

The Constructive Approach in Management Accounting Research

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Abstract: The constructive approach means problem solving through the construction of models, diagrams, plans, organizations, etc. This mode of research is widely used in technical sciences, mathematics, operations analysis, and clinical medicine. The doctrine of management accounting includes several important examples of managerial constructions, such as the ROI-measure in profit-center accounting or the DCF-techniques in capital budgeting. However, almost all of such constructions have been developed in companies or consulting bureaus. We argue that the constructive approach is used too scarcely in management accounting research. Our review of the accounting literature shows that surprisingly few of the most significant managerial constructions originate in management accounting research. Typically the academic literature has merely analyzed and interpreted the innovations constructed elsewhere after the fact. A potential explanation for this scarcity is the adoption of the scientific ideals of accounting either from the natural or social sciences. Another may be that the design of useful managerial constructions tends to result in a consulting relation between the researcher and the firm, which inherently limits the possibility of publishing the results. Also we argue that the constructive approach, grounded in management accounting theory and leading to working managerial constructions, satisfies the requirements of valid applied research. Thus, we propose the constructive approach as a significant option for management accounting researchers to enter the field of relevant and useful problem solving. This direction for research would be one potentially fruitful answer to the recent claims that management accounting has lost its relevance.

INTRODUCTION

Management accounting, largely an applied and practical field, is constantly faced with new challenges from the business world.¹ As a way to

¹Currently such demands include, for instance, the provision of real-time information supporting the management and control of business operations in an international firm [e.g. Hassel, 1992], the design of cost management systems compatible with new production and marketing environments and strategies [e.g. Young and Selto, 1991], and the development of adequate financial measures to support the implementation of Total Quality Management or Time Based Management programs [e.g. Horngren and Foster, 1991].

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respond to these challenges we introduce the constructive approach which means problem solving through the construction of organizational procedures or models.

The following observations have led us to assess the role of problem solving in the management accounting research tradition:

1. A significant share of Master's theses in management accounting follow the plan of problem statement, theory review, a solution of a real-world business problem (a managerial construction), and discussion. However, there are only a few Doctoral dissertations and articles in major research journals in management accounting which rely on this sort of problem solving oriented approach. Typical research strategies include statistical analysis, descriptive case studies, and analytical mathematical models.
2. An example of a challenge to management accounting is the claim by Johnson and Kaplan [1987] that academic research in management accounting has drifted away from the present needs of companies. As a result, management accounting is claimed to be in a crisis. Whether we believe Johnson and Kaplan's argument, it is interesting to study in more detail their prescription:

The innovative spirit evident one hundred years ago at the outset of the scientific management movement can be recaptured by innovative managers and academic researchers who are committed to developing new concepts for designing relevant management accounting systems. [Johnson and Kaplan, 1987, pp. 17-18]

A key term in the quotation is "to design": management accountants are encouraged to construct new accounting systems which will better address modern challenges.

Our analysis is based on three main concepts. **Constructions** refer, in general terms, to entities which produce solutions to explicit problems. By developing a construction, something that differs profoundly from anything which existed before is created: constructions tend to create new reality [cf. Järvinen, 1988].² An important characteristic of constructions is that their usability can be demonstrated through implementation of the solution.³ Constructions relevant to this paper are called **managerial constructions**, which refer to entities that solve problems that emerge in running business organizations. The **constructive approach** is a research procedure for producing constructions. In management accounting this research approach is intended to produce managerial constructions.

Our main argument is that the constructive approach is used **too scarcely** in management accounting research. The fact that it is rarely used is revealed by our review of accounting literature. We suggest potential explanations for this scarcity. Also we show that the constructive ap-

²This is in line with the idea, today widespread in the accounting literature, that accounting plays a significant role in constructing reality, see e.g. Hopwood [1983], Hines [1988] and Lukka [1990].

³Sometimes constructions refer to principal solutions only, as the testing of their usability is not always possible because of resource and time restrictions. In this paper, however, a stricter position is adopted as far as this important issue is concerned: we argue that at least in accounting research the demonstration of the usability of a construction is essentially linked to its scientific value.

proach, grounded in management accounting theory and leading to working managerial constructions, satisfies the requirements of valid applied research.

At the more general level, the major aim of this paper is to **encourage discussion** on the following question: Should management accounting research be explicitly involved in solving practical accounting problems?⁴ Thus, the paper is part of the more general methodological discussion which questions the criteria which are, or should be, used in (management) accounting research in order to validate it.

The paper is structured as follows. Section 2 illuminates more profoundly the idea of the constructive approach. Section 3 shows how little the constructive approach is used in management accounting research while Section 4 discusses the various reasons for this scarcity. In Section 5 we analyze the constructive approach from a methodological viewpoint and in Section 6 its scientific status is examined. Section 7 integrates the main arguments of the paper.

THE IDEA OF THE CONSTRUCTIVE APPROACH

Intuitively it is relatively clear what we mean by the constructive research approach: managerial problem solving through the construction of models, diagrams, plans, organizations, etc. Several examples of applied constructive studies are found in technical sciences, in clinical medicine and in operations research. Some are found in management accounting.

Mathematical algorithms and new mathematical entities provide theoretical examples of constructions. Constructive research can be found even in philosophy in those cases where the world is constructed, step by step, from supposedly basic elements like objects, time-space slices, observations, thoughts or logical relations. Creating an artificial language (e.g. Morse alphabet, Braille's alphabet, computer languages) is an example of a construction at its purest. In medicine we find the constructive approach in the production of new pharmaceuticals, or in the creation of a new treatment. With regard to accounting in general, the metaphor of accounting as a language is a powerful one. In management accounting, a new budgeting system or a new method of supporting capital budgeting provide us with concrete examples of managerial constructions.

Recent discussions on the development of cost accounting systems offer an example of managerial constructions, too. The debate on the pros and cons and on the origins of the activity-based costing (ABC) has been lively during the past few years [see e.g. Bromwich and Bhimani, 1989; Staubus, 1990; Kaplan et al., 1990]. Without going into the details of ABC, one may argue that the main ideas of ABC are deducible from the traditional cost accounting principle of traceability. In addition, they can be found in earlier cost accounting literature under different titles [e.g. "func-

⁴There has been much critical debate—e.g. on Johnson and Kaplan's [1987] description of the history of management accounting; see e.g. Miller and O'Leary [1990], Loft [1991] and Miller [1991]—in which this question is probably perceived but not explicitly addressed. However, recently some cautious signs of this sort of discussion have emerged, e.g. McCarthy et al. [1990], Edwards and Emmanuel [1990], Cooper and Zeff [1992], Kinney [1992] and Williams [1992].

tional costing," see Kaplan et al., 1990]. However, we consider ABC as a construction whose designers have managed to group together, develop further, and sell to interested audiences a number of cost accounting ideas during a period in which a need for such a construction was emerging. The main point is that the designers of ABC have revealed their ideas in theory, demonstrated that they work in a number of cases and have been able to forcefully launch them into the cost accounting literature and practice.

All problem solving exercises do not pass as constructive research. As illustrated in Figure 1, an essential part of the constructive approach is to tie the problem and its solution with accumulated theoretical knowledge. The novelty and the actual working of the solution have to be demonstrated as well.

However, the practical functioning of a construction is not at all as self-evident an issue as it may seem at first glance, not least because of the active role of the participants of the organization into which a managerial construction is to be imported. Complex organizational processes, manifesting themselves in such ways as resistance to change and mobilization of power, are often present at the beginning and in other stages of implementation. Therefore, a construction that is considered as adequate in narrow technical terms does not necessarily work in practice. It is always difficult, if not impossible, to assess the practical adequacy of any new construction prior to its implementation.

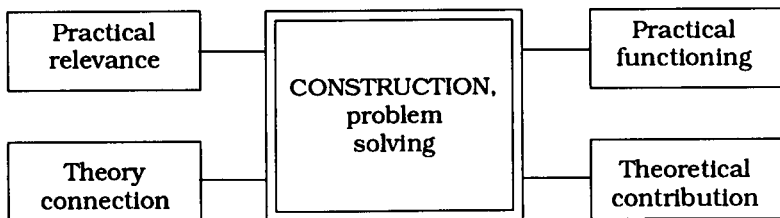
The constructive approach may be characterized by dividing the **research process** into phases, the order of which may, of course, vary from case to case:

1. Find a practically relevant problem which also has research potential.
2. Obtain a general and comprehensive understanding of the topic.
3. Innovate, i.e., construct a solution idea.
4. Demonstrate that the solution works.
5. Show the theoretical connections and the research contribution of the solution concept.
6. Examine the scope of applicability of the solution.

The concept "**innovation**" appears both in the above process description and in the earlier quotation by Johnson and Kaplan.⁵ The innovation phase is often heuristic by nature; stricter theoretical justification and testing of the solution typically come afterwards. The innovation phase is the

⁵For a further explanation of innovation, see e.g. Dunk [1989].

Figure 1
Elements of Constructive Research



core element of a successful constructive study for the simple reason that if the researcher is not able to produce any new⁶ solution to the problem in question, then there is obviously no point in going on with the study. The creative element in the constructive approach brings us to the fundamental question on the role of management accounting research, illustrated in Figure 2: Is the main point of management accounting research in making observations and analyses, or in participative problem solving? Or, should management accounting research act in both roles interactively?

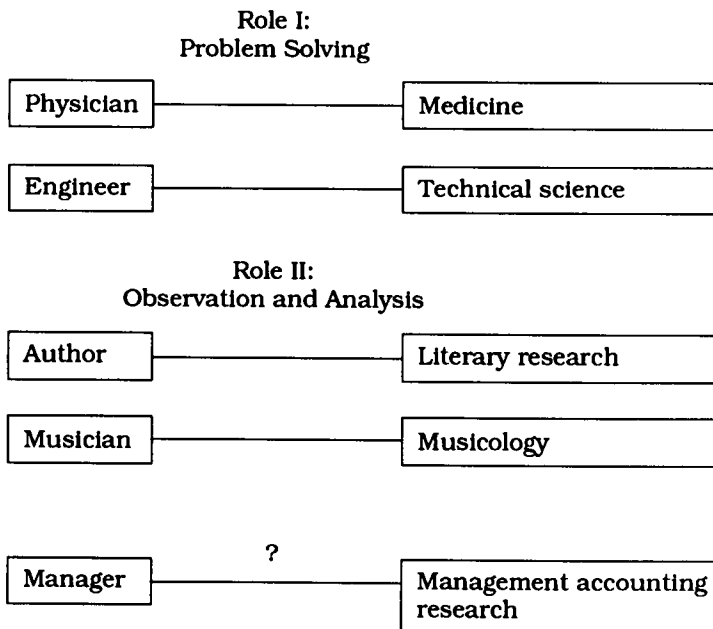
As an example, one of the authors of this paper prepared his doctoral dissertation utilizing the constructive approach [Kasanen, 1986]. To illuminate the constructive approach, let us highlight some of the methodological points in the research process.

The problem area addressed by Kasanen [1986], dynamic interactions among investment projects, was derived from actual company cases. The managerial problem was how to determine a proper mix of strategic and normal investment projects. Theoretical background consisted of the value-maximizing paradigm, Meyer's framework,⁷ and the formal models of input-output analysis, capital budgeting and performance measurement. After the derivation of analytical results on synergy and control issues, based on an optimization model, a case study was used in a company to test the model. A decision support system for capital budgeting was constructed,

⁶By the notion of a new construction, we refer to novelty of the solution, not only for the decision-maker in question (e.g. a manager, business unit, firm, other type of organization), but also more widely. Thus, the construction has to include something new for the research community as well.

⁷For a description of this framework, see Kasanen [1986] pp. 49-56 and Meyer [1976, 1983].

Figure 2
Which Role Best Suits Management Accounting Research?



based on managerial problem formulation. The real-world exposure caused several modifications to the original analytical model. The thesis ended with an illustration of a prototype model and some new analytical results on the revised model's structure. However, no real organizational implementation was achieved at this stage.

The strategic capital budgeting support system constructed in Kasanen [1986] was later implemented at Farnos, a pharmaceutical company, as part of their strategic planning. According to the CFO of the company, the model helped to tighten the links between strategic and operational planning. Thus, the construction passed the weak market test.⁸

We can find some clear examples of constructions in areas which are rather closely related to management accounting research. The field of **option pricing**, for instance, provides a good example of the constructive research approach applied in finance. Before Black and Scholes published their famous option pricing formula, the equilibrium price of an option could not be calculated with the data available from the markets [Black and Scholes, 1973, pp. 637-639]. Once the formula was derived, option traders throughout the world used it as an important factor in pricing and other trading decisions. The option pricing model also has been applied recently in capital budgeting [see e.g. Trigeorgis and Kasanen, 1991].

THE SCARCITY OF THE CONSTRUCTIVE APPROACH IN MANAGEMENT ACCOUNTING RESEARCH

We reviewed references which might possibly be related to the constructive approach. To our surprise, we found that the greatest part of major management accounting innovations have been developed in companies or consulting bureaus. The academic literature has typically just analyzed and interpreted these innovations after the fact. Several examples will illustrate the situation.

Variance analysis in standard costing was first reported by two management consultants, Emerson and Harrison, in the two first decades of this century [Garner, 1954; Johnson and Kaplan, 1987].

The **ROI (Return on Investment)** management system and the related formula was developed in the 1910s by electrical engineer F. Donaldson Brown, who at that time worked in the Treasurer's Department at the Du Pont company. No preceding academic writing on the subject has been found. Academic literature and teaching caught up with ROI in the 1950s [Chandler, 1962, 1977; Johnson and Kaplan, 1987].

The **DCF (Discounted Cash Flow)** technique applied to capital budgeting for firms was first published by the production engineer Eugene Grant [Grant, 1938]. The real breakthrough came with scholar-consultant Joel Dean's classic "Capital Budgeting" [1951] and, in particular, with his article published in the Harvard Business Review [1954] stemming from the solution of real-world problems [Johnson and Kaplan, 1987].⁹

⁸For details of the weak, semi-strong and strong market test of a construction, see the section, "The Constructive Approach as a Methodology."

⁹It has to be remembered, however, that the time value of money concept had been used in the actuarial literature since the early 19th century, see Johnson and Kaplan [1987]. Thereafter it appeared in the political economy literature, in which the so-called capital theory emerged. The most significant early developers of this area were Böhm-Bawerk [1889] and Fisher [1907], see e.g. Naylor and Vernon [1969].

The first attempt to apply **zero-base budgeting** in a fight against waste was in 1964 in the U.S. Department of Agriculture [Wildavsky, 1974]. Peter Pyhrr, Control Administrator, developed the method at Texas Instruments in 1969 and later reported on TI's experiences [Pyhrr, 1970].

In all of the above examples, dealing with major management accounting innovations,¹⁰ academic research has been content with the role of a commentator, an analyst, a critic, an observer, an advocate, etc. instead of having had a role in constructing them.

In order to get a picture of how commonly the constructive approach is used in management accounting research, we went through the recent contents of four **major accounting research journals**:

- The Accounting Review (AR) 1985-1991
- Journal of Accounting Research (JAR) 1985-1991
- Journal of Accounting and Economics (JAE) 1985-1991 and
- Accounting, Organizations and Society (AOS) 1985-1991.

In AR and JAR, we could not identify a single example of constructive management accounting studies published in the examined period.

In JAE, Banker et al. [1988] develop a model to analyze the behavior of relevant costs with respect to changes in the expected duration and variability in set-ups and processing. A numerical example is presented and the model is applied in a real-world setting. Banker et al. [1988] is a good example of a constructive management accounting study.

In AOS, Flamholtz [1987] develops a model which determines the value of human assets. The model is implemented in a case study in which a large U.S. financial institution purchased the assets and liabilities of a securities brokerage firm. This may be regarded as another clear example of a constructive study in management accounting.

In addition, we analyzed articles published in two new **research journals** concentrating on **management accounting**:

- Journal of Management Accounting Research (JMAR) 1989-1991 and
- Management Accounting Research (MAR) 1990-1991.

JMAR has published several papers that have at least some features of the constructive approach. Dhavale [1989] develops a product costing model for FMS and presents a numerical example, based on field research, to clarify the steps of the procedure. The paper has some features of a constructive study, even though the construction is not really implemented in any particular firm. Turner [1990] develops a measurement system, applying the Data Envelopment Analysis (DEA) method, for manufacturing maintenance performance and tests it with the help of an artificial data base consisting of operating data in manufacturing departments. Turner [1990] designs a partially new construction,¹¹ but it is not implemented into practice. Callen [1991] may be mentioned here as a review of the studies on DEA focusing on its management accounting applications. Chan and Lynn

¹⁰The fact that some of the above mentioned accounting constructions currently have limited use does not diminish their value as examples of major accounting innovations. All accounting concepts are socially constructed, e.g. Hines [1988], Lukka [1990] and Dillard [1991]. Therefore they cannot be eternal "truths" but are restricted in the dimensions of time and space.

¹¹DEA itself as a mathematical programming method was originally developed by Charnes et al. [1978].

[1991] provide a model based on the Analytic Hierarchy Process (AHP) procedure for developing an overall effectiveness measure in a multiple measure environment.¹² The use of the construction is illustrated with a hypothetical example.

We could not identify any examples of constructive studies in MAR. However, Kellett and Sweeting [1991] may be mentioned as a descriptive study dealing with the ways in which a major U.K. electronics company responded to the employment of a range of manufacturing technologies by adapting and innovating its managerial accounting techniques. Gietzmann [1991] again reviews and appraises an ABC system some time after its implementation.

We group our findings as follows:

1. Clear examples of constructive studies: Flamholtz [1987] and Banker et al. [1988].
2. Studies in which a new construction is created, or an older construction is developed further, but which lack, in one way or another, practical implementation of the construction developed: Dhavale [1989], Turner [1990] and Chan and Lynn [1991].

It is important to notice that Callen [1991], Kellett and Sweeting [1991] and Gietzmann [1991] are not in themselves constructive studies even though they deal with the constructive approach. Their aim is not to solve problems but to observe and analyze what others have done either in research or practice.¹³

In summary, our review of the recent contents of selected accounting **research journals** reveals that the constructive approach is scarcely used in management accounting research. We are not arguing, however, that constructive papers would not be published elsewhere. Indeed, the more practitioner-oriented journals — such as *Management Accounting (USA)* and *Management Accounting (UK)* — quite often include such papers.

Also we reviewed the 42 Finnish accounting dissertations in 1944-1984, from which we could find only three which adhered to our definition of constructive research.¹⁴ Let us describe in more detail the three examples of constructive research, all in the field of management accounting, found in Finnish accounting dissertations.

Wallenius [1975] develops and compares new methods to support multi-criteria decision making. Various methods are compared in a laboratory setting with hypothetical decision makers. The most interesting part of the work from our paper's point of view is the implementation of the multi-criteria model in a Belgian steel company, where Wallenius also participated in the development of the control system as well as in the definition of the managerial targets.

Reponen [1977] builds a model for the planning of a capacity expansion program. In addition to the analysis of the general investment pro-

¹²AHP is originally designed by Saaty [1980].

¹³Compare the difference between the two major roles which management accounting research can play, illustrated in Figure 2.

¹⁴We studied in detail and searched for the constructive research approach in all those dissertations (18 pieces) which were originally classified as "decision-oriented" or "action-oriented," cf. Lukka et al. [1984].

gram, Reponen's model was applied to Finland's electric power capacity planning.

Koironen [1982] explicitly poses his research as problem solving. Koironen has a MIS-manager's point of view, and he designs a measurement system for assessing the efficiency of an information system. The measurement system was implemented and monitored for several years.

To sum up, on the basis of the literature review we consider it justified to argue that full blown constructive studies with actual problem solving experiences are scarce in management accounting research: they occur very seldom in the major research journals or dissertations in accounting. We feel that management accounting, and business studies in general, should perhaps take a closer methodological look at the technical sciences, clinical medicine and other problem oriented fields to better understand the constructive approach.

WHY IS THE CONSTRUCTIVE APPROACH SO SCARCE?

Scarcity of the constructive approach in management accounting research is a curious phenomenon in itself. Are researchers not able to use the method of construction, do researchers not offer problem solving-type papers to journals, or do editors not understand or consider construction as a scientific method?

One explanation can be found in the **philosophy of science ideals** dominating accounting research. Natural and social sciences have served as methodological models for accounting research. Methodological discussion in accounting research on the research approaches found in other practical and applied fields like engineering and medicine has been scarce.¹⁵ There has been much debate on the strengths and weaknesses of positivism and hermeneutics. However, we may in fact ask if either statistical testing or critical interpretation really lead us to the core of management accounting knowledge. Should we instead put more immediate emphasis on the design of accounting systems and problem solving?

From the historical viewpoint, the adoption of the scientific ideals of the natural and social sciences is understandable as accounting has been attempting to gain status as a respectable academic field. Accounting is not an old scientific discipline: a serious search for its **scientific identity** seems to have begun as late as the 1960s. The scientific ideals have largely been adopted from the natural sciences, leading to the notion of mainstream accounting research. Since the 1970s the respective ideals of the social sciences have played an increasingly significant role, particularly among European researchers [cf. Chua, 1986].

In spite of the clear merits of the development outlined above, not all of its implications are fruitful, a fact that has been recently recognized primarily in the United States. The interaction between management accounting research and practice has languished, not least because research endeavors linked explicitly with practice are often routinely considered as consulting and, therefore, dismissed as non-scientific. Today there is a

¹⁵Mäkinen [1980] is a notable exception, in which parallels are drawn between a physician's work and action-oriented accounting research.

considerable **gap** between management accounting research and practice [e.g. Edwards and Emmanuel, 1990; Cooper and Zeff, 1992], and there is only little communication between the two. However, in some areas, such as cost management in new manufacturing environments, there is an emerging trend of rapid development in this respect.¹⁶

It is important to realize that the opportunities to do practice-oriented management accounting research in the 1990s are largely **different** from the ones in the 1960s, when the above mentioned search for identity began. Thanks to the basic studies, our knowledge on the various roles of management accounting in organizations and society as well as on its economic and behavioral implications is now rather well developed. This offers us a good starting point to widen the scope of management accounting research towards practice and, at the same time, to act in this new role independently and critically, not as lackeys of managers [cf. Astley, 1984; Edwards and Emmanuel, 1990].

Another explanation for the scarcity of constructive studies in the academic publications can be found in the nature of **consulting**. If researchers' ideas get an enthusiastic reception in a company, then a consulting relationship often emerges. Consulting reports are typically confidential, and they contain **business secrets**. The profitability of a consulting practice requires that consulting know-how (e.g. managerial constructions and innovations) is kept secret. Truly functioning constructions have great commercial value, and their submission to journals is therefore delayed, if not entirely hindered. In this way the process of producing scientific knowledge (if it would be otherwise considered as such) is dramatically stopped before its culmination, the publication of the results of the study.

THE CONSTRUCTIVE APPROACH AS A METHODOLOGY

Constructive research may be viewed as a type of **applied studies**. Characteristic of applied studies is the production of new knowledge in the form of normative applications. In this sense it may be distinguished from

- **basic studies** which aim at increasing our knowledge and understanding of the world without any explicit normative purposes and from
- **development of techniques** which purely aims at improving our skills and means [cf. Niiniluoto, 1985].

Constructive research differs essentially from **analytic model building**, which represents applied studies, too. The primary aim of analytic model building is to produce an elegantly proved problem solution which works in principle but whose actual practical adequacy usually remains unclear.

Instead, drawing a line between constructive research and **scientific problem solving**, in which the decision-maker gives the aims and the researcher gives him or her a unique recommendation for action, is difficult. According to Niiniluoto [1985] scientific problem solving does not, because of this uniqueness, produce real scientific knowledge, though scientific methods are used in developing the recommendation. It is, however, somewhat difficult to imagine a solution to a real-world management account-

¹⁶For a review of this literature, see Young and Selto [1991].

ing problem which would suit well the firm in question but not be suitable to other approximately similar firms.

In addition, distinguishing constructive research from **consulting** needs serious consideration. Consulting does not presuppose the use of scientific methods. That is, the use of scientific methods is not an inevitable condition for successful consulting work, and its results are subject to commercial property rights.

The results of applied studies are by their philosophical nature **technical norms**, such as "If we wish to keep the earth as a place which is fit to live in, pollution must be restricted immediately" [cf. Niiniluoto, 1985]. To put it in more general terms, the technical norms are of the form of **practical reasoning** [e.g. Niiniluoto, 1985]: "If you intend to reach A, and you believe to be under conditions of B, you have to do X." ¹⁷ A norm of this type does not, of course, imply truth in itself. However, in a conditional sense it does imply truth: a technical norm is true if and only if doing X is really unavoidable in order to reach A under conditions of B. Therefore, it is to some extent possible to assess the validity of the results of applied studies also from the viewpoint of their **truthfulness**, as we do when basic studies are concerned.

However, the actual usefulness of a managerial construction is never proved before a practical test is passed. Therefore the primary criterion to assess the results of applied studies is their **practical usefulness**, which raises the issues of the **relevance, simplicity and easiness of operation** of those results [cf. Niiniluoto, 1985].

In his dissertation, in which the constructive approach is applied, Kasanen [1986] makes a case for **market-based validation** of managerial constructions, arguing that the testing of the pragmatic adequacy of a construction takes time and requires several attempts of application. The following market tests are based on the concept of innovation diffusion, i.e., managerial constructions are viewed as products competing in the market of solution ideas.

Weak market test: Has any manager responsible for the financial results of his or her business unit been willing to apply the construction in question in his or her actual decision making?

Semi-strong market test: Has the construction become widely adopted by companies?

Strong market test: Have the business units applying the construction systematically produced better financial results than those which are not using it?

It should be noted that even the weak market test is relatively strict — it is probably not often that a tentative construction is able to pass it. For instance, there is no lack of formal optimization models which supposedly solve managerial control problems but which no one is using in practice. The question whether a construction passes the semi-strong or strong market tests is a typical mainstream accounting research task, requiring statistical analysis of a substantial amount of implementation data, the occurrence of which may take a good deal of time.

¹⁷An attempt to make behavior teleologically understandable is one of the key elements of the Aristotelian tradition of explanation; the syllogism of practical reasoning again is the most widely used formulation of teleological explanation, see e.g. von Wright [1971].

Recent discussions on research approaches in accounting have focused on the following issues:

1. Quantitative vs. qualitative research
2. Positive vs. interpretive and critical research
3. Research based on large vs. small empirical samples

In fact all the distinctions above are of the same origin: they reflect the collusion between the modernist mainstream view, i.e., the **positivist tradition** (the former), and its **alternatives** (the latter). Characteristic of the positivist tradition is its quantitiveness, the claimed elimination of values and large samples; quantitative phenomena (viewed as objective "facts") are studied with law-like generalizations as the ultimate aim of the whole research endeavor. The alternative ways of doing research are more or less in contradiction with these basic ideas. Here we focus the discussion on the alternative modes of research, as the principles inherent in the positivist tradition are supposedly well-known to the reader.

Characteristic of **qualitative accounting research** is a direct collection of empirical data from the field through interviews and/or observations. From the viewpoint of the positivist tradition, the central problem of these studies is the **measurement** of variables, which usually can be done on nominal or ordinal scales only. However, qualitatively oriented researchers do not seem to stress these problems very much by themselves [see e.g. Van Maanen, 1979; Bryman, 1988; Marshall and Rossmann, 1989].

Interpretive accounting research is a rather heterogenous group of ways of doing research, the common link of which is that they are influenced by continental philosophy, in particular by phenomenology, existentialism, hermeneutics and post-structuralism. Usually interpretive research is also qualitative by nature.¹⁸ Perhaps the most essential single characteristic of the interpretive studies, and the most significant difference from the positivist tradition, is their acceptance of certain **subjectivity** as a legitimate part of science.

Critical accounting research is based on the ideas of the Frankfurt school, but has strong links with hermeneutic and other continental philosophical streams of thought, too. To put it very briefly, critical studies are committed to the emancipation of humans from the constraints imposed by social power and domination structures through revealing and questioning the mechanisms which support the status quo behind social institutions. Value statements are an inseparable part of critical studies. Therefore, a critical researcher is ethically committed in a way that is not acceptable from the positivist viewpoint.¹⁹ The critical approach has recently gained quite a strong position in accounting research [see e.g. Tinker, 1985; Chua, 1986; Cooper and Hopper, 1987; Laughlin, 1987]. It is worth mentioning that often the scope of critical accounting research is understood so widely that it also includes interpretive studies [cf. Lukka, 1990].

Characteristic of field and case studies is the use of **small samples** [e.g. Kaplan, 1986]. The usual aim is to gain a more profound and compre-

¹⁸However, the reverse is more seldom true: there are many qualitative studies that may not be counted as interpretive ones.

¹⁹In fact, the critical researchers used to question if any value-free studies can exist at all, see e.g. Lukka [1990].

hensive understanding of the studied subjects than what could be possible by collecting large samples through surveys. The distinctive feature of case and field studies is the smaller distance between the researcher and his or her research object. From the positivist viewpoint the central problem of these studies is that there seems to be no opportunity for making (statistical) **generalizations** [cf. Hägg and Hedlund, 1979; Mäkinen, 1980; Yin, 1984; McKinnon, 1988].²⁰

As far as the constructive approach is concerned, several points may be raised on the basis of the analysis presented above. One, constructive research may be either quantitative or qualitative or both. Two, constructive research may be distinguished from positive accounting research: being inherently goal-directed problem solving activity, constructive research is explicitly normative by its very nature. Three, constructive research typically applies the case-method. As to this third point, it is important to notice that, as such, the notion of "case study" may refer to descriptive as well as to normative research. The constructive approach represents the latter type of studies.

A famous attempt to integrate different methodological viewpoints is the Burrell and Morgan [1979] classification, which has been frequently cited in the accounting literature during the last few years [e.g. Hopper and Powell, 1985]. One of the most important functions of the Burrell and Morgan classification is the location of the radical approaches in the field of social studies. It is worth noting, however, that this classification — as any other discussion on positivism and its alternatives — does not include any explicit reference to the constructive approach. Therefore, the fundamental nature, philosophical and methodological underpinnings, and scientific value of the constructive approach are so far unsettled issues.

The Finnish methodological discussion in accounting has widely adopted the classification by Neillimo and Näsi [1980] as the starting point for further analysis. It consists of four approaches: the nomothetical (natural scientific), the decision-oriented (management science oriented), the action-oriented (hermeneutic), and the conceptual [cf. Lukka et al., 1984]. As one encounters similar or corresponding approaches elsewhere in the international discourse, too [cf. Abdel-khalik and Ajinkya, 1979; Tomkins and Groves, 1983; Hopper and Powell, 1985], we have chosen to use this classification as a basis for our further analysis. In Figure 3 these approaches are located according to their main emphases on two axes, theoretical-empirical and descriptive-normative [cf. Lukka, 1991].

The **nomothetical approach** is closely linked to the modernist (positivist) research tradition. The underlying explanatory model is causal and attempts are made to state the findings in the form of general laws. The **decision-oriented approach** is usually grounded on assumptions similar to the nomothetical one. However, there is a difference in the fundamental

²⁰However, on the one hand it may be claimed that particularly in case studies the aim is not to make generalizations. On the other hand, even though statistical generalizations are clearly impossible in case studies, the nature of the studies may be raised from the level of pure casuistic analysis to a more general one either through strong theoretical linkages (e.g., as is done in ethnomethodology) or through some very rigorous way to do inductive analysis (cf. developing a "grounded theory"). See Chua [1989], Scapens [1990] and Lukka [1991].

nature of the research, which in this case is normative; the results are meant to help management in running the firm. The **action-oriented approach** provides a kind of alternative to the nomothetical approach as it brings the human being into the focus of analysis. The explanatory model is often teleological and the historical background of the phenomena studied is examined carefully. The emphasis is usually placed on gaining a thorough understanding of the studied subjects, but the purpose may include an active participation in change processes, too. The **conceptual approach** again is distinguished by its a priori basic nature: it produces new knowledge primarily through the "method of reasoning" [see e.g. Neillimo and Näsi, 1980; Lukka et al., 1984; Lukka, 1986].

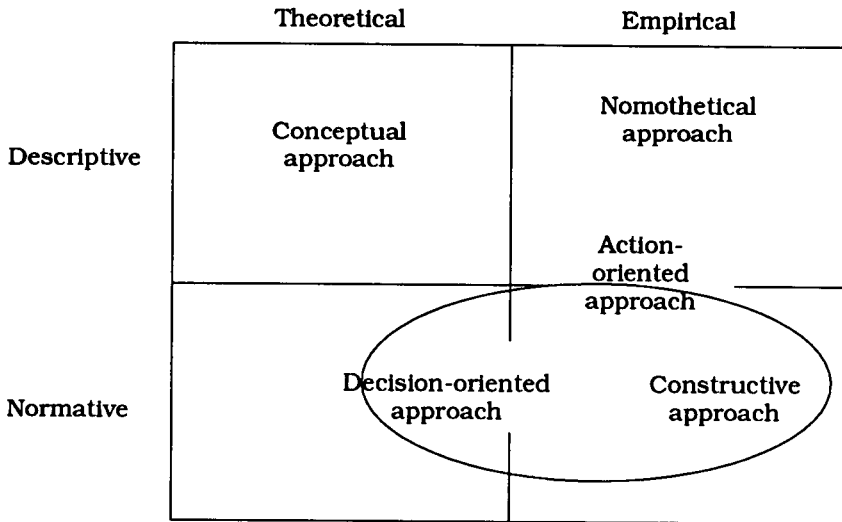
Figure 4 illustrates the location of the constructive approach in the Neillimo and Näsi classification. The constructive approach takes a position in the lower section of the typology, that is, in the normative and, for the most part, the empirical area.

As far as the Neillimo and Näsi classification is concerned, the constructive approach has a lot in common with the decision-oriented one. In both cases a theoretical analysis, thinking, etc. plays an important role leading to the creation of a new entity. However, the decision-oriented approach typically uses the method of deduction while **heuristic innovations** are characteristic of the constructive approach. The main difference lies in the fact that the constructive approach — following the position adopted in this paper — always entails an attempt to explicitly **demonstrate the practical usability** of the constructed solution. Therefore, we may conclude that a decision-oriented study which encompasses a successful implementation may correspond to a constructive one, too.

Figure 3
The Established Accounting Research Approaches

	Theoretical	Empirical
Descriptive	Conceptual approach	Nomothetical approach Action-oriented approach
Normative	Decision-oriented approach	

Figure 4
The Location of the Constructive Approach into the Established Accounting Research Approaches



Another approach of the Neilimo and Näsi classification which draws close to the constructive approach is the action-oriented one. In both cases the direct and pragmatic empirical connections play a major role. Action research is the normative option of action-oriented studies [see e.g. Susman and Evered, 1978]. The common features of action research and the constructive approach emerge in the empirical phase of the studies in which the case method is usually applied. Both modes of research presuppose, on the one hand, a thorough understanding of organizational processes in order that the intended changes can be accomplished in practice. On the other hand, both modes of research presuppose that the researcher adopts a role of a "change agent," as a person who supports the participants of the organization in their learning processes. An important difference lies in the fact that action research does not seem to aim at creating any **explicit managerial constructions**.²¹ Thus, we may conclude that a successful action research study may result in an entity which fulfils the distinctive features of the managerial construction we refer to in this paper.

IS THE CONSTRUCTIVE APPROACH SCIENTIFIC?

One of the tasks of philosophy of science is to give the criteria under which research is scientific. This means that those necessary and sufficient conditions which distinguish science from non-science (e.g., sport) and from pseudo-science (e.g., astrology) should be given. However, because science is open and developing, no definitely strict criteria can be

²¹Of course it is possible that a construction just emerges during an action research process.

given — such that would retain their validity once and for all. In fact, openness and changeability are presupposed as characteristics of science. In spite of the fact that there are different approaches and schools of metascience, the following list of criteria hardly meets many opposing arguments among scientists [Niiniluoto, 1984]:

objectivity, criticalness, autonomy, progressiveness.

In order that scientific research be fruitful, it has to be able to solve problems and pose new problems. Accordingly, progressiveness may be seen as referring both to growth of knowledge (through problem solutions) and to propagation of new problems [Rescher, 1984; Siitonen, 1984].

Moreover, with regard to constructive studies, one has to consider the criteria of the applied sciences, viz. that their results should be **relevant, simple and easy to use** [Niiniluoto, 1985]. In addition, one has to relate all these considerations to the methodological research tradition in (management) accounting.

Before we take a look at these criteria, let us discuss the character of constructive research in more detail. The characteristic features of the constructive method in general are the following:

- (i) It is a step by step procedure, so that the nature of the steps is specified in the framework system, within which the method is applied.
- (ii) The possibility exists to check every step, or every phase in the construction.
- (iii) The procedure as a whole serves some definite purpose. Thus, building constructions is a goal-directed activity.

Let us now analyze the method of construction in the light of the general criteria of science, given above.

The possibility of checking the steps of a construction (cf. point (ii) above), linked with the criteria of **objectivity, criticalness** and **autonomy**, contributes to the issue that anybody can try out the construction and obtain results similar to the person who has made the original construction.²² In checking the construction, one also may criticize the way in which the construction was made. It should be borne in mind that making constructions, though goal-directed, is in itself largely a self-supporting activity and as such independent of economic, political, etc. considerations. However, a constructive research process as a whole is of course value-laden, and the preferences of the managers in question tend to play a significant role in this respect.

Making constructions tends to free us from prejudices, because constructions show us concretely, which solutions work, and which do not. Thus, making constructions is connected to the criteria of **progressiveness** and **criticalness**. Moreover, managerial constructions not only solve problems but often show us new problems, too. A construction that works, tends to lead us to new questions.

The main condition of validity for constructions is clearly that they work (i.e., solve the problems in question). It seems sound to assume that

²²However, in accounting research it may often be rather difficult to repeat the study by another researcher—particularly in the case of constructions which are implemented in an organization. This is largely due to the above mentioned "human factor" (see "The Idea of the Constructive Approach" section) which may affect, quite unforeseeably, the application of a construction in practice.

unpracticable alternatives, whether in engineering or in accounting or elsewhere, become eliminated in the course of time in the market of solution ideas. In most cases, the simplest idea is the most adequate one. Therefore, we may argue that a working construction is **relevant, simple, and easy to use**.

It is important to notice that one may draw theoretical conclusions from the usability of constructions. In this respect, the most radical view is that of American pragmatism, which considers practical usability as the major criterion of truthfulness [James, 1955], and for which constructions are the basic means of theoretical thinking in general. Charles S. Peirce has put it as follows:

We find some peoples drawn more toward arithmetic; others more toward geometry. But in either case, a correct method of reasoning was sure to be reached before many centuries of real inquiry had elapsed. The reasoning would be at first awkward, and one case would be needlessly split up into several. But still all influences were pressing the reasoner to make use of a diagram, and as soon as he did that he was pursuing the correct method. For mathematical reasoning consists in constructing a diagram according to a general precept, in observing certain relations between parts of that diagram not explicitly required by the precept, showing that these relations will hold for all such diagrams, and in formulating this conclusion in general terms. All valid necessary reasoning is in fact thus diagrammatic [Peirce, 1955, p. 46].

In other words, according to pragmatism, constructing a diagram amounts to using the correct method, in mathematics and also elsewhere. Peirce considers the method of construction to be a self-justificatory procedure.

In order to show that the method of construction is scientific, it is not enough to show that a certain managerial construction works in its proper context. One also has to show that the construction has theoretical connections, i.e., that it is a part of a particular theoretical framework.²³ In addition to contributing to the scientific validity of the method, the showing of the theoretical connections supports the claim that the construction in question also would work in other instances than in its original field. The development of mathematics and experimental science provide us with examples of a fruitful cooperation between constructions and theory.

With regard to the methodological research tradition in accounting, one may be unsatisfied with the above criteria of science and claim that, in order to be scientific, the results of research must be **generalizable**, too. According to positivism and modernism, science has the task of detecting the invariant features of nature and society [e.g. McCloskey, 1983]. First, it is worth noting that generalizability is not a self-evident condition for science as there are examples of scientific endeavors which clearly do not even aim at fulfilling this criterion (in particular history). In addition, perhaps somewhat surprisingly, it is possible to argue that this objective has already been met when a useful managerial construction has been designed: working, adequate constructions are in themselves apt to lead us to law-like connections between the phenomena in question. If, for instance, a

²³Cf. point (i) of the characteristic features of the constructive method.

working solution is produced to a management accounting problem of a firm, it is likely that this solution applies to other firms of the same type, too.

In addition, it is most important to realize that the question of generalizing in the case of constructive studies differs significantly from the respective problems in explanatory small sample studies where unwarranted statistical inferences are sometimes made (for instance, on the basis of the small samples). In fact, the generalization of managerial constructions may be regarded as a **diffusion process** of innovations occurring among practitioners, often with the help of academics (research and teaching). Even though we can to some extent predict the rapidity and scope of this process on the basis of the introductory success of a managerial construction, the decisive test takes place in the market for innovations [cf. "The Constructive Approach as a Methodology"]. This diffusion process differs profoundly by nature from the notion of generalizing in sample studies, in which it is simply based on certain assumptions about the probability distributions of the studied variables.

One of the major points here is that the actual question to be asked is the reverse to that presupposed by the claim of generalizability: after designing a working managerial construction, we may begin to consider what are the more general features which are revealed by the creation of a new reality.

CONCLUSIONS

In this paper we have discussed the legitimacy of the constructive approach as a way of doing management accounting research. The constructive approach is widely used in technical sciences, mathematics, operations analysis, and clinical medicine. The doctrine of management accounting includes several important examples of managerial constructions, such as the ROI-measure in profit-center accounting, the DCF-techniques in capital budgeting, and variance analysis in standard cost accounting. However, almost all of them have been developed in companies or consulting bureaus.

Our analysis showed that surprisingly few of the most significant constructions originate in management accounting research. The academic literature has typically just analyzed and interpreted the innovations constructed elsewhere after the fact.

We suggest that the rare occurrence of the constructive approach in management accounting research may be understood by the following:

- 1 The scientific ideals of accounting have been adopted either from natural or social sciences while such disciplines as engineering and medicine — which are characterized by their close connections to applied problem solving — are largely left outside of the methodological discussion.
- 2 The design of useful managerial constructions tend to result in a consulting relation between the researcher and the firm. The research results, having often great commercial value, are then usually considered as business secrets, the publication of which is naturally limited.

In relation to the more established accounting research approaches, constructive research was located in the normative area comprising both a theoretical and an empirical analysis. Both a decision-oriented study encompassing a successful implementation phase and an action research option of the action-oriented approach may in practice draw close to the constructive approach.

As far as the potential scientific merits of the constructive approach are concerned, conditions at three levels may be distinguished:

- the general characteristics of science,
- the features typical of the applied sciences and
- the methodological research tradition in accounting.

We argue that a successful constructive study — in which an innovative solution to a real-world problem is produced, its specific usability and theoretical connections are demonstrated, and its potential for more general adequacy is examined — is apt to fulfil the most significant general characteristics of science (i.e., objectivity, criticalness, autonomy, and progressiveness).

The fact that a successful constructive study satisfies the requirements typical of the applied sciences (i.e., relevance, simplicity and easiness of operation) follows from the pragmatic starting points of the problem and from making sure that the solution works.

The methodological discussion in accounting, influenced mainly by the positivist tradition, raises the claim of generalizability as one of the most important criterion imposed for scientific research results. This claim may at first be considered a problem for the constructive approach usually in which just a single real-world problem is solved. As to this question, we wish to stress two points. One, generalizability is not a self-evident condition for science as there are examples of scientific endeavors which clearly do not fulfil this criterion (e.g., history). Two, generalizability is a smaller problem for the constructive approach than it is for positive studies based on small samples.

As to the second point mentioned above, it is quite likely that a solution which works in one firm is useful in several other similar firms. At any rate, the grounds for generalizing in the case of a constructive study differ radically from an attempt to make statistical inferences from a small sample. A managerial construction is like a product competing in the market of solutions, not a statistical statement. Following the main ideas of pragmatism, practical usability is the major characteristic which shows the truthfulness of a managerial construction. Perhaps the most interesting point here is that the entire question of generalizability may be turned upside down: when an adequate, working construction has been created, it is proper time for us to consider what are the more general features which become visible in that construction.

At the more general level, we may consider the acceptance of the constructive approach as the next step in a process in which (management) accounting looks for its identity as a respectable discipline. So far this search has been based on the scientific ideals of natural and social sciences. In spite of the indisputable merits of this development, we now have reached a point in which there is only little interaction between management accounting research and management practice. This situation is prob-

lematic as management accounting is, in the end, a practical field where theory without pragmatic implications is empty. We argue that an effort now should be made to use the methodological ideas of other applied fields, such as technical sciences and medicine, in management accounting research. It is precisely here that the constructive approach emerges as a natural methodological option for management accounting studies.

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