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Complex Constraint Modeling (CCM): A Bridge Between Rational Choice and Structuralism

Comment

by

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1. Introduction

With modeling becoming a more wide-spread form of theory formation in the social sciences, the greatest need is to develop Complex Constraint Modeling (CCM), rather than ever-expanding applications of micro-economic market models beyond the realm for which they were intended. This will be my conclusion at the end of this contribution. There are various scholars who have worked on moves in the direction of CCM, and I would like to single out Harrison White for two reasons. For one, he has gone further than many others in elaborating the view that actors are made rather than given; and to my mind his work is at the cutting edge on this point (WHITE [1992]). But then, secondly, his work breathes solipsism. Whereas there are many references to other relevant work, there are few bridges to related efforts in economics and rational choice sociology. I believe that in this, he is like many other champions of structural analysis, only more extreme. This is very disturbing because it unnecessarily isolates two important developments in the social sciences from each other.¹ I would like to do three things in the following: First, to discuss briefly what I consider to be the most important feature of White's work; second, to explore systematic reasons why there are so few bridges; and third, to suggest some bridges.

2. White's Contribution

Let me begin by pointing out where I think White's work comes in. As traditional sociology came to be pressured for more rigorous theorizing and micro-

¹ This is not to deny the important role being played by those few who do attempt to bridge the structuralist and the rational choice developments, as for example BURT [1992], FLAP [1988], LAZEGA [1992], STOKMAN, HANGYI and ZEGGELINK [1994], ZEGGELINK [1993].

economics for more realistic models, a favorite topic of discussion was the appropriate model of man to use in social science inquiry. Traditional sociologists defended role-playing man in its various guises, whereas economists and rational choice sociologists opted for a more active model of man: the choosing maximizer. At the same time, the "structuralists" attacked both traditional sociologists and economists for viewing the individual as much too autonomous. The impact of social structure is so powerful that concern for behavioral principles is either trivial or "individualistic" and thus mistaken. In this view, actors are only interesting as nodes in relation to other nodes. No model of man is needed.² The important aspect about roles is not the fact that somebody plays them but that they represent patterns of ties. Behavior of units is seen as determined by the social network which constitutes "the forces that mobilize individual and collective actors" (BERKOWITZ [1988, 481]). Harrison White's work has prominently contributed to shaping this structural view. Yet, inspired by two economists (Chamberlin's work on monopolistic competition, and Spence's work on market signaling), WHITE [1988], [1995] recently pushed the structural approach again closer to the actor-oriented approaches by insisting that the node is not just the result of social structure. The structuralist view that a node's behavior can be explained by the structural context is now enlarged with a full feedback loop: "Actors of all scopes come into existence in the very social processes which they help to shape" (WHITE [1995, 67]). In a recent book, he uses the term "identities" in order to point to the context-dependent and context-creating nature of the actor (WHITE [1992]). The power of this approach must be judged against his theory of production markets. Although the final word about this theory is not yet in, and although the theory contains far too few bridges to other theories, it certainly deserves to be taken seriously. Space does not allow an exposition of this theory here³ but a few points need to be mentioned. The theory offers reasons for the view that production markets are small. Smallness means that there is no anonymity and that it makes sense to trace feedback mechanisms from actor to structure and from structure to actor. The characteristic features of the actor arise in the interaction with the context and, in that sense, the actor is made, just as he helps make the other actors in the network. The theory states the conditions under which participants in a production market will behave in such a way as to reproduce their characteristic features (and thereby the entire structure). Identities (i.e. the reproduction of actors) thus cannot be taken for granted. If the conditions are not met, identities will not be sustained. In a new handbook on network analysis, the general view underlying White's market model has been adopted for network analysis in general. The social (and economic or political)

² In the following I will make frequent use of two standard expositions of the structuralist viewpoint by BERKOWITZ [1988] and WELLMAN [1988]. It is not that I do not know any other such expositions but that these two authors are central codifiers in that field.

³ See LEIFER and WHITE [1988] for a fairly accessible introduction into the production market model.

structural environment “gives rise to observed characteristics and associations among characteristics” of social units (WASSERMAN and FAUST [1994, 8]). For White, this principle holds at virtually all levels of social organization. Thus, the view that a market actor is an independent bundle of fairly stable traits (preferences, size, objective, etc) must be just as wrong as the cherished traditional view in psychology that human personality is a stable collection of traits. From a structural point of view, one expects a personality to be a collection of behavioral profiles that depend on different social ties. As WHITE [1995] relates in his paper, this structural view of personality is now also emerging in psychological research.

In economics, Williamson has developed a view of problematic market transactions that points in the same direction. He based his transaction cost economics on what he calls “the great transformation,” a situation in which anonymous actors become special to each other, develop characteristic features in and through the interaction, and begin to develop a governance structure for their relationship. The contexts in and against which Williamson and White developed their theories are so different that it is not surprising that until now the two authors have responded to each other as specimen of their disciplines rather than with regard to the communality of their analyses.

3. Why Structuralists Fail to Build Bridges

There is a more pressing reason why the discussion between structuralists (White in particular) and economists is virtually lacking, and in my view this is a stumbling block to progress on all sides. The major problem is a big misunderstanding concerning methodological individualism. This misunderstanding is so central that we must look at it in some detail.

Readers not so familiar with the situation in traditional sociology need a few hints in order to understand the origin of the tenacity of the misunderstanding. In the nineteenth century, role theory emerged as the extreme view of context dependency of individuals, a view that took biologism in all its forms of assumed innate tendencies as a target. There are two versions of role theory (see LINDENBERG [1985]). The weak version can be summarized as the trits “Social environment → Attitudes → Social Behavior” and it is watered down from the strong version of role theory, viz. “Socialization → Internalization → Social Behavior”. Socialization consists of an intentional teaching environment, as it exists for small children at home with their mothers. Its effect is the development of a personality in which deep preferences for doing what is expected are formed (internalized values and norms). However, not all influences are intentional teaching influences and not all effects are deep personality formation. There is also influence from sheer exposure and that may be more superficial and temporary. For example, political attitudes may be influenced by whether you live in the city or in the countryside. Such an indication of social environ-

ment is of course very sketchy. There are all sorts of influences you are exposed to in a city (as opposed to the countryside), such as fleeting contact with strangers, variety of occupations, lack of social control, rapidly changing employment opportunities, etc. The indicator is a catch-all for these various influences.

Much of empirical research in traditional sociology was (and is) linked to the weak version of role theory. It consisted (and still consists) of measuring "social environment" with a battery of variables, each a proxy of a bundle of influences. Examples are: social class or socio-economic status, religion, party affiliation, age, sex, married/unmarried. These variables are then linked to attitudes (on politics, business, solidarity, confidence in the future, the quality of institutions, foreign workers, etc), sometimes also to behavior (such as voting for a particular party, getting a divorce, engaging in deviant behavior, etc). From a methodological standpoint (especially for statistical analysis), the indicators of social environment could be and were interpreted as attributes of the individual (even though they were meant to be proxies for aspects of the social environment of the individual). In this way, individuals could be grouped into categories according to one or more of these attributes.

It is against the strong version of role theory and against the research tradition linked to the weak version that structural analysis first developed. Criticism of the strong version focuses on the distinction between inner and outer attributes. Structural analysts refuse to interpret behavior "in terms of inner forces within units (e.g., 'socialization to norms')..." and they "focus on the relations between units, instead of trying to sort units into categories defined by inner attributes (or essences) of these units" (WELLMAN [1988, 20]). The criticism of the research practice linked to the weak version of role theory took two (interrelated) forms. One charge was that the indicators were being interpreted as attributes of (independent) individuals (mostly for purposes of statistical analysis). In that way, one is "misled into studying the attributes of aggregated sets of individuals rather than the structural nature of social systems" (WELLMAN [1988, 14]). The other form of criticism is that a particular attribute is assumed to refer to a real environment, whereas it does not contain any structural information. "Instead of assuming that classes or other categories of actors are real in themselves, structural analysts begin by recognizing that there are underlying relationships among the elementary parts of a social system that constrain their interactions with one another and shape the patterns of behavior in which they engage" (BERKOWITZ [1988, 480]).

Although these criticisms were by and large justified, two drawbacks hampered their effectiveness. First, as for many other approaches, the criticism was directed at the input rather than the output quality of theories and empirical studies: If your work does not contain explicit reference to network effects, then the study cannot be any good. We can find similar ways of arguing with regard to "conflict," "system theory," "symbolic interaction," and sometimes even "rational choice." Barely has anybody actually compared work that has been

done with proxies for social environment (like the variables listed above) to work that was done with explicit consideration of networks. As one prominent structuralist observed: "Structural analysts often have not competed directly with other sociologists in explaining the same phenomena. Rather, they have been preoccupied with reformulating basic questions" (WELLMAN [1988, 48]).

A second defect in the structuralist criticism was that it never questioned the weak version of role theory as a theory of action. At best, it short-circuited social environment and behavior by ignoring attitudes as an intervening variable, under the assumption that the (structurally specified) environment constrains behavior to such a degree that it "explains" the behavior.⁴ As a result, there are endless confusions. Everything that is somehow called "individual" is subject to a structuralist knee jerk: "individual" is what people thought before there was structural enlightenment. Economists are also seen as champions of the individual and therefore as barking up the wrong tree. For example, Wellman sees nothing wrong in equating social indicator research with methodological individualism, suggesting that "the shift away from methodological individualism toward structural analysis calls for the development of new relational methods..." (WELLMAN [1988, 38f.]). On the basis of the weak version of role theory, it is indeed impossible to distinguish the ascription of individual attributes in social indicator research from the formulation of a theory of action necessary to describe how constraints (and thus social environment) can affect behavior. Disarmingly, Berkowitz observes (in an article called "Toward a Formal Structural Sociology") that "structuralists have, as yet, no clear general way of approaching the problem of behavior under constraint" (BERKOWITZ [1988, 491]). There is no indication that Berkowitz scratched his head and asked: why don't structuralists have a clear way of dealing with constraints when their most important message is that constraints are crucial?

The result of this innocence with regard to a theory of action leads to much ad hoc maneuvering and contradictory stances concerning rational choice in structuralist writings. Consider the exposition of "a structural approach to markets" by LEIFER and WHITE [1988]. Here they introduce the model with an example (p. 88–91): Tony producing and distributing frozen pizzas and trying to find the appropriate niche among the frozen pizza producers. They argue, against the standard market model, that Tony is not a price taker. But in doing so, they invoke arguments like these: a good business person should seek to change niches, if it is possible and profitable to do so. Or: in a stable market, with each producer operating like Tony, the individual maximizing decisions lead each producer to choose the same niche as in the previous period. Or: if some niche other than his own offers a greater return he must consider a change. Then again, in another context, White spends many pages expounding

⁴ In his earlier works, Durkheim had done the same, a fact that is often quoted as a legitimation for this kind of explanation without a theory of action (see also BERKOWITZ [1988, 484]).

the maxim that “to use goals and means as a guide to observation and analysis is to mislead oneself, to turn away from the sources of action . . .” (WHITE [1992, 299]). No wonder that bridges fail to be built.

4. Why Economists Fail to Build Bridges

Economists have developed the ultimate tool for sniffing out constraints: a theory that made action contingent on relative prices. People are what they are and do what they do in a juxtaposition of their own resources vis-a-vis the structure of relative prices. In this way there is maximal context dependency of the individual. This approach is very congenial to the structuralist approach, only the context is more abstract than a network of individuals.

Yet, a number of things happened in the elaboration of this approach that worked against the context dependency. First of all, in order to make models tractable, the individual was assumed to have full information on goods and prices, and that not only fictionalized the structure of relative prices, it also forced the empirically interested scholar to homogenize the population into representative consumers, greatly reducing the context dependency of individuals. Constraints were reduced mostly to income and prices for consumer goods. In network terms, the simplification implied fully connected networks by default (as WHITE [1995] also observed). Second, again for purposes of modeling, individual preferences were assumed to be given, fully connected, and stable. No combination of goods would be left out in the ordering of goods. Empirically interested scholars had to restrict the kinds of goods for which these preferences could be assumed. Again, these simplifications helped trim the constraints that have to be considered, but they also still further reduced the context dependency of individuals. Ironically, the discipline with the most sensitive machine for tracing constraints streamlined those constraints to such a degree that their structure became trivial. Economics had adopted a strategy of Simple Constraint Modeling (SCM), and, combined with the ideological stance of consumer sovereignty, this did create the impression that economic theory is all about autonomous individuals rather than about interdependencies. It now takes good will to detect the potential in economics for modeling context dependency, and given the history of structuralism, it is not surprising that this good will is not abundant.

5. Some Bridges

Both sociology and economics originated as disciplines that championed the fact that human interaction is the cause of virtually every social phenomenon. Each got stuck in carrying out this message, but much has happened in the meantime. The recent convergence between economics and sociology has creat-

ed more pressure for empirical content for economists and more pressure for attention to theory for sociologists. Both pressures mean that the time has come to dive seriously into Complex Constraint Modeling (CCM). By this I mean models in which the most important part is devoted to representing interdependencies as mutual constraints, given an explicit constraint driven theory of action. For that, new possibilities have emerged. Game theory, designed for dealing with interdependencies, has become very sophisticated and it may be one of the most prominent tools for breaking the Simple Constraint Modeling tradition in economics. New textbooks (such as the one by Kreps) show this trend, and there is increasing attention to the link between structural embeddedness and game theory (see RAUB and WEESIE [1990]). Complex Constraint Modeling has recently also found its way into the treatment of traditional SCM topics, such as careers and contracts (see for instance SCHANZE [1993], LIGTHART and LINDENBERG [1994], and BERNASCO [1994]).⁵

Since computer simulation has become a sophisticated tool in the social sciences, a very important step toward Complex Constraint Modeling (CCM) can be and presently is being taken: dynamic models, game theoretic and otherwise. See for instance the work of ZEGGELINK [1993] and the recent work by STOKMAN, HANGYI and ZEGGELINK [1994].

These developments show that you always need a theory of action that allows you to relate relevant constraints and feedback effects. Contrary to the implicit or explicit canon of structuralists, the more you make this theory explicit, the easier it is to deal with the constraints and the feedback effects. Yet having a constraint driven theory of action does not automatically yield attention to complex constraints, as we have seen. All too often, micro-economics is applied in the social sciences as a demonstration of the usefulness of using the language of micro-economics, and then Simple Constraint Modeling is the name of the game. A prime example of this is the book by MCKENZIE and TULLOCK [1981], and most other examples of the so-called economic imperialism are of the SCM kind. By contrast, Complex Constraint Modeling is a bridge between structuralists and rational choice theorists.

However, in order to build a complete bridge between the camps, the notion has to be abandoned that there is a trade-off between either making constraints or the theory of action more complex. So far, COLEMAN [1990] is a strong champion of this trade-off idea. Elsewhere (for example LINDENBERG and FREY [1993]), I have argued how the theory of rational choice would have to be broadened in order to incorporate most of what has hitherto been pushed to the side of preferences into the camp of constraints. There is no room here to expound these developments. Suffice it to say that in order to expand our grip on constraints, we need to make (most) goals and the size of the relative price

⁵ Of course, complex constraint modeling may use simple constraint modeling as a stepping stone in model development in what has been called the method of decreasing abstraction (see LINDENBERG [1992]).

effects dependent on the context. For the former, we need a theory of social production functions, and for the latter, we need a theory of framing. But in both cases, it is clearly the broadening of the theory of action that considerably advances the possibilities for CCM. This notion also fits nicely with Harrison White's insistence that the context dependency prominently includes the development of goals in the interaction (see WHITE [1992, 298]). In order to create a wider acceptance of this further push into CCM, one would have to give up hopes of modeling maximization across all contexts, i.e. as if there was no context dependency. Ultimately, CCM must entail sacrifices with regard to neat modeling. Slowly but surely this will come to be accepted as well.

6. Conclusion

Structural sociologists have an important message but their tradition also creates many misunderstandings with regard to the meaning of "individual". Economists have developed important tools for relating constraints to action, but development of their discipline pushed towards trivialization of constraints. Now that sociology and economics are converging more and more, the time is ripe for joining forces in Complex Constraint Modeling (CCM), a strategy of model development that combines the insights from structuralists and others about the complex context dependency of individual action with the constraint-driven theory of action originating in economics. However, that theory needs broadening in order to capture relevant constraints on goals and on the perception of relative prices.

References

- BERKOWITZ, S. D. [1988], "Toward a Formal Structural Sociology," pp. 477–497 in: B. Wellman and S. D. Berkowitz (eds.), *Social Structures. A Network Approach*, Cambridge University Press: Cambridge.
- BERNASCO, W. [1994], *Coupled Careers: The Effects of Spouse's Resources on Success at Work*, Thesis Publishers: Amsterdam.
- BURT, R. S. [1992], *Structural Holes. The Social Structure of Competition*, Harvard University Press: Cambridge, MA.
- COLEMAN, J. S. [1990], *Foundation of Social Theory*, Harvard University Press: Cambridge, MA.
- FLAP, H. [1988], *Conflict, Loyalty, and Violence*, Peter Lang: Frankfurt.
- LAZEGA, E. [1992], *The Micropolitics of Knowledge. Communication and Indirect Control in Workgroups*, de Gruyter: New York.
- LEIFER, E. M. and WHITE, H. C. [1988], "A Structural Approach to Markets," pp. 85–108 in: M. S. Mizuchi and M. Schwartz (eds.), *Intercorporate Relations: The Structural Analysis of Business*, Cambridge University Press: Cambridge.
- LIGHTHART, P. A. M. and LINDENBERG, S. [1994], "Solidarity and Gain Maximization in Economic Transactions: Framing Effects on Selling Prices," pp. 215–230 in: A. Lewis and K. E. Wärneryd (eds.), *Ethics and Economic Affairs*, Routledge: London.

- LINDENBERG, S. [1985], "An Assessment of the New Political Economy: Its Potential for the Social Sciences and for Sociology in Particular," *Sociological Theory* 3(1), 99–114.
- [1992], "The Method of Decreasing Abstraction," pp. 3–20 in: J. S. Coleman and T. J. Feraro (eds.), *Rational Choice Theory: Advocacy and Critique*, Sage: Newbury Park.
- and FREY, B. [1993], "Alternatives, Frames, and Relative Prices: A Broader View of Rational Choice," *Acta Sociologica*, 36, 191–205.
- MCKENZIE, R. and TULLOCK, G. [1981], *Modern Political Economy*, 3rd ed, McGraw-Hill: New York.
- RAUB, W. and WEESIE, J. [1990], "Reputation and Efficiency in Social Interactions: An Example of Network Effects," *American Journal of Sociology*, 96, 626–654.
- SCHANZE, E. [1993], "Symbiotic Arrangements," *Journal of Institutional and Theoretical Economics*, 149(4), 691–697.
- STOKMAN, F. N., HANGYI, H. T. and ZEGGELINK, E. P. H. [1994], "Social Networks. Principles of Self-Organization," Proceedings of Second Social Science Information (SSIT) Conference, Amsterdam, December 1994.
- WASSERMAN, S. and FAUST, K. [1994], *Social Network Analysis*, Cambridge University Press: Cambridge.
- WELLMAN, B. [1988], "Structural Analysis: From Metaphor to Substance," pp. 19–61 in: B. Wellman and S. D. Berkowitz (eds.), *Social Structures. A Network Approach*, Cambridge University Press: Cambridge.
- WHITE, H. C. [1988], "Varieties of Markets," pp. 226–260 in: B. Wellman and S. D. Berkowitz (eds.), *Social Structures. A Network Approach*, Cambridge University Press: Cambridge.
- [1992], *Identity and Control*, Princeton University Press: Princeton.
- [1995], "Social Networks can Resolve Actor Paradoxes in Economics and in Psychology," *Journal of Institutional and Theoretical Economics*, 151(1), 58–74.
- WILLIAMSON, O. E. [1985], *The Economic Institutions of Capitalism*, Free Press: New York.
- ZEGGELINK, E. [1993], *Strangers Into Friends. The Evolution of Friendship Networks Using an Individual Oriented Modeling Approach*, Thesis Publishers: Amsterdam.

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