

On the Complementary Relationship between Causality and Function in Sociological Theory:

A Commentary on the Recent Theoretical Controversy over Action Theory and Systems Theory

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1. Background and Aim

The aim of this paper is to show the complementary relationship between two methodologies in social science, especially in sociology, which have been often regarded as contradictory or logically inclusive to each other: causal explanation and functional analysis. In a controversy over theoretical framework in sociology which has continued above all in German-speaking world for the last several decades, two major theoretical approaches have occupied an essential role to draw the central axis of the controversy¹⁾. The one is action theory for which Hartmut Esser's the Model of Frame-Selection (MFS) is a representative and the other is systems theory which Niklas Luhmann developed. While the purpose of action theory in general, MFS in particular, is causal explanation of social mechanism through understanding subjective meaning of action, the methodology of systems theory is functional analysis.

The main question of the paper is, therefore, "what type of relationship do both methodologies have?" There are three possible answers: 1) causal explanation includes functional analysis but not vice versa²⁾, 2) functional analysis includes causal explanation but not vice versa³⁾, 3) both methodologies are complementary to each other⁴⁾. Position 1) is mainly supported by advocates of action theory because of their epistemological commitment to the nomological model of explanation, so to speak Hempel-Oppenheim Model; Position 2) is asserted by Luhmann and his followers because of their own epistemology as well; and this article takes and shall prove Position 3).

The way of the demonstration is as follows. First, Position 1) and 2) shall be took up respectively to clarify their formal structures (§2 and 3). Second, three issues shall be examined to scrutinize the relationship between causal explanation and functional analysis: a) the formal relationship of both methodologies, b) the import of the concept of self-referential system in systems theory and c) the thesis of functionally differentiated society as an typical problem to which both methodologies can and should be applied empirically (§4). The conclusions are summerized in §5.

2. The Relationship between Causality and Function in Action Theory

Esser (1993) proposes “action-theoretical functional analysis” as a methodology which integrates Hempel’s general formalization of functional analysis and Merton’s concept of manifest/latent function. This section, therefore, clarifies each theoretical construction of these two types of functional approach to confirm the logical ground of the proposition, as advocates of action-theory assert, that functional analysis is a special case of, and consequently included in, causal explanation.

2.1 Hempel: Functional Analysis as a Special Case of Causal Explanation

Hempel & Oppenheim (1948) proposes a scheme of deductive-nomological explanation (Figure 1)⁵⁾. Figure 1 includes three components: laws, boundary conditions (these constitute explanans) and explanandum. Figure 1 means that if and only if both law and boundary condition exist, then explanandum can and must occur.

Hempel (1968) also insists that functional analysis can be considered as a special type of deductive-nomological explanation (Figure 2)⁶⁾. Figure 2 includes three components: 1) a system S, 2) a functional requirement R that must be satisfied for existence or continuance of the system and 3) a set of items ($e_{(1)}, \dots, e_{(n)}$). Figure 2 means that 1) if there is a system S, then there must be a functional requirement R, namely, R is necessary condition for S; that 2) there is a set of items each element of which equivalently satisfies the requirement R, namely, the items are functionally equivalent each other.; and that 3) an item $e_{(n)}$ can be deduced only if non-existence of all other items functionally equivalent to $e_{(n)}$ is demonstrated or proved.

Hempel (1968), furthermore, enumerates three imports of functional analysis: 1) explanatory, 2) predictive and 3) heuristic ones.

The explanatory import of functional analysis lies in that it deduces the existence of explanandum that satisfy the necessary condition under the view of the appropriate functioning of the system.

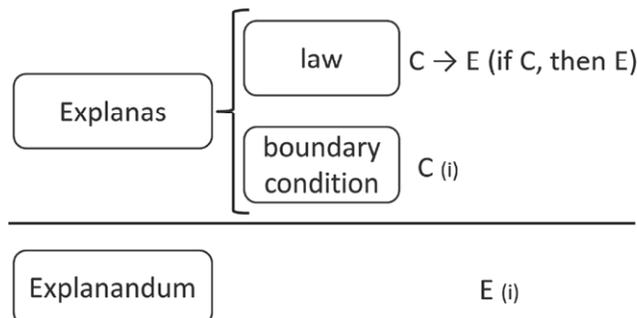


Figure 1 Model of deductive-nomological explanation (Hempel & Oppenheim, 1948)

$$\begin{array}{c}
 \text{system: S} \\
 S \ni \text{R: functional} \\
 \text{requirements} \\
 e_{(1)} \cup e_{(2)} \cup \dots \cup e_{(n-1)} \cup e_{(n)} \equiv \text{R} \\
 \neg e_{(1)} \cap \neg e_{(2)} \cap \dots \cap \neg e_{(n-1)} \\
 \hline
 e_{(n)}
 \end{array}$$

Figure 2 General formalization of functional analysis (Hempel, 1968)

Functional analysis is a type of teleological explanation which deduces cause from effect. This import, however, can practically not bring its ability into full play because 1) there can be some functional equivalents in virtually all of the cases and 2) it is practically impossible in most cases to prove the non-existence of all these equivalents.

The predictive import of functional analysis has close relationship with the explanatory one. The analysis provides the import to predict the existence of (a set of) explanandum which satisfy the necessary conditions on the assumption of the appropriate functioning of the system. Such a prediction, however, is possible only when self-regulation of the system is acknowledged. If not, no prediction is possible because any “self” of the system, that is, the continuation of the same system can be presupposed.

The heuristic role of functional analysis lies in that it is a kind of research program which is conducted by a particular heuristic maxim or working hypothesis. From the point of view of this aspect, the analysis is inquiry of particular self-regulation of a system and investigates how various properties of a system contribute a specific mode of self-regulation. As Hempel notices, social sciences are as yet at a stage of empirical generalization so that it should be carefully to adopt a viewpoint of functional requisite.

2.2 Merton: A Paradigm of Sociological Functional Analysis

A paradigm of sociological functional analysis which Merton proposes (Merton, 1949 = 1957: pp. 19–84) can be digested as Figure 3. While Merton refers eleven constructs in this paradigm, what is worth to argue here is two points as follows: 1) the paradigm adopts the perspective of functional equivalence (above all No. 7 in Figure 3) and the methodology of comparison (above all No. 10 in Figure 3) and 2) it separates between the levels of subjective dispositions and objective consequences, in other words, it presupposes that the distinction of manifest (intended) and latent (unintentional) consequences of an action. The former guarantees the possibility of a connection with Hempel’s general formalization of functional analysis and the latter enables a connection with a

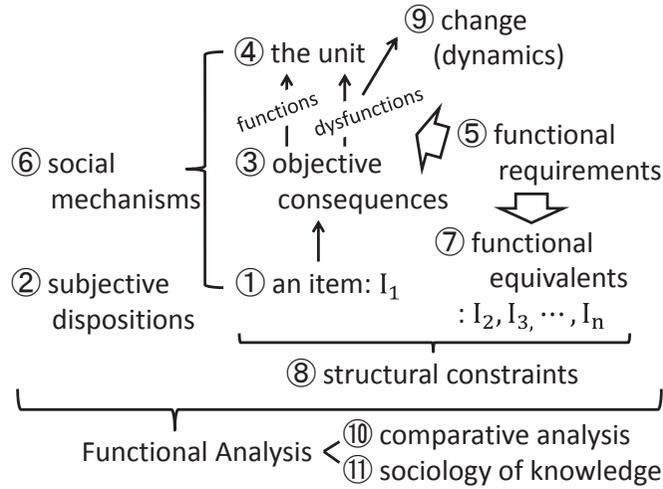


Figure 3 A paradigm of functional analysis (Merton, 1949 = 1957)

certain kind of action theory as described in the next subsection.

2.3 Esser: Action-theoretical Functional Analysis

Esser offers an approach named action-theoretical functional analysis combining Hempel's general formalization of functional analysis and Merton's idea of manifest and latent function (Esser, 1993: p. 374). While Esser himself does not invent a new theoretical or methodological viewpoint for functional analysis, this approach Esser offers can connect his explanatory model of Macro-Micro-Macro linkage which consists of three stages of logic (Figure 4) with functional analysis. In the one hand, the distinction and connection between manifest and latent function, namely, subjective dispositions and objective consequences are expressed as Macro-Micro link (the logic of situation) and Micro-Macro link (the logic of aggregation). On the other hand, explanatory factor of the approach lies in the Micro-Micro link (the logic of selection). So it can be said that this approach as a whole integrates the deductive-explanation and functional analysis into a theoretical scheme (Figure 5).

3. The Relationship between Causality and Function in Luhmann's Systems Theory

In Luhmann's idea of functional analysis, contrast to action theory, causality is considered as a mere scheme whose application can and should be scrutinized through functional analysis. This argument is one of the main grounds for the proposition that causal relationships can be included in functional ones. This section, therefore, clarifies the skeleton of Luhmann's assertion about the significance of functionalist approach and the role of systems theory for the approach to confirm the

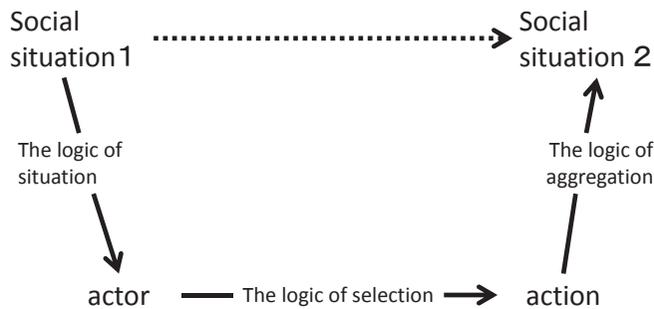


Figure 4 Marco-Micro-Macro linkage (Esser, 1993)

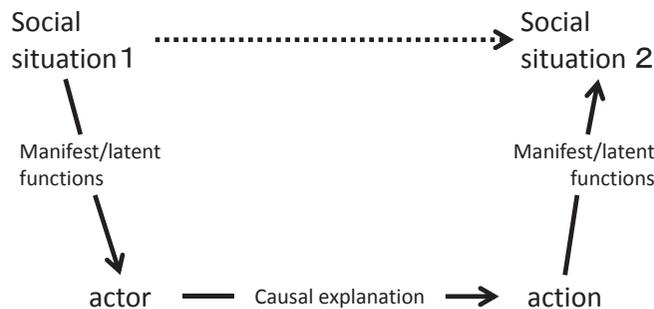


Figure 5 An integral model of causal explanation and functional analysis

logical of his proposition about the relationship among both approaches.

Luhmann adopt a methodological position of equivalence-functionalism which is asserted to criticize the formalization that equalizes functional analysis with teleological explanation (Luhmann, 1962: pp. 16ff.). He argues that contrast to the teleological formalization the essential ‘function’ of functional analysis lies in discovering functional equivalents and that the concept of function in functional analysis should be utilized as problem of reference to define functional equivalence.

How do functional analysis and systems theory relate themselves each other? Functional analysis needs systems theory (Luhmann, 1964: above all pp. 49ff.). Because what is possible for the analysis is restricted to discovery of functional equivalents, the analysis needs a theoretical device which enables asymmetrization among equivalents for explanations or predictions. In this regard, functional analysis requires systems theory which is the theory about some kind of systems that include and must resolve some functional requisites at the same time. Functional analysis can provide explanatory or predicative knowledge only if the functional requisites are put in order within the unit of system.

4. Arguments and Consideration

4.1 *The Complementary Relationship between Both Methodologies*

What is elucidated in the previous two sections is that action theory and systems theory, though the directions are the exact reverse each other, share a common assumption: the relationship between causality and function is formalized as a form of logical inclusion, that is, the one includes the other but not vice versa. This assumption, however, cannot hold. The focus of the argument here lies in evaluation of Luhmann's assertion. On the one hand, Hempel's formalization of functional analysis indicates that functionalist mode of explanation can be reconstructed as a kind of reverse causal explanation, namely, teleological explanation. On the other hand, equivalence-functionalism in Luhmann's sense emphasizes the significance of the heuristic "function" of functional analysis and refuses the interpretation of functionalism as teleological explanation. How can these seemingly conflicting assertions be reconciled or moreover integrated? The point to which we should pay attention is a common procedure of searching for functional equivalents. This procedure which is included in both teleological explanation and equivalence-functionalism can connect these two positions. That is to say, functional analysis the independent epistemic significance of which Luhmann emphasizes is a necessary procedure for Hempel's formalization of functionalist explanation as well.

The complementary relation concerned here comes into view if we focus on this searching process. For functional explanation in action theory, on the one hand, a search for functional equivalents should be essential not only for teleological but also heuristic significance. In other words, functional equivalents should be detected in a functional analysis not only because they have to be eliminated to establish a (reverse) causal relationship but also because they are necessary to criticize and relativize the analysis in which they are adopted. The essential role of the idea of functional equivalence, on the other hand, is such as shown in § 3.

4.2 *The Import of the Concept of Self-referential System in Systems Theory*

A significance of the concept of "self-referential" system lies in that the concept is one of possible concepts of system available in functional analysis. For functional analysis in Luhmann's sense, the concept is principally one but not only possibility of system concept because the concept 'system' is necessary in functional analysis as a point of reference which enables limitation of the functional equivalents to ones that can satisfy or at least not contradict all prerequisites of the system. The concept of system which is characterized by its self-referential property, therefore, should be analyzed and compared in 'functional analysis' with other possible concepts of system in view of the very 'function' of those concepts.

In regard to this point, the functionally specificity of the concept of self-referential system lies in

that it provides the point of view of “construction from above”. If we use the terminology of action theory, the concept enables us to focus on emergent properties of social order itself⁷⁾. On the other hand, one of its “dysfunctional” blind spots lies in that differentiation of entire system and out-differentiation of subsystems is explained exclusively in the framework of ‘differentiation theory’: increase of complexity (in system itself or the environment) would lead to differentiation the system adopts for its maintenance and in result this differentiation process could provide an opportunity for the next ones because the process in itself increases the complexity of the system and therefore of the environment (the distinction of system/environment is constructed in the system itself). This type of explanation of differentiation is at a risk of paralogism to pseudo-explanation, that is, insufficient teleological explanation in which a explanandum deduced from the existence of a functional prerequisite in a system without investigating and comparing with other possible functional equivalences. Such a pseudo-explanation is not a explanation but finally a mere description of the fact that there is an object in a system which is to be explained. In the case of social systems, in particular, the description about differentiation in systems theory has to be complemented by the causal explanation in action theory in order to avoid falling into this kind of pseudo-explanation.

4.3 The Thesis of Functionally Differentiated Society as an Empirically Applied Problem

The most important macro-sociological proposition in Luhmann’s theory is that the predominant form of differentiation of modern society is functional differentiation. This thesis, however, is described by virtue of differentiation theory so that it is necessary to question in terms of causal explanation in action theory as to how the functional differentiation of society is reproduced. More concretely speaking, the leading distinction is not system/environment but actor/situation and then the description in differentiation theory is to be completed by the question which is proposed in causal explanation as follows (Shimank, 2009): How are the code and programs of a functional system perceived as the definition of the situation by individual actors who participate in the reproduction of the system? In action theory, social systems can be understood macro-level phenomena which are in principle to be deduced and explained from micro-level phenomena: selections of actions by individual actors.

To connect both approaches in question, it is essentially significant process of the investigation to pay attention to symbolically generalized media of communication (SGM) (高橋 (Takahashi, 2012a, 2012b)). On the one hand, SGM function as codes of functional systems to enable out-differentiation of the systems and then functional differentiation of modern society⁸⁾. On the other hand, SGM constitute an essential part of functionally specific definition of situation. In other words, the phenomena of SGM locate in the point of contact between macro-level and micro-level. So it seems plausible to develop the question about the reproduction of functional differentiation of society into

the question of the reproduction of SGM. This question includes three sub-questions: 1) how does a medium determine the situation as functionally specific (Macro-Micro link, the logic of situation), 2) how does an actor who defines the situation as functionally specific select an action (Micro-Micro link, logic of selection) and 3) how are the medium reproduced through the definition of the situation and the selection of the action by the actor (Micro-Macro link, logic of aggregation). If these all questions are answered, the description of functional differentiation in systems theory can be complemented in regard to explanation of the mechanism of reproduction.

5. Conclusion

The conclusion of this paper can be summarized into three points as follows.

- 1) Causal explanation and functional analysis have a complementary relationship.
- 2) The significance of the concept of self-referential system lies in that it is one of the possible concepts of system which itself can be compared with other functional equivalents. In the case of social systems, it is necessary that the concept and the related methodology is complemented in the virtue of action-theoretical and causal explanation.
- 3) The central problem of functional differentiation as an empirical problem of application is how “the functional differentiation of modern society is reproduced.” As to answer this problem formulated in the tradition of functionalist and/or systems theory, action-theoretical and causal explanation can and should come into play.

Notes

- 1) As some recent examples in German-speaking world: Greshoff & Schimank (2006), Hill, Kalter, Kopp, Kroneberg & Greshoff (2009), Albert & Sigmund (2010).
- 2) As a representative example: Hempel (1968), Esser (1993).
- 3) As a representative example: Luhmann (1962).
- 4) As a representative example: Schützeichel (2006) in which, in the viewpoint of selectivity of meaning that is common categorical determination in both theory, a comparison between action theory which questions “why” and systems theory which problematizes “how possible” in order to insist the possibility of the complementary relationship. There is still another possible position which insists that three positions have no theoretical relationship one another. This pragmatic position shall not be discussed here because it would remain only if all other positions would be rejected.
- 5) As an example adopting this argument: Esser, *op. cit.*, pp.39ff.
- 6) As an example adopting this argument: Esser, *op. cit.*, S.371ff.
- 7) Luhmann (1984). As to contrast “construction from above” with “emergence from below”: Sutter (2006) in which indeed the significance itself of connecting (moreover integrating) of action and systems theory

is affirmed, rather the inclusion of systems theory into action theory Esser attempts is evaluated critically. As to the problem of the circular definition: 高橋顯也 (Takahashi, 2012a).

- 8) It is one of the most important contributions which Luhmann has made toward the thesis of functionally differentiated society to indicate the roles of “symbolically generalized media of communication” in concrete temporal events of communication. Medium/Form-distinction is the theoretical device introduced by Luhmann for the purpose of analysis of Form-functioning in autopoietic and information processing systems (including meaning-processing communicative ones). In short, it is necessary for meaning-processing systems in general, communication systems in particular, that they constitute any appropriate distinction between Medium and Form and symbolize objects in the environment as Forms through Medium to operate and observe them. Andersen (2003) rearranges the theoretical system of Luhmann into five analytical strategies: form analysis, systems analysis, differentiation analysis, semantic analysis and media analysis. The basic characteristics of each analytical strategy are shown in Table 1. In regard to relationships between the strategies he argues only three of them: the relationships between semantic and form analysis, differentiation and semantic analysis, and media and systems analysis, so that the general configuration including all five strategies is not dealt with. And I summarize the general configuration of the five analytical strategies rearranged by Andersen as shown in Fig. 6. Fig. 6 consists of two axes: 1) the distinction of meaningful operation (sinnhafte Operation) and its object, both are two fundamental targets of Luhmann’s analysis, 2) the level of analysis, namely, the distinction of the element level of each target and its set level. The five strategies rearranged by Andersen correspond to three of the four quadrants which the rectangular crossing of the axes makes:

Table 1 Luhmann’s analytical strategies (modified from Andersen, 2003)

Analytical Strategies	General Question
Form analysis	What is the unity of the distinction? And which paradox does it establish?
Systems analysis	How does a system of communication come into being in a distinction between system and environment?
Differentiation analysis	How are systems differentiated?
Semantic analysis	How is meaning condensed?
Media analysis	How are media shaped? How do they suggest a specific potential for formation?

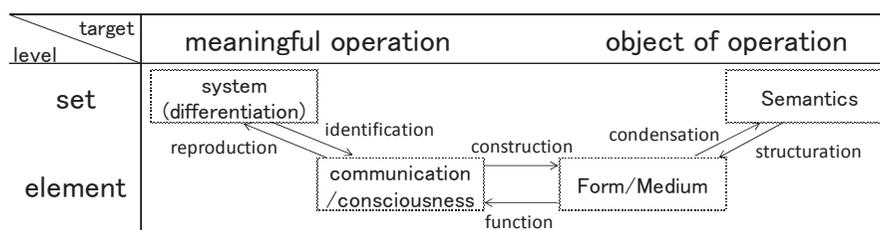


Figure 6 The relationships of Luhmann’s analytical strategies

systems analysis and differentiation analysis correspond to the set level of operation, semantic analysis to the set level of object, and form/media analysis to the element level of object. In the element level of operation to which no strategies corresponds is allocated communication which is the element of social systems and a fundamental concept in Luhmann's theory of social systems (in case of psychic systems consciousness is allocated). The arrangement shown in Fig. 6 clarifies a general relationship between targets in each analytical strategy. The first is the relationship of the set level and the element level of operation. In this relationship, operations as elements (= communications) can be identified only within the systems of communication to which they belong; systems of communication, namely, boundaries of system/environment can be reproduced through the communicative operations of which they consist. Systems analysis that focuses on how a distinction of system and environment is reproduced, therefore, the analysis which elucidates the way of reproduction of the distinction, that is, the boundary of the system through a temporary event of communication. For various kinds of social systems come into being through re-entries of the distinctions of system/environment within the societal system (Gesellschaftssystem), the same analytical perspective is true for differentiation analysis as well. Second, in the relationship of operations and Form/Medium, the element of object is a unit of difference, namely, a Form, which can be extracted through form analysis; A Form, as media analysis describes, must be distinguished from its Medium through an operation so as to be formed as such. The relationship which a communicative operation has to Form/Medium, therefore, is the construction of the distinction of Form/Medium. A Form, that is, a distinction Form/Medium, conversely, shall be analyzed in terms of function which it performs for generation of communication. Third, it is the relationship of the set level and the element level of object to be taken up now. A distinction Form/Medium, which in itself can be regarded as a semantic unit, condenses and is generalized in the course of history, so that a complex of Forms which come to be adopted repeatedly on communications in connection with other Forms is a unit of Semantics (Semantik). Each distinction of Form/Medium which is constructed within communication, hence, is structured within the Semantics to which it belongs. Semantic analysis puts the focus on this relationship of condensation and structuration. Now it is possible to arrange the general relationship of five analytical strategies in Luhmann's theory as described above in order to clarify the position of form- and media analysis and to point out its significance in the whole theory. The significance in theoretical system of Luhmann is about to be summarized mainly in the following three points. First, to focus on the difference of Form/Medium enables us to expose the existence of Medium which, behind its Forms, let them formed as direct objects of operation. Form- and media analysis, secondly, has the significance to enable the analysis of the element level because three fundamental concepts of operation, Form, and Medium, as Fig. 6 shows, constitute the analysis of the element level. Finally, form- and media analysis may contribute the problem of differentiation of which differentiation analysis mainly have charge. As correspondences between functional subsystems of society and symbolically generalized media of communication show typically, in the case that certain medium enables out-differentiation of the system, form- and media analysis works as direct presupposition. Form- and media analysis, conclusively, occupies a fundamental position in Luhmann's theoretical system and plays a central role which has possibility to be connected with all other analytical strategies.

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