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## PROPERTIES OF DOUBLE-ENTRY BOOKKEEPING

by

*Shōji Kasai*

### *Preface*

In accounting and bookkeeping the terms debtor and creditor are always used as if self-evident words, yet their implications and substances are not always clear. To speak as the largest common measure, they represent a concept assuming some correspondence between the two, but questions remain what sort of relation such correspondence expresses, whether all relations presented as debtor-creditor in accounting and bookkeeping are homogeneous and, if heterogeneous, what connection lies among different concepts of debtor and creditor. With all these relations being left indefinite, presently the terms debtor and creditor are singularly being used.

Since accounting has continued to use the so-called double-entry bookkeeping for its technical mechanism of record and calculation, various concepts on accounting and those on bookkeeping have been ambiguously applied without clear distinction, and the concept of debtor-creditor is not its exception.

Today in accompany with such movement as the rise of criticisms on historical cost accounting, and the birth of the accounting information theory and multiple valuation, there is seen reflection on the point that "historically the methods of the accounting discipline have largely been confined to the double-entry bookkeeping mechanism, the discipline of arithmetic and certain conventional measurement tools."<sup>1)</sup> However, because of the indefinite relation between accounting and bookkeeping, such a trend is apt to be criticisms on accounting theory under the pretense of bookkeeping, or in reverse intended criticisms on accounting theory become in essence those on the bookkeeping mechanism.

Therefore in criticizing the customary accounting theory properly as an accounting theory and ascertaining its future directions under the sharp fluctuation of accounting and accounting disciplines as it is today, it is very important to settle squarely the relation between accounting and bookkeeping, and on this

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1) AAA, "A Statement of Basic Accounting Theory," p. 64.

ground to distinguish concepts on the former and the latter. In other words it is now the time to examine sincerely "Why accountancy has been paying regard to the bookkeeping system, that is, in accountancy, what factors inherent in double-entry bookkeeping have been utilized and regarded as indispensable requisites."<sup>2)</sup> That is, "from the standpoint of accountancy, what technical requisites are indispensable to make accounting be accounting is whether calculation by account form, double-entry, dual grasp or something else, or whether any monetary expression does suffice."<sup>3)</sup> And through such clarification, these must be squarely discussed as problems of accountancy.

The concept of debtor-creditor,<sup>4)</sup> which I take up in this paper, is a factor defining the relation between accounting and bookkeeping. So in what follows I will inquire into this relation as well as roles expected on bookkeeping through analysis of the debtor-creditor concept.

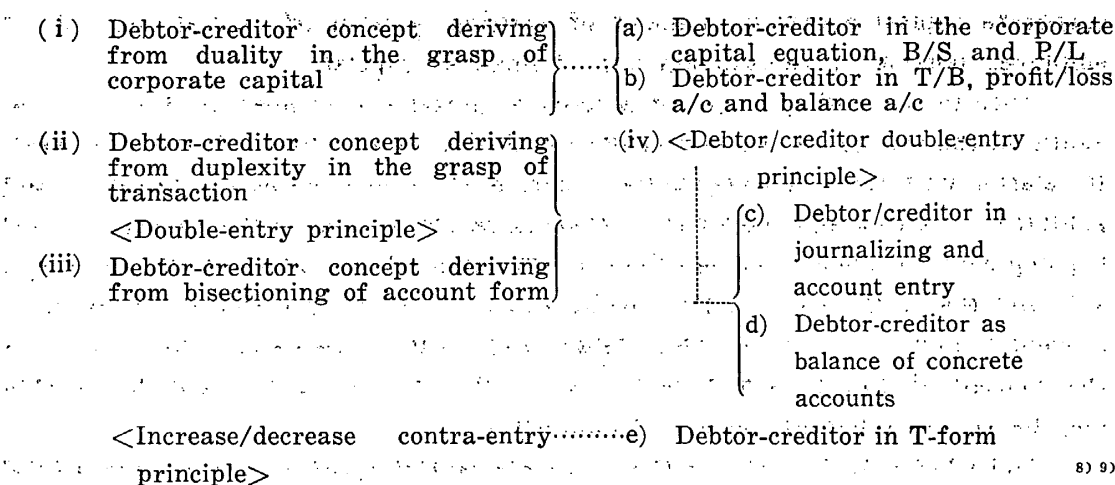
In this paper bookkeeping means corporate double-entry bookkeeping. On the formal-technical aspect "It purports to make double recording of transactions using a calculation form called account,"<sup>5)</sup> and on the substantive-content aspect in relation with accounting "It performs calculation of increments of corporate capital and makes valuation on the construction of the balances of corporate capital at the same time,"<sup>6)</sup> acting as "an apparatus to perform unitary and overall administration of corporate capital by calculation."<sup>7)</sup>

### § 1. Features of the Debtor-Creditor Concept

To mention matters of accounting and bookkeeping relevant to the debtor-creditor concept, we have journalizing, account entry, balances of accounts, profit/loss a/c, balance a/c account form, trial balance, income statement and balance sheet, as well as various accounting equations such as the capital equation (assets—liabilities=capitals), the balance sheet equation (assets=liabilities+capitals), the equity equation (assets=equities) and the corporate capital equation asserted by Prof. Yamamasu (amount of waiting portion of capital+amount of employed portion of capital=amount of financed capital). In this paper Prof. Yamamasu's equation is taken up as the framework of accounting.

From the viewpoint of this paper the matters above are arranged in a table as below, on which explanation shall be given one by one.

- 2) Tadahiro Yamamasu, *Kaikeigaku no Ryōiki to Taikei* (realm and construction of accountancy), "*Kaikei*", vol. 104, No. 5, p. 9.
- 3) *Ibid.*, pp. 9~10.
- 4) The term debtor-creditor is one of the rare indigenous concepts in accounting. It is even said that As the rule about expression by symbols, it is the sole inherent concept of accounting. So its analysis is very essential.
- 5) T. Yamamasu, "*Kindai Kaikei Riron*" ("modern accounting theory"), 10th ed. p. 20.
- 6) T. Yamamasu, "*Fukushiki Boki Genri*" ("principle of double-entry bookkeeping"), p. 42.
- 7) *Ibid.*, p. 43.



(i) Duality in the grasp of corporate capital

The ultimate property of accounting lies in the dual grasp of objects. To speak in reverse, a certain kind of systematic calculation provided with a methodological feature that grasps a certain object on two aspects is called accounting. This dual grasp builds the technical framework of accounting and is preserved as a methodological feature apart from historical changes of substantive contents of accounting. To express more exactly, it should be said to be what defines accounting in face of historical transition of its function. If this is called duality in grasping corporate capital, this concept of duality is just what makes accounting be accounting.

Now, the object of accounting is economic activities of a corporation which are never separate and independent ones, so "If it is intended to grasp them from a unitary and ideological standpoint they must be understood as a unitary move of corporate capital led by a certain purpose."<sup>9)</sup> Thus duality means dual grasp of moves of corporate capital,<sup>11)</sup> and the formulation of such grasp is right the

8) a) and b) represent the debtor-creditor concept on accounting and e) that on bookkeeping, while c) and d) carry that on both accounting and bookkeeping.  
 9) Littleton mentions three aspects about the significance of "double" in double-entry bookkeeping: 1) duality concept about books, account form, and entry 2) "equilibrium of results" or "equilibrium within balance-sheet" observable in the opposition between positive and negative properties and proprietorship, or that between capital kinds and capital sources, and 3) equilibrium of entered transactions. Since Littleton's double-entry bookkeeping is "proprietor's bookkeeping", these various concepts do not always conform with our concepts in this paper, yet (i) in the above table represents or corresponds with "equilibrium of result," (ii) "duality of entry" and (iii) "duality of account form" respectively.  
 10) T. Yamamasu, "Kindai Kaikei Riron," 10th ed. p. 6.  
 11) Mattessich also finds the logical structure to be an accounting system in the duality principle. His duality, however, means that transactions or flows basically consist of two dimensions (e.g. process of input and output, process of give and take), and seems to be theoretically applicable to non-economic structure of flows. And so it is fundamentally different from our duality concept.

corporate capital equation (amount of waiting portion of capital+amount of employed portion of capital=amount of financed capital).

Since in accounting moves of corporate capital are grasped on dual aspects, again on the side of record and exhibition duality is required. That is, to speak in relation with the corporate capital equation, it becomes necessary to record and exhibit the waiting and employed portions of capital as well as the financed capital keeping correspondence between the two. For this sake division into the left-hand side and the right-hand must be made, and as their symbol the debtor-creditor concept is logically derived. Thus debtor and creditor are necessarily born from the concept of duality, which makes accounting be accounting, and hence this may be said an inherent concept of accounting.

And what actually express the corporate capital equation are of course total account table as well as income statement and balance sheet, and to look from the side of bookkeeping they become trial balance, profit/loss account and balance account.

Thus the debtor and creditor of trial balance, profit/loss account and balance account form the debtor-creditor concept inherent in accounting to distinguish duality in the grasp of corporate capital.

(ii) Duplexity in the grasp of transaction and the principle of double-entry

The composition of capital in the corporate capital equation changes in accompany with economic activities each, and in accounting such economic activities are doubly grasped due to their duality. And the double nature of individual economic activities is unified in what are called transactions in accounting.

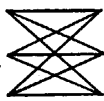
As the result of double grasp of transactions, again on recording duplexity is required. This is named the double-entry principle.<sup>12)</sup> And by expressing this double nature by elements *A* and *B*,<sup>13)</sup> let's consider what the double-entry principle implies.

Since bookkeeping is a kind of vessel to record accounting, the substance, it is on one hand provided with a formal and mechanical aspect but on another it must receive indications from accounting, and in this sense it is defined by the contents of accounting. And here, because accounting is the grasp of moves of corporate capital, bookkeeping accepts definition by the corporate capital equation, viz. the framework to grasp corporate capital in accounting. Hence if an economic activity occurs in a corporation some change emerges in the composition of the corporate capital equation. And so long as the equation is integration of duality, and the equality lying therein represents equilibrium that should primarily exist, a change of an element (e.g. *A*) inevitably causes

12) Strictly, the double-entry principle and the debtor/creditor double-entry principle should be distinguished. The popular word double-entry principle accords with the debtor/creditor double-entry principle in this paper. Please note this.

13) These elements *A* and *B* are merely tentative names of the two sides of a transaction, nothing more.

a change of an equal amount in another element (*B*). In dissolving a transaction into two elements, combination of these changes is as follows.

<u>Element A</u>		<u>Element B</u>
Increase of waiting portion		Decrease of waiting portion
Increase of employed portion		Decrease of employed portion
Decrease of financed capital		Increase of financed capital

Thus what can be mentioned from the double-entry principle itself are (1) a transaction is always dissolved into element *A* and *B* and doubly entered, and (2) in a transaction the sum total of an element and that of another are necessarily equal.

**(iii) Bisectioning of account form and the principle of contra-entry of increase and decrease**

As a particular method of double-entry bookkeeping generally “calculation by account form” is mentioned. Needless to say this account form denotes contra-recording of increase and decrease on the concerned account using T-form. That is, as a device to change subtraction to addition two sections are set up for an account, on which increase and decrease are separately recorded. As the result an account itself is divided into two, and in order to distinguish them the left-hand side has come to be named debtor and the right-hand side creditor.<sup>14)</sup>

Thus if increase (addition) is entered on either debtor or creditor of an account, decrease (subtraction) is entered on another side. Let’s name this the increase/decrease contra-entry principle.

To speak logically this bisectioning of an account, debtor and creditor, is defined only by the presence of two methods of arithmetic calculation. In so far as this, it is conceived to have been introduced from a viewpoint of convenience of form apart from substantial contents of accounting. In this sense the debtor-creditor concept in this account form may be said notably a product of an inherent thinking of double-entry bookkeeping.

**(iv) The principle of debtor/creditor double-entry**

The duplexity of a transaction and the principle of double-entry, in themselves, have an implication merely that occurrence of a transaction ought to be doubly grasped and recorded. However, when combined with T-form, double-entry leads to double-entry on the debtor of an account and the creditor of another account.

And the duplexity of a transaction can be double-entry of the debtor element and the creditor element because the rule of entry has been given by the corporate capital equation.

14) In this paper we let T-form represent account form, and hence debtor and creditor become respectively the left and the right. Yet since the essence of bisectioning is to distinguish two places to receive increase and decrease separately, logically T-form is not always necessary; e.g. upper-lower division is allowable.

This double-entry principle combined with the increase/decrease contra-entry principle on the debtor-creditor of T-form we name the debtor/creditor double-entry principle. Of course journalizing and account entry in double-entry bookkeeping are conducted in conformity with this principle. And its debtor-creditor carries that in accounting (duality concerning with the corporate capital equation) and that in bookkeeping (bisectioning in T-form).

## § 2. Properties of the Increase/Decrease Contra-Entry Principle

The above-described debtor/creditor double-entry principle—combination of the double-entry principle and the increase/decrease contra-entry principle—makes the entry principle of corporate double-entry bookkeeping and defines its structure and function. Yet the double-entry and the increase/decrease contra-entry principles do not necessarily combine themselves, nor are required to do so. As has been explained already these two principles are different in character and hence have different working. So prior to considering the significance of the debtor/creditor double-entry principle it is necessary to examine inherent properties of the two. First we shall take up the increase/decrease contra-entry principle.

Let's assume that T-form is employed to record property changes of a corporation (that is, the increase/decrease contra-entry principle is working). And the system of profit calculation is assumed to be the asset-comparison method (Vermögensvergleich) or inventory method (Inventarrechnung) in which profits are calculated by comparing net asset amounts based on records of individual positive and negative properties each for two time points (that is, the double-entry principle does not work). This case shall be considered by an example as below.

An illustrative case.

Beginning balance:

cash ¥3 million, commodity ¥5 million, account payable ¥2 million;

Activities during the term:

- 1) purchase of ¥2 million's worth of commodity,
- 2) sale of ¥3 million's worth of commodity at ¥5 million,
- 3) payment of ¥1 million of account payable.

Cash		Commodity		Account payable	
Beginning balance 3	1) 2	Beginning balance 5	2) 3	3) 1	Beginning balance <sup>15)</sup> 2
2) 5	3) 1	1) 2	Ending balance 4	Ending balance 1	
	Ending balance 5				
Assets at the term-beginning:		3+5-2=6			
Assets at the term-end:		5+4-1=8			
Net profits:		8-6=2.			

15) Unit in million yen; similarly for all tables below.

If by the increase/decrease contra-entry principle it is prescribed to enter increase on debtor and decrease on creditor as for accounts of positive-property, and reversely for those of negative-property, entries of the above transactions become as above:

In these accounts there is no correspondence between 1), 2) and 3), that is, here entries have been made only with respect to increase or decrease of individual positive and negative properties. Hence the debtor 1) ¥2 million on the commodity account and the creditor ¥2 million on the each account have no inter-correspondence. The increase in commodity and the decrease in cash have been grasped merely as separate, independent facts and entered on the respective accounts. Hence here the double-entry principle is not working. This fact is more evident in the entries of 2) in which the increase of ¥5 million in cash and the decrease of ¥3 million in commodity are entered on respective accounts merely as independent events, and hence conformity of amount between element *A* and *B* seen in the double-entry principle does not exist.

For account record such as in this case where the double-entry principle is absent and only the increase/decrease contra-entry principle works, the following points must be noted.

1) Whether an account belongs to positive property or negative can be automatically seen by the place where its balance lies as the result of entry. This is due to using T-form.

2) Calculation of profit is not made automatically on the profit/loss account as the logical result of entry on various item accounts, but is performed outside the system of accounts. This derives from the asset-comparison method or inventory method system if viewed as the substantial part of profit calculation, but from the lack of the double-entry principle if looked as an aspect of book-keeping procedure.

3) Accordingly bookkeeping of this case does not represent a self-conclusive system that records entire process of accounting from entry of transactions to calculation of profit.

4) Closing is made with respect to each account irrelevantly to other accounts. This means that there is no system-organizational relevancy as book-keeping treatment among accounts.

5) The amount of profit is calculated outside the account system on the base of the sum of account balances (net properties) singularly at a certain time point, and so its calculative correctness depends on the adequacy of entries during the period and the calculative correctness at the time of the closing of accounts and any mistake of entry or calculation accepts no checking by system-organizational relevancy of accounts. Such absence of the testing function derives from non-working of the double-entry principle.



### § 3. Properties of the Double-Entry Principle

Now assume that moves of corporate capital are grasped according to the corporate capital equation. Hence when a business activity has occurred and a change of capital composition has been caused, this transaction is doubly grasped, separating element *A* and *B*, for which the same amounts are entered. (The double-entry principle is working.) But, T-form is assumed to be not used, accordingly increases and decreases are added or subtracted in sequence on respective accounts. (The increase/decrease contra-entry principle is not working.) Then in the above example the item accounts become:

Cash	Commodity	Cost of goods sold
Beginning balance 3	Beginning balance 5	
1)            Δ2	1)            2	
2)            5	2')           Δ3	2')           3
3)            Δ1		
Ending balance 5	Ending balance 4	3
Accounts payable	Capital	Sales
Beginning balance 2	Beginning balance 6	2)            5
3)            Δ1		
Ending balance 1	Ending balance 6	5

Here 1)~3) in the concerned two accounts correspond each other respectively. For example, if as for 1) the element *A* represents the increase in commodity, the element *B* becomes the decrease in cash. This is the result of double grasp of this transaction as integration of changes in commodity and cash, and the amounts are the same. Similarly other transactions are doubly grasped and entered.

#### (i) Relevancy between item accounts and trial balance

Now, in this case if one attempts to draw trial balance from these item accounts, it is impossible to do it automatically from their balances, because these show only their money values, not whether they are debtor items or creditor items in the corporate capital equation. So trial balance must be prepared outside

Trial balance			
Cash	5	Account payable	1
Commodity	4	Capital	6
Cost of sales	3	Sales	5
	12		12

the system of accounts referring to the equation for each account. This trial balance shown has been drawn by such process.

Here the sum total of debtor and that of creditor are equal because the double-entry principle is applied. In so far as this testing function is provided.

However, since this trial balance is prepared not automatically from the system of accounts, but by dint of outside force of mechanism, this function of testing is not inherent one of the system of accounts. In other words, it cannot be said a function immanent in the mechanism of bookkeeping (automatic testing function).

**(ii) Relevancy of item accounts to profit/loss account and balance account**

The above description applies similarly for profit/loss account and balance account. That is, in opening these accounts it must be subject to indications of the corporate capital equation whether an item account (or its balance) comes under profit/loss account item or balance account item, and whether it is a debtor item or creditor item. The former problem relates to the substantive contents in relation with accounting and hence is impossible to judge inside the bookkeeping system, however ingenious its structure may be. It is a problem quite foreign to bookkeeping as a vessel of recording. Accordingly as a problem immanent in bookkeeping it is to be questioned whether the nature as a debtor item or a creditor item can be decided inside the system of accounts. Alike with the case of trial balance this must be decided outside the mechanism following indications of the corporate capital equation. Thus these two accounts are drawn by dint of outside force as are shown. Since the differences on the two necessarily coincide, the testing function may be said working, yet the significance of this function is quite the same with the case of trial balance.<sup>16)</sup>

Profit/loss a/c		Balance a/c	
Cost of goods sold	3	Cash	5
Difference	2	Commodity	4
Sales	5	Accounts payable	1
		Capital	6
		Difference	2

**(iii) Relation between the relevancy among accounts and the double-entry principle**

What must be paid attention in bookkeeping is the role the double-entry

16) By the above consideration it is seen that the debtor-creditor here is basically an inherent concept of accounting in the corporate capital equation. For, while in this case the debtor-creditor concept in T-form does not exist because the item accounts are not of T-form, the debtor-creditor in trial balance, profit/loss account and balance account is a concept existing or being required. In other words, right because the debtor-creditor concept here is irrelevant to that in the T-form, it is possible to draw trial balance, profit/loss account and balance account even from ladder-form accounts. Accordingly, in double-entry bookkeeping, although trial balance, etc. take T-form, its significance is different from that in item accounts.

principle plays in transfer entry from item accounts to profit/loss account and balance account, and that from profit/loss account to balance account.

First as regards the former, since this is entry of an account in item accounts, and profit/loss account or balance account, the accounts to be double-entered are specifiable, and in so far it is thinkable that the double-entry principle is working. However, concrete entry is impossible by such specification of elements *A* and *B* alone. Since the nature as debtor or creditor of the balances of item accounts cannot be decided within the bookkeeping mechanism as explained already, indications by the corporate capital equation must be waited. Hence on this stage of bookkeeping it is difficult to say the double-entry principle is perfectly working as the procedure of bookkeeping. As the result the relevancy of procedure between item accounts and profit/loss account and balance account is not complete.

Next as regards transfer relation of the differences on profit/loss account and balance account, in conclusion the double-entry principle can be considered to be working. That is to say, since the differences in these two accounts are decided simply by placing debtor and creditor in reverse, to look as the bookkeeping mechanism, the double-entry principle is fully fulfilled by specifying the elements *A* and *B*. Therefore the two accounts may be said to have relevancy as the bookkeeping mechanism.

Accordingly in this system of bookkeeping substantial relevancy between accounts is maintained due to the work of the double-entry principle, yet as the procedure of bookkeeping system-organizational relevancy between accounts is not yet formulated.

The following conclusion may be drawn from above consideration. Even if T-form (increase/decrease contra-entry) is not employed, by adapting the double-entry principle it is possible to work out account records to exhibit moves of corporate capital as well as trial balance, profit/loss account and balance account, and hence profit is calculated inside the system of accounts. As the result records of bookkeeping cover the entire process of accounting from input of data to output of accounting information. At the same time, however, the following defects must be pointed out.

1) Trial balance as well as profit/loss account and balance account are not automatically wrought out from bookkeeping procedure as the result of entry on the various item accounts.

2) This means that there is no organic connection as procedure between the act of closing item accounts and that of drawing profit/loss account and balance account. In other words there is no idea of transfer between accounts. And as its result it is impossible to close self-conclusively all accounts including profit/loss account and balance account through double-entry by transfer. That is, there is no system-organizational relevancy through all accounts as bookkeeping procedure.

3) Further, although the testing function itself is working, it cannot be said to make an automatic function immanent in the mechanism and as a necessary product of the system of accounts.

#### § 4. *Properties of the Debtor/Creditor Double-Entry Principle*

In the above properties of the double-entry principle and the increase/decrease contra-entry principle have been examined. Now on this ground let's observe the debtor/creditor double-entry principle which combine these two principles.

Corporate accounting—which is to describe and measure the process and ends of moves of corporate capital—“implies nature as corporate capital calculation and in concrete is constructed on organic combination of two sorts of calculation, that is, calculation of increments of corporate capital and that of balance of corporate capital.”<sup>17)</sup> And corporate bookkeeping intends to achieve these two tasks.

Now, bookkeeping that stands on the double-entry principle presuming the duality concept can be said to make records so that substantially these tasks may be performed as seen in §3, speaking logically and letting alone practicability. For, although such bookkeeping involves defects as mentioned in the previous section, these defects are limited to such aspects as organizational relevancy in procedure or a purely calculative-technical side as a recording system, and concern with the character as a vessel or apparatus of bookkeeping. In this sense it may be said that such a system is sufficient to express accounting. A remaining problem is how to cover such defects as mechanism.

So, remembering the defective features described in the above, combination of the double-entry principle and the increase/decrease contra-entry principle shall be considered. That is, T-form of accounts shall be introduced into the system of §3.

For this sake it must first be decided which one of the two sections of the form receives increase and which one decrease. Needless to say the agreement on entry is decided by indications of the corporate capital equation. That is to say, as for accounts belonging to the waiting and employed portions of capital, entry of increase is made on the left-hand side (debtor) and that of decrease on the right-hand (creditor) because these portions are posited left to the equality sign. As for accounts belonging to the financed capital entry is reversed. Thus the elements *A* and *B* in the double-entry principle are connected with the debtor/creditor concept in the increase/decrease contra-entry principle, to work as the debtor/creditor double-entry principle.

On this debtor/creditor contra-entry principle the various item accounts are entered as below.

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17) T. Yamamaşu, “*Kindai Kaikei Riron*,” 10th ed., p. 32.

Cash			Commodity				
Beginning balance	3	1)	2	Beginning balance	5	2)	3
2)	5	3)	1	1)	2	d) Ending balance	4
		c) Ending balance	5				
Cost of goods sold			Accounts payable				
2)	3	b) profit/loss	3)	1	Beginning balance	2	
		a/c	3	e) Ending balance	1		
Capital			Sales				
f) Ending balance	6	Beginning balance	6	a) profit/loss	5	2)	5
				a/c	5		

(i) Relevancy of item accounts to trial balance, profit/loss account and balance account

As the result of entry advanced on the debtor/creditor double-entry principle an item account becomes either debtor-balance or creditor-balance reflecting its nature on the corporate capital equation. Especially noteworthy is the point that trial balance is automatically drawn. For example, in the cash account there is a debtor-balance of ¥5 million. To look from the aspect of account form (i.e. increase/decrease contra-entry principle) debtor expresses merely a fact of increase and creditor that of decrease, and a balance on debtor merely means cash in hand as the residual of increase and decrease. But this debtor-balance possesses the nature of waiting capital according to the agreement of entry on the corporate capital equation. Hence by assembling the balances on various item accounts trial balance is wrought out, which conforms with the corporate capital equation.

Thus by using T-form for double-entry the balances of accounts are automatically divided into debtor and creditor as the result of entry itself, and so trial balance can be automatically framed from item accounts. This is also the same for drawing profit/loss account and balance account. And this point may be said substantially different from the §3 system in which these three have to be prepared outside the mechanism of bookkeeping following indications of the corporate capital equation for each case.

As the result of such automatic drawing, the testing function can be said an automatic function literally inherent in the mechanism of bookkeeping.

(ii) Relevancy among accounts

And it should be noted that transfer of the item accounts to profit/loss account or balance account is performed in the form of executing the debtor/creditor double-entry principle in connection with the act of closing. For example, when the sales account is closed by reckoning @ ¥5 million on its debtor, simultaneously the same @ ¥5 million is reckoned on the creditor of profit/loss

account through transfer entry to work out this account. In this example the debtor/creditor double-entry principle performs two functions at the same time—closing of item accounts and the drawing of the profit/loss account. The two accounts shown have been wrought out through such procedure.

Profit/loss a/c		Balance a/c	
b) 3	a) 5	c) 5	e) 1
α) 2		d) 4	f) 6
			α) 2

And the reason why the debtor/creditor double-entry principle can work in this way is already obvious. That is because by the adoption of T-form for item accounts their balances themselves come to carry the nature as debtor-creditor (on the corporate capital equation). Hence there emerges a transfer relation between item accounts, and profit/loss account and balance account, and so the debtor/creditor double-entry principle works. And since, needless to say, the balances of these two accounts have natures on the corporate capital equation, profit/loss account and balance account themselves are closed simultaneously through transfer entry of (α) [profit/loss ¥2 million, balance ¥2 million].

In this way all accounts including profit/loss account and balance account are self-conclusively closed on bookkeeping procedure by the debtor/creditor double-entry principle in the form of transfer entry. This shows clearly that in this system all accounts have system-organizational relevancy.

(iii) Essence of the automatic testing function

So long as profit/loss account and balance account are drawn automatically as the result of entry to item accounts as explained in (i), and there is system-organizational relevancy between these two accounts as explained in (ii), the conformity of the difference between the two may be said literally worthy of the name of automatic testing function. And side by side with the above-described testing function of trial balance, the inherent testing function immanent in double-entry bookkeeping as the recording mechanism is constructed. So let's inquire into the features of this function in further detail.

This function is in itself an attendant advantage of the double-entry principle as is already clear. Now, because the double-entry principle is necessary requisite of double-entry bookkeeping, it concerns much with the power of testing function whether the form of accounts to be woven into the bookkeeping mechanism is ladder-form or T-form. And by adopting T-form and taking the increase/decrease contra-entry principle the function can work automatically. In this sense T-form makes the function more ingenious. Thus it may be said that the automatic testing function is of a nature notably inherent in the principle and mechanism of bookkeeping, that is, it originates from the combination of the double-entry and the increase/decrease contra-entry principles.

Here the double-entry principle means nothing more than a principle of

entry for given events recognized and measured by accounting. It secures only purely technical conformity of the sum total between debtor and creditor and conformity of the difference between profit/loss account and balance account. Primarily it is foreign to the adequacy of recognition and measurement in accounting.

On another hand, again the significance of T-form is foreign to substantive recognition and measurement in accounting. That is to say, the significance of T-form regarding preciseness of testing function lies merely in that trial balance as well as profit/loss account and balance account are automatically formed, and that systematic connection among accounts and hence between profit/loss account and balance account is born through transfer entry. In this sense T-form is posited in relation with the inner and latent presence of the testing function within the system of accounts in bookkeeping. It is basically irrelevant to substantive contents of accounting.

Accordingly the testing function can fully work being supported by the double-entry principle and the increase/decrease contra-entry principle, yet this function primarily cannot have direct connection with the contents of accounting because these two principles themselves are what concern with the systematic relevancy among accounts on the purely calculative-technical aspect or booking procedure. Therefore in discussing the automatic testing function of double-entry bookkeeping it should be remembered that "Such automatic function is what is naturally provided in double-entry bookkeeping itself, not what has come to be secured by our particular desire; we should pay deep consideration on the point that it is obtained mechanically from the principle and structure of double-entry bookkeeping."<sup>18)</sup>

To summarize the above description in this bookkeeping system:

- 1) As the result of entry to accounts, balances carrying the nature on the corporate capital equation are automatically calculated;
- 2) As its result, trial balance as well as profit/loss account and balance account are automatically prepared from balances;
- 3) Closing of all accounts including profit/loss account and balance account becomes possible through transfer entry on the debtor/creditor double-entry principle, which means that all accounts have system-organizational relevancy as booking procedure, and so this system can be said self-conclusive.
- 4) Consequently the testing function is born from the system-organizational relevancy and works automatically.

Accordingly in this system all the defects involved in the §3 system are covered without impeding its role, that is, fulfilling the task of bookkeeping as an apparatus to record moves of corporate capital. If so, its superiority to the §3 system is evident, and the reason lies of course in the adoption of T-form.

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18) T. Yamamasu, "*Kindai Kaikei Riron*," 10th ed., pp. 20~21.

The above-merits (1~4) newly born in this system are needless to say ascribable to the increase/decrease contra-entry principle or its combination with the double-entry principle.

We give the name of double-entry bookkeeping right to such a system that takes the debtor/creditor double-entry principle—combination of the double-entry and the increase/decrease contra-entry principle—and as the result of such entry has structure and functions as described above.

### § 5. *Composition of Double-Entry Bookkeeping*

Here the composition of double-entry bookkeeping shall be summarized.

(i) Rule of entry: Principle of debtor/creditor double-entry.

1) Double-entry principle:

- Principle of double grasp and double record of a transaction;
- This means definition by accounting (or duality concept in accounting) in connection with the requisite that bookkeeping should describe moves of corporate capital.

2) Increase/decrease contra-entry principle:

- Principle to record increase and decrease separately by using T-form with two sections and entering subtraction on the contra-side;
- This is an immanent property inherent in the mechanism of bookkeeping.

(ii) Structure.

- 1) Trial balance as well as profit/loss account and balance account can be automatically made as the necessary result of entry following the above principles;
- 2) All accounts including profit/loss account and balance account can be self-conclusively closed through transferentry;
- 3) Records on bookkeeping can cover the entire process of accounting, and hence accounting and bookkeeping completely correspond each other with respect to contents and form.

(iii) Function

Immanent automatic testing function inherent in double-entry bookkeeping as a total system is performed:

- Conformity of the sum total between debtor and creditor of trial balance;
- Conformity of the difference between profit/loss account and balance account.



## *Conclusion*

Partially as a conclusion we will make some remarks on the complication of concepts on accounting and those on bookkeeping. We place emphasis on the point that in corporate double-entry bookkeeping the mechanism is self-conclusive in that trial balance, profit/loss account and balance account are automatically wrought out as the result of entry on item accounts. So let's look back the conceptual relevance of debtor and creditor in such a series of procedure steps.

First at one polar of the bookkeeping system there are various item accounts taking T-form. The debtor-creditor in this T-form of item accounts is born primarily to receive increase and decrease separately, being subject to the increase/decrease contra-entry principle. Accordingly the act of closing on item accounts is for the sake of keeping balance between increase and decrease, and to look as itself it sits on the extension of the idea of using this T-form (subtraction by contra-position). This is already seen in the §2 system. That is, while therein duality and the double-entry principle are not working, a balance is calculated by closing an account by reckoning a difference on the side of decrease-entry. This debtor-creditor concept is defined by the two calculation methods of addition and deduction, and represents a concept notably inherent in bookkeeping.

And at another polar there are profit/loss account and balance account which are defined by the duality of the corporate capital equation, where debtor-creditor is confined only by the duality involved in the dual grasp of corporate capital as the framework of accounting. For example, the creditor in balance account is a concept defined in relation with the financed capital in the equation.

However, in the process from journalizing to derivation of profit/loss account and balance account, the natures of the said two polars are overlapped. In other words in this process debtor-creditor carries two meanings: one as increase-decrease (inherent in T-form) and one as expression of duality in the corporate capital equation.

Because thus the T-form of bookkeeping and the thinking of accounting are alike of double-aspect, casual coincidence of such double-aspect (two calculation methods and duality in the grasp of corporate capital) has brought about the double-significance of debtor-creditor.

And the significance of such two meanings carried by debtor-creditor is already clear. That is, in the §3 bookkeeping system T-form is not introduced and debtor-creditor inherent in bookkeeping does not exist. Accordingly automatic drawing of trial balance, profit/loss account and balance account is impossible, and the testing function cannot fully work. Hence the double-meaning given to debtor-creditor implies improvement of bookkeeping mechanism and gives an inherent significance to it. In this sense we place high appreciation on the double-meaning of debtor and creditor, yet on another hand it is undeniable that it has invited confusion of concepts between accounting and bookkeeping, and hence

between accounting and bookkeeping themselves.

In short, accounting as the object of the accounting discipline is to grasp moves of corporate capital on the base of duality as a methodological particularity of accounting discipline, while corporate double-entry bookkeeping records moves of capital as the contents by full utilization of T-form.

It is important to recognize that "To speak of relation with accounting, bookkeeping is nothing more than a formal vessel," and to hold clear distinction of concepts between the two, taking close relation between accounting and bookkeeping into consideration.