monograph No. 3, 1940) pp. 43—44.

of not including idle costs in the costs of a product.¹⁴ Let us, then, investigate the relationship between the true cost and the early standard costs which derived much of their characters from their father.¹⁵

Scientific management movement began in the form of task management by F.W. Taylor. He established the task scientifically by means of time studies and this was so difficult that it could be achieved only by a first-class man. So it is needless to say that early standard costs were ideal standard costs because they were set by efficiency engineers based on such hard-tasks. J.R. Wildman, for example, wrote in his work: "Generally speaking, from the standpoint of costs, standards are unattainable. A comparison of actual costs with standard costs determines the percentage of inefficiency." To him standard costs were ideal costs which provided for one hundred percent efficiency.¹⁶

H. Emerson, one of the earliest writers on standard cost accounting, thought that the true cost was the predetermined total unit cost of a product which could be calculated by adding the predetermined unit wastes to the predetermined unit standard cost of the product and that the difference between the true cost and the actual unit cost could be carried to the efficiency account at the end of the fiscal year.¹⁷ So he did not think standard costs to be true costs. F.E. Webner and J.R. Wildman concurred.¹⁸ Seven years later, F.J. Knoepfel, agreed with them. According to Knoepfel, the true cost was calculated by adding the cost of inefficiencies due to shop organization to the standard cost of a product, and the difference between the actual cost and the true cost was the cost of inefficiencies due to the non-shop organization.¹⁹ Thus, we can reach the following conclusion: The early standard costs whose origin can be directly traced to the scientific management movement were ideal or unattainable standard costs.²⁰ Their tightness was so high that the standard costs themselves were not considered true costs at that time. There exists no element in them that can be connected with the standard-cost-is-true-cost theory.

On the other hand, it must be pointed out that Emerson, Knoepfel, and others did attack actual costs, saying that actual costs were incorrect or not true costs. Was not it enough for them merely to say that actual costs were irrelevant to cost control? We must seek for the origin of the standard-cost-is-true-cost theory in the other type of early standard costs which derived much of their character from their mother.

¹⁴ Matsumoto, M., *Standard Cost Accounting* (Tokyo: Dōbunkan, rev.ed. 1953) p. 72.

¹⁵ Prof. Lang explains that the basic idea of a normal overhead rate logically led to set standard material and labor costs (Lang, *Ibid.*, p. 85). But historically speaking the reverse was the case; standard labor and material costs might be established earlier by efficiency engineers.

¹⁶ Wildman, J.R., *Cost Accounting* (New York: The Accountancy Publishing Co., 1911) p. 4., pp. 89—93.

¹⁷ Emerson, H., *Efficiency as a Basis for Operation and Wages* (New York: Works Management Library, 1911) pp. 134—167.

¹⁸ Webner, F.E., *Factory Costs* (New York: The Ronald Press Co., 1911) pp. 290—291. Wildman, *Ibid.* pp. 93—97.

¹⁹ Knoepfel, F.J., "Fundamentals of Accounting for Industrial Waste", *The Journal of Accountancy*, Vol. 25, No. 5, May 1918, pp. 354—358. By the way Knoepfel's cost of inefficiencies due to shop organization is nothing but efficiency variance and his cost of inefficiencies due to the non-shop organization is the total of budget variance and capacity variance in present standard cost accounting.

²⁰ There are slight differences of the tightness of standard costs among the authors at that time; for example, Emerson, as pointed out by D. Solomons, seems to vacillate between an ideal and an attainable standard (Solomons, *Ibid.* p. 44). Webner, on the other hand, seems to write about normal standard (Webner, *Ibid.* p. 290).

VI *Idle Cost Problem*

It was the idle cost problem that made the other type of standard cost come into the world. In this connection, all such scholars as Solomons, Garner, Brummet, and others refer to an article written by J. Whitmore.²¹ In the early days all cost accountants believed that every expense incurred in the course of producing a product constituted the legitimate cost of the product. But Whitmore found it quite absurd to include all the expenses in the cost of the product. He observed: "Accidents or blunders occur and the cost, as in some instances the cost of unused factory capacity, may be so great that it would be absurd to state it as part of the cost of the product."²² From this point, he started to reach the idea of distinguishing proper and improper cost and then the basic idea of standard cost accounting. Thus this type of standard cost was borne with the consciousness of true cost.

Now a question arises here. An idle cost is essentially a loss because it is the cost of unused capacity. Therefore the theory of excluding idle cost from product cost is merely a theoretical development in actual cost accounting. The exclusion has no relation to standard cost, because we shall be able to get "purer" actual cost after the exclusion. And yet, why could Whitmore himself come to the idea of standard cost? Why do many scholars misunderstand as if idle cost could be excluded from product cost only in standard cost accounting?²³ It is necessary for us to investigate the reason why Whitmore and other cost accountants in those days advocated the exclusion of idle cost from product cost.

VII *Rise of Normal Burden Rate Based on Practical Capacity*

In the early years of the 19th century, American cost accounting began in the form of prime cost estimates as described by Metcalfe and Webner,²⁴ the form of which developed later into actual prime costing or the estimate and test plan of cost-finding. In those days manufacturing overhead costs were not considered to be product costs. They were jumbled together with selling and administrative expenses and were applied to products on some arbitrary basis. With the lapse of time they gradually increased, so that manufacturers could not ignore them. Some manufacturers in the latter part of the 19th century began to include a proper portion of all "unproductive" material and labor in the prime cost of a

²¹ Solomons, *Ibid.* p. 42. Garner, S.P., *Evolution of Cost Accounting to 1925* (Alabama: Univ. of Alabama Press, 1954) pp. 134—135. Brummet, R.L., *Overhead Costing, The Costing of Manufactured Products* (Ann Arbor: Univ. of Michigan, 1957, Michigan Business Studies, Vol. XIII No.2) p. 12.

²² Whitmore, J., "Shoe Factory Cost Accounts." *The Journal of Accountancy* Vol. 6, No. 1, May 1908, p. 14. Used by permission.

²³ March, G.M., *Cost Accounting* (New York: McGraw-Hill Book Co., 1st ed. 1949) pp. 433—434.

²⁴ Metcalfe, H., *The Cost of Manufactures* (New York: John Wiley and Sons, 3rd ed, 1900) pp. 57—75. pp. 311—312. Webner, *Ibid.* p. 36.

product.²⁵ In this way unproductive manufacturing overhead costs were slowly gaining the character of product costs. On the other hand, the general tendency among the then shop managers was to separate selling and administrative expenses from manufacturing overhead costs for the reason that the former expenses were uncontrollable by shop managers.²⁶ Thus recognizing manufacturing overhead cost as an independent manufacturing cost element, manufacturers soon found a curious phenomenon: unit manufacturing overhead costs fluctuated strikingly with the volume of production. To cope with this, some managers endeavored to predetermine correctly the fluctuating historical overhead rates.²⁷ But most managers had keen interest not in merely ascertaining accurate historical costs but in reducing them, because American industrial enterprises began to fall into cutthroat competition and tried to push their products into the European market. In 1898 H.L. Arnold started to investigate the actual cost-accounting practices in several successful factories.²⁸ In all enterprises, according to his investigation, current actual costs were collected for comparison with the actual costs of prior periods. Although the comparisons indicated the trend of actual costs, they did not show the efficiency of workmen. Changes of actual costs might be the result of the efficiency or the result of the factors over which the management had no control. One of the most serious obstacles in the cost comparisons was found to be idle costs. Without removing these obstacles in the comparisons, managers could not find changes in efficiency. On the other hand, manufacturers soon realized that it was wiser for them to use plant facilities fully than to cut rates of workers for the purpose of cost reduction. Therefore to grasp the correct full amount of idle costs was the starting point for efficient management—cost control and capacity control. It was the normal burden rate based on practical capacity that was devised to meet the managers' requirements by A.H. Church.²⁹

After he carefully examined the existing three overhead application methods: the percentage-on-wages method; the hourly burden plan (direct labor hour method); and the old machine-rate method, he paid the greatest attention to the last method. This method indeed, he thought, had two weak points: (a) it was not a complete method in the sense that it did not apply all the charges for a given period but applied only certain machine cost items; (b) the amount of under-applied burden was "just lost sight of." But it had excellent

²⁵ For example, the prime cost concept in National Switch and Signal Company was as follows: "The value of all stores issued for a production order, all labor directly employed in its completion, and the proper percentage of all unproductive labor and material which is chargeable to it, determines, what is here called the prime cost of that order". Arnold, H.L., *The Complete Cost-Keeper* (New York: The Engineering Magazine Press, 1901) p. 204.

²⁶ Arnold, *Ibid.* p. 79. Evans, H.A., *Cost Keeping and Scientific Management* (McGraw-Hill Book Co., 1911) p. 29.

²⁷ For example, see the overhead application in the Hyatt Roller Bearing Company (Arnold, *Ibid.* p. 32.) and in G.L. Fowler (Garner, *Ibid.* p. 205.).

²⁸ Arnold, *Complete Cost Keeper*, 1901. Arnold, *The Factory Manager and Accountant* (New York: The Engineering Magazine Press, 1903)

²⁹ Church, A.H., "The Proper Distribution of Establishment Charges", *The Engineering Magazine*, XXI and XXII (1901). Unfortunately I could not see the magazine. In this article quotations are made from Church, *The Proper Distribution of Expense Burden* (New York: The Engineering Magazine Co., 1913) granted by McGraw-Hill Book Company. Eighteen years before Church, Mr. Foote in Strieby and Foote, *Manufacturers of Drop Forgings*, Newark, N.J., devised a simple cost-keeping system, in which factory expenses were applied to products on "work-producing tool" rate basis (Arnold, *Complete Cost-Keeper*, pp. 17—18.). His application method bears a remarkable resemblance to Church's scientific machine rate.

advantages as compared with the first two methods: (1) "It *does* take into account just what is missed by the former systems, viz., the variation in the cost of work done on different types of machines."³⁰ (2) The more important advantage was that by this method the total amount of idle cost could be removed from applied burden and consequently the comparison of product cost at different periods was made possible. This is because the old machine rate was "an hourly charge, based on the probable life of the machine under full work",³¹ so that "the fact that it establishes a permanent relation between the work and the machine is a valuable feature. By a permanent relation is meant a relation which does not change or fluctuate with conditions of work in the shop. The charge for the machine being always x, whether the shop is slack or busy, brings a very steady factor into account, which is available as a datum of comparison between work done at different periods as no other factor is available."³² Then he removed the above-mentioned (a) and (b) defects by introducing into the old machine-rate method two factors. These are (a'), the concept of a production center, and (b') the way of applying the undistributed balances by a supplementary rate. In this way he succeeded in devising his new scientific machine rate.

VIII *Exclusion of Idle Costs from Efficiency Engineers' Point of View*

Church's contribution to overhead costing was so great that since 1901 American theorists and practitioners made his theory a turning point to take the leadership of cost accounting studies in the world. But his followers soon realized that his theory was not so perfect as first conceived. Their critical eyes were focused on his supplementary rate. As a result, there gradually appeared people who advocated the closing of the unapplied overhead variances directly to profit and loss account. They were J. Whitmore (1906), W.J. Gunnell, J.P. Jordan, H.S. Gantt (1908), P.J. Darlington, G. Smith, H. Emerson (1909), C.E. Knoeppel, C.H. Scovell (1911), E.P. Moxey (1913), and others.

It must be emphasized here that most of these advocates were efficiency engineers or management consultants who had made every effort to promote the scientific management movement. As a natural consequence they insisted on the exclusion of idle costs not from accountants' or cost accountants' point of view. Their reasons can be gathered from the following quotations; Whitmore wrote on the effect of using his machine rate as follows: "..., cost figures are thus freed from the fluctuating and confusing element of the expense of capacity idle that ought to be operated; and profits are determined on the basis of these cost figures; but against these profits is always set out the idle capacity expense that has to be deducted from them, giving thus the net result of the operations,....."³³ Scovell in his work clearly observed: "A manufacturing cost with unearned burden eliminated serves as a true barometer to indicate the general efficiency inside the shop. Unearned burden, known as a separate total, serves as a true barometer to indicate the effect of the industrial situation outside the shop on the business in question. A knowledge of both of these factors is essential. They must be known in order to make intelligent selling prices, but

³⁰ Church, Ibid. p. 44.

³¹ Church, Ibid. pp. 42-43.

³² Church, Ibid. pp. 44-45.

³³ Garner, Ibid. p. 220.

they should be known as separate factors, so that the information given by each can be used to its full advantage. To combine them gives a meaningless total, made up of two independent variables: One, the variation in cost due to manufacturing efficiency; the other, the apparent variation in cost due to the lack of business, because of the prevailing industrial situation."⁸⁴

Jordan and Harris also stated as follows: "The chief merit of Church's theory was that it focused attention on idle machine and equipment costs, which had formerly not been shown in separate account. But his theory, according to some good cost accountants, is erroneous, in that it led to charging the cost of idle machines to manufacturing cost in cases in which the factory management was not responsible for machines being idle. Such charging made it extremely difficult to compare normal costs which were not separated from unusual costs, for the costs of idle machines were included along with the normal overhead in the manufacturing costs. This combination, by uniting two independent variables, made comparison of overhead costs and total manufacturing costs practically worthless."⁸⁵

In short, their primary concern lay not in correct costing but in efficiency, so that they wanted the exclusion of idle costs from applied burden for the purpose of cost control and capacity control, not for the reason that idle costs were losses and had no product-cost character.

IX *An Origin of the Standard-cost-is-true-cost Theory*

Schlatter and Schlatter say that there are two interpretations of "normal rate of activity"; one is the average-capacity rate "based on sales orders expected in a number of future years," and the other is the practical-capacity rate "at which it would operate if there were no lack of sales orders."⁸⁶ Which normal rate, then, should be chosen if the reason of excluding idle costs lies in cost comparison and capacity control? Because this point is very important in this article, a brief explanation is necessary.

The following is a Schlatters' illustration simplified for the present purpose. In this chart BF represents the applied burden and FJ represents the capacity variance when the practical-capacity rate is used. On the other hand, BH represents the applied burden, HJ represents the capacity variance when the average-capacity rate is used. Thus, as Schlatter and Schlatter clearly point out,⁸⁷ the average-capacity rate charges part of idle costs, FH, to the products. So the idle costs which are a serious obstacle for cost comparison, cannot be removed from the applied burden completely and their total amount FJ, which is quite important for capacity control, cannot be grasped when the average-capacity rate is used. Therefore we should choose the practical-capacity rate for these purposes. This is why Church, Whitmore, Scovell, and others chose the practical-capacity rate.

⁸⁴ Scovell, C.H., *Cost Accounting and Burden Application* (New York: D. Appleton and Co., 1916) pp. 176-177.

⁸⁵ Jordan J.P. and Harris, G.L., *Cost Accounting, Principles and Practice* (New York: The Ronald Press, 1920) p. 396. Used by permission.

⁸⁶ Reprinted with permission from Schlatter and Schlatter, *Ibid.* p. 402.

⁸⁷ Schlatter and Schlatter, *Ibid.* pp. 412-417. Incidentally B'B represents a burden-budget-variation loss in flexible budget.

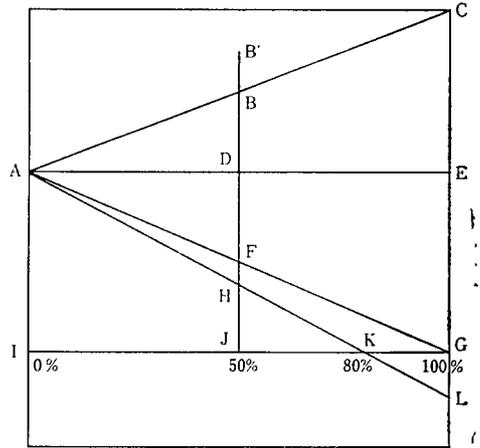
Now what did the practical capacity mean to these people? The capacity variance in the average-capacity rate basis shows nothing but the distance from the average capacity, while the capacity variance in the practical-capacity rate basis shows the deviation from the goal or standard to be attained. Perhaps this must be the reason why Scovell called his practical capacity "standard production" or "standard running time."³⁸ At that time the following relations seemed to be held among many cost accounting specialists;

$$\begin{aligned} \text{normal capacity} &= \text{practical capacity} \\ &= \text{standard capacity} \end{aligned}$$

For example in 1921 H.G. Crockett spoke in his address on the distribution of overhead under abnormal conditions as follows: "Let us first get clearly in mind what we mean by normal burden. The definition of normal is 'that which is standard'. 'Normal' and 'average' are words of quite different meanings, yet I find that some cost accountants, in determining burden rates, take the average of performance for a certain period as the standard of operating capacity. 'Normal', as I understand it, means what the plant as a whole is equipped to do; and I believed it is on this basis that rate should be established."³⁹

The above consideration naturally leads us to the next conclusion, that the practical-capacity rate was the standard burden rate at that time. Then we will still further investigate how the standard burden was calculated by them. In 1906 D.C. Eggleston wrote on the burden application: "In figuring costs the standard cost is first found and then the supplementary rate added to give the current cost. The advantage of this method is that comparison of costs of production are more scientific, as obviously the only fair way to compare the cost of doing a job is under conditions as similar as possible."⁴⁰ So it is evident that his "standard cost" of burden was calculated by the practical-capacity rate multiplied by the number of actual machine hours. In 1908 the "proper cost" or "calculated costs" in Whitmore which are deemed to be one of the original types of standard costs were calculated in the same way.⁴¹ The calculation method of standard burden remained unchanged for

Schlatters' Illustration Simplified



- (notes) IG: practical capacity (100%)
- IK: average capacity (80%)
- IJ: actual capacity (50%)
- CE: variable burden budgeted for a year's practical capacity
- EG: fixed burden for a year
- B'J: actual burden incurred

³⁸ Scovell, *Ibid.* p. 170., p. 178.
³⁹ Crockett, H.G., "The Distribution of Overhead Under Abnormal Conditions" (*NACA Year Book 1921*) p. 216. Used by permission.
⁴⁰ Eggleston, D.C., "A System of Factory Cost Accounting", *The Journal of Accountancy*, Vol. III, 1906, p. 121. Used by permission.
⁴¹ Whitmore, "Shoe Factory....." Refer to Note (22).

some dozen years after that time. We can see the same example in J. P. Jordan's "scheduled costs."⁴² In the early days of standard cost accounting, such a "half-standard cost" of burden itself was the standard burden with which the actual burden incurred had to be compared. It was an incomplete or transitive form in the developmental process of standard burden.

If so, what was the result? Their "standard burden" for cost and capacity control could be the true cost for the product costing and income-determination purpose without any modification. This is because their "standard burden" was in fact an incomplete or half-standard and their practical-capacity rate, which had been used for control purposes, resulted in removing completely the unused capacity loss as well as the obstacle in cost comparison. Here mingled the standard cost and the actual cost view points. If they had devised directly the complete standard burden (the standard burden rate multiplied by the number of standard machine hours, not by way of the half-standard burden), they would not have thought that their standard burden was the true cost.⁴³

X *From Practical Capacity Basis to Average Capacity Basis*

The rationale for the theory which insists that the true overhead cost of a product is not actual burden applied by actual-capacity rate, but normal burden applied by normal-capacity rate, lies in that the latter does not include any unused capacity loss.⁴⁴ But historically speaking the capacity basis of the normal burden rate gradually changed from the practical capacity to the average capacity as Professor Lang described.⁴⁵

First of all, the change began in the form of modifying the indiscriminate application of the practical capacity basis. For example, Whitmore divided machines into three groups according to their expected degree of usage: the first group were expected to run full time efficiently; the second were efficient, but for only special use; and the third were inefficient and reserved for over-full capacity. And then he calculated the machine rates for each group.⁴⁶ Webner and Moxey seem to vacillate between the practical capacity and the average capacity. Webner's basis, for example, was "the maximum output possible under existing conditions" and "in practice the output naturally falls below this established maximum efficiency,"⁴⁷ so that he seemed to imply the practical capacity. Nevertheless, he expected that "certain seasons may be known in advance to have idle time during which costs will accrue to be absorbed in busy seasons."⁴⁸

⁴² Jordan, J.P., "Under What Conditions Should Scheduled Costs Be Used and How Should They Be Proved?" (*NACA Year Book*, 1920) Incidentally, his standard rates of burden were not based on the practical capacity but on the average capacity, which will be described later.

⁴³ Perhaps another origin of the standard-cost-is-true-cost theory may be the theory of value, but this is beyond the scope of cost accounting.

⁴⁴ For this theoretical reason Schlatter and Schlatter prefer the practical-capacity rate to the average-capacity rate. Schlatter and Schlatter, *Ibid.* p. 407., pp. 433—437.

⁴⁵ Lang. *Ibid.* p. 84.

⁴⁶ Garner, *Ibid.* p. 219.

⁴⁷ Webner, *Ibid.* p. 321. Used by permission.

⁴⁸ Webner. *Ibid.* p. 319. As for Moxey, see Moxey, E.P., *Principles of Factory Cost Keeping* (New York: The Ronald Press Co., 1913) pp. 85—87.

This may be a reflection of a changing American economic society. Since the crisis of 1907, the production pendulum in American industry had swung back and forth violently during busy and dull seasons.⁴⁹ At that time many manufacturers estimated their selling prices and calculated their actual costs "on the basis of the actual burdens for the month in which the work is estimated on or performed—or at least for no more than the last two or three months' average."⁵⁰ This practice naturally resulted in their costs appearing high when production slackened, and low when it increased. Such cost information failed to provide the necessary basis for the determination of selling prices and the income determination. Thus Jordan and Harris decided once for all to shift their capacity basis, saying: "An attempt to do business on the basis of actual burdens is thus fair neither to the producer nor buyer. The only fair basis is to figure all estimates and applied costs with a predetermined rate of burden for each department, basing this rate on an average of monthly figures for a period sufficiently long to indicate how actual burdens have been running."⁵¹

It must be emphasized here that the reason why the capacity basis shifted from the practical capacity to the average capacity was not to get information to be used as an instrument of control as Professor Lang said,⁵² but to get information to be used as a basis for establishing selling prices and for income determination. This fact explains why the use of the average-capacity rate has been advocated in connection with the true cost. It is also important to point out that Jordan and Harris didn't know the difference between the practical and the average capacity rates. Indeed they insisted on basing their rate upon the average capacity, mentioning practical reasons, but, as to the rationale for using the rate, they seemed to follow Scovell in his theoretical explanation.⁵³ This was evidently inconsistent. In the case of Scovell, his applied burden didn't include any unused capacity loss, because his burden rate was based on the practical capacity. On the contrary, in the case of Jordan and Harris, their applied burden included part of the unused capacity loss (FH in our illustration), because their burden rate was based on the average capacity. Therefore, if one wants to advocate that the true overhead cost of a product can be figured only by the average-capacity rate, he should seek for another new rationale. Jordan and Harris never dreamed of it.⁵⁴

⁴⁹ For further details, refer to Noyes, A.D., *The War Period of American Finance, 1908—1925* (New York: G.P. Putman's Sons, The Knickerbocker Press, 1926)

⁵⁰ Jordan and Harris, *Ibid.* p. 392.

⁵¹ Jordan and Harris, *Ibid.* pp. 392—393.

⁵² Lang, *Ibid.* p. 84.

⁵³ Jordan and Harris, *Ibid.* pp. 397—398.

⁵⁴ When the practical-capacity rate is used, usual activity variation loss at the end of a month should be charged direct to the Profit and Loss account. When the average-capacity rate is used, on the other hand, usual activity-variation loss or gain should be carried to the following periods so that all the balances are to be absorbed within a period of years for which the average capacity rate is based. Unusual variation should be closed to Earned Surplus account in both methods. Because Jordan and Harris didn't know the difference between two normal rates and couldn't discriminate between both variance-disposition methods, they listed both methods side by side. Jordan and Harris, *Ibid.* p. 394., pp. 398—399.

XI *Rationale for Average-Capacity Basis*

Perhaps one of the earliest precursors who gave correct theoretical explanations to the use of the average-capacity rate was C.B. Williams. At a regional meeting of the American Institute of Accountants, in Detroit in 1921, he gave an address entitled "Treatment of Overhead When Production Is Below Normal," in which he set forth his view on this point with admirable clarity as follows: "Most accountants have been in the habit of considering one year as the proper accounting period. In many cases the accounting period has been fixed as a single month. May I venture to suggest that in this we have sometimes been mistaken? Capitalists do not invest their money and erect a manufacturing plant with any idea that it is to be a yearly proposition. They do not invest their money with the sole thought of getting a particular rate of return in any one year. Rather do they look to a satisfactory return over a period of years; and this return is predicated as much on the normal cost of production as on an expected selling price."⁵⁵ In order to prove his theory he takes a few examples from general accounting and income-tax returns. One of them is the case of organization expense. Accountants do not consider the expense to be charged entirely to the first year's revenue, he said; rather, they consider it an investment, which is expected to be returned in succeeding years. So they write off the expense during a period of years. If such a disposition be accepted in general accounting, the same must be also accepted in cost accounting and in the particular part of cost accounting: i.e. overhead costing.

It is worthy of special mention that Williams tried to seek for the rationale for the average-capacity basis in the plan or intent of capitalist. According to his view, planning of capitalists is usually based "on the expected normal volume of business over a period of years," so that the overhead costing should be considered from the point of view of the same long period of years. His view was right, but not complete in the sense that he made only the first step toward the solution of the question. Generally speaking, if one wanted to insist that the true cost can be figured by a certain costing procedure, he should prove that the procedure is really relevant to income determination. By A.C. Littleton, R.L. Brummet and others, Williams' view has been developed into a theoretical system of periodic income determination. According to Brummet the crucial points are summarized as follows:⁵⁶

(a) The net income computation for external purpose should represent a statistical estimate of the economic progress of the entity or the effectiveness of management effort for a particular time period.

(b) In earlier days the computation was made by an appraisal of relative economic positions at the beginning and end of a business venture. But today accountants measure a periodic profit by matching identifiable value of current input and identifiable value of current output based upon the going-concern postulate.

(c) From the practical point of view, accountants must choose between input and

⁵⁵ Williams, C.B., "Treatment of Overhead When Production Is Below Normal," *The Journal of Accountancy*, Vol. 31, No. 5. May 1921, pp. 337-338. Used by permission.

⁵⁶ Brummet, *Ibid.* pp. 21-26, pp. 46-75.

output as the primary signal for income recognition.

(d) The method of measuring input as the primary signal against which output may be related has certain difficult problems.

(e) Therefore accountants generally adopt a postulate of realization, measure the output as the primary signal by sales transactions and relate input thereto.

(f) Since the timing of output recognition is postponed until the sales transaction has been completed, the recognition of input must also be postponed in order to facilitate proper associations.

(g) In this postponement of input recognition certain input, the costs occasioned by the production of tangible products to be sold, are associated with tangible product units. Here emerges the concept of product cost.

(h) Then, what items and what portion of costs should be associated with product units for matching of costs and revenues? In order to solve the question, we should ask ourselves why and how cost are incurred.

(i) Generally speaking, business costs are released just when management has carried an established plan into execution after considering many alternative possibilities of planning. Littleton clearly speaks to this point that costs are quantitative measures of policies translated into action.⁵⁷

(j) Costs represent the efforts made (cause) and revenues show the accomplishment attained (effect). In order to associate more reasonably the known results with their causal factor, a particular emphasis must be laid on the plan or intent of management in the matching process.

Now let us return to our problem with the above considerations in mind. The average-capacity rate, indeed, charges part of the unused capacity loss to the product produced. But this part is such idle cost that management thought it necessary for attaining the planned profit, because they planned on the expected normal volume of business over a period of years. As for the overhead costs, management used the average-capacity rate in planning and purposefully made that part of the idle cost incurred. Therefore it is indeed a loss, but not a dead loss. It forms a part of efforts made to acquire revenues, so that it has a real product-cost character.⁵⁸ The practical-capacity rate was relevant only while the American economy was so young that manufacturers could believe and thought it their responsibility to attain the practical capacity.

XII Conclusion—Normal Costs as True Costs

So far we have followed step by step in Professor Lang's research path, considering which are the true costs, the actual costs or the standard costs. Since the rationale for the average-capacity basis has been given, we should next consider whether the basic idea of a

⁵⁷ Littleton, A.C., "Concepts of Income Underlying Accounting," *The Accounting Review* Vol. XII, No. 1, March 1937, p. 19.

⁵⁸ The above considerations are based on some elemental assumptions. One of the most important is no error of estimation in expected sales volume, expected service life of facilities, etc. and consequently there is no change in the plan which has been carried into operation. The other is that costs can be resolved into their fixed and variable components. For further discussions see Ferrara, W. L., "Idle Capacity As A Loss—Fact or Fiction," *The Accounting Review* Vol. XXXV, No. 3, July 1960.

normal overhead rate, as Professor Lang says, leads to the basic feature of standard costs or not.

As already mentioned, the earlier standard costs were not average but unattainable or ideal standard costs. If we are to extend the basic idea of the normal overhead rate and to set a level for material and labor costs similar to that for overhead costs, we may have standard material and labor costs, the tightness of which is average or expected actual standard. This does not coincide with our historical data in tightness. Also, the reason why the capacity basis shifted from the practical capacity to the average capacity was not to get information to be used as an instrument of control. Historically speaking, the tightness of standard cost seemed to be lowered later in connection with budgetary control and motivation control. Therefore Professor Lang's theory may be applied to the later period which is not within the present scope. As for us, we will stop the following of his pattern for a while and try to seek our own way.

We have been hitherto concentrating our entire attention only on overhead cost accounting because in this particular field a consciousness of calculating the true cost has been more conspicuous than in any other field of cost accounting. But if we are to turn our eyes to the other fields, we can notice just the same phenomena as we have seen in overhead cost accounting within our research period: the phenomena that can be seen in average-cost method in costing material issued; adjustment of inventories; use of average rate in labor costing; controversy regarding treatment of overtime and bonuses; accounting for defective and spoiled work; and so on. All these are phenomena called "the normalization of actual cost concept," the effect of which is to remove the influences of accidental price and efficiency fluctuation on product cost. Today, for example, nobody doubts that actual material cost can be also calculated by average-cost method in costing material issued. In earlier days, nevertheless, cost accountants believed that true or actual material cost could be found only by identifiable-cost method of pricing. But as soon as they realized that it was seldom possible, they began to use the average-cost method. To those many cost accountants who believed that the true cost was historical cost, the use of average-cost method was quite a matter of expediency or a substitute for the ideal method.⁵⁹ Some cost accountants, however, perceived that their seemingly ideal method was seldom desirable, even when it was possible; and they used the average-cost method not as an expedient substitute, but with the definite purpose of removing fluctuations of market prices from material costing.⁶⁰ This may be quite unreasonable from the "historical cost is true cost" viewpoint, because average-cost method calculates equalized material cost. The same "unreasonable" phenomena began to emerge in other special problems mentioned above.⁶¹

Since the average-capacity rate removes the influence of accidental activity fluctuations on product cost, isn't it a more reasonable way of interpreting the historical facts to

⁵⁹ See a correspondence, entitled "Cost Accounts, Average Prices" and an editorial, "Cost Accounts and Average Price" (*The Journal of Accountancy*, Vol. 11, No. 5, March 1911) and also Nicholson, J. L., *Cost Accounting, Theory and Practice* (New York: The Ronald Press Co., 1913) p. 105.

⁶⁰ Bunnell, S.H., *Cost-Keeping for Manufacturing Plants* (New York: D. Appleton and Co., 1911) P. 82

⁶¹ The detailed discussions on the evolution of the normalization phenomenon in each problem are written in my thesis "A Study on the Changing Concept of Actual Cost in USA (Unpublished thesis for finishing doctoral course of Hitotsubashi University, 1960).

consider the basic idea of the average-capacity rate in connection with the normalization phenomena of actual cost concept, rather than to consider it in relation to the basic idea of standard costs?

If this view be accepted, we should say that so-called actual product cost concept has been changing from historical cost to normal cost, which is selected by average price, average efficiency, and average capacity out of the historical cost incurred,⁶² and that the real reason underlying such normalization phenomena is to make it possible to associate costs and revenues more reasonably, that is, in accordance with the plan or intent of management, by using such normal costs;⁶³ and thereby to let the measured operating profit show the effectiveness of management effort for a particular time period in connection with the planning of management. Such normal cost is the true cost! It is indeed no more historical cost, but it still remains within the limits of the actual cost concept, because it maintains two essential elements of actual cost concept that have been confirmed in the earlier part of this article.



The writer wishes to express his full gratitude to all the publishers who gave him permission to use excerpts for this article.

⁶² In every American cost accounting book, the reader will notice the following sentences where abnormal costs are likely to be incurred: "(Inventory) Shortages, disclosed by a physical count, which can be attributed to unusual circumstances beyond the control of the manufacturing divisions.....should receive a different treatment. Such losses should be eliminated from cost to manufacture..... (Blocker and Weltmer, *Cost Accounting*, New York: McGraw-Hill Book Co., Inc., 3rd ed. 1954, pp. 217-218. Used by permission.);" "If waste and spoilage has been excessive, the excess may be removed by a credit to the Manufacturing account and a debit to an Excess Waste and Spoilage account, thus making the cost of the product include only the normal amounts of such losses.....(Reprinted with permission from Schlatter and Schlatter, *Ibid.* pp. 675~676) and so on. Such treatments show these authors' view that only the normal amount in historical cost incurred should be considered true product cost, and so-called "actual cost" is used as a substitute for the true or normal cost.

⁶³ In connection with the planning of management the normalcy should be of a longer period for fixed costs and of a shorter period for variable cost. Incidentally, budget variance in overhead cost should not be included in the product cost, not because it is controllable and consequently a waste (standard cost viewpoint), but because it is an abnormal cost.