

Measuring the Social Capital of Brokerage Roles

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Several researchers (Burt, 1995; Marsden, 1982, 1983; Granovetter, 1973; Homans, 1951, 1974) have stressed the importance of actors who occupy strategic positions in social networks to explain aspects of diffusion processes in social structures: If contacts between two parties are only possible through a third party, the latter can be regarded as being in control of resource flows. Such transmitting actors – often referred to as brokers – play a decisive role in the connectedness of social structures and hence, in determining the existing amounts of social capital available to the members of a network. Although attempts at classification and operationalization of brokerage roles have already been made (Gould and Fernandez, 1989), the integration into a broader theoretical framework – such as social exchange theory – is still to be achieved. Before we redefine to this purpose the Gould and Fernandez' typology of broker roles by making use of Hummell and Sodeur's (1987) census of triadic role patterns (see also Burt, 1990), several aspects of physical capital (such as accumulation, conversion and decay) will be analyzed with regard to their meaning in the different concepts of capital in social sciences (e.g. human capital, cultural capital, social capital). Finally, the validation of the proposed instrument for measuring social capital will be discussed against the back-ground of some empirical evidence.

INTRODUCTION

One reason for the attractiveness of the idea to treat relations as if it were capital is that it offers the possibility to treat the resources of human action in a common conceptual framework. In this regard, the notion of *social production* (Lindenberg, 1989) points to the fundamental meaning of social processes for the thorough understanding of phenomena such as *markets*. Another yet related reason may stem from the possibility to make use of economic concepts such as *price theory* which take into account the dynamical aspects of an actor's deployment of resources to certain ends. In his book *Foundations of Social Theory* James S. Coleman (1994) states that the notion of human capital (Becker, 1993), which stands for the capabilities, knowledge and habits of an individual, is one of the most important and fruitful concepts of the last decades. With regard to the production of human capital, Coleman as well as Bourdieu (1980) stress the productive aspects of social structures, which can therefore also be described as social capital.

In general, two aspects of productivity of social capital need to be distinguished: Whereas authors like Putnam (1995) or Fukuyama (1995) are mainly interested in the collective goods aspect of social capital, other researchers study the way in which social capital may serve as a resource to the individual (Burt, 1995; Lin, 1986) - the assumption here is that "something about the structure of the player's network and the location of the player's contacts in the social structure of the arena provides a

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competitive advantage in getting higher rates of return on investment” (Burt, 1995, p. 8). As Borgatti, Jones and Everett (1998) have pointed out, both distinctions need be made. This has implication in the formulation of a measure for social capital. Until now, tentative efforts in this regard have mostly lead to single measures of social capital exclusively focused on aspects of a network’s *closure* or *betweenness* respectively. If one accepts the view that the production of collective goods (such as “trust”) often involves strong ties², whereas provision of private goods implies more often *weak ties*, two relational aspects are identified which are equally decisive for the formulation of a genuine measure of social capital.

Given the evolutionary primacy of mechanisms of social integration which involves strong ties (that is to say that something needs to be integrated before it is differentiated), the question is raised of how different kinds of social capital come into existence and how they are connected in order to produce an overall integrated structure. Regarding the relation between denser social units, Georg Simmel sometimes used the image of intersecting circles. If the intersection is brought about by a single actor one deals with what might be called a “broker”. In this regard brokers are actors that allow or enhance resource flows between otherwise unconnected or only weakly connected actors; as a result they able to gain advantages due to their strategic positions in social networks.

Within the past two decades a number of publications tried to cast light on central aspects of social capital (e.g. Bourdieu, 1980; Coleman, 1988, 1994; Lin, 1982, 1988; Flap and De Graf, 1986; Burt, 1992). Against the background of some of these works it seems that exchange theory as a common theoretical framework for social capital could be of high relevance for the integration of a number of research attempts. With regard to the meaning of the concept of social capital within such a common theoretical setting, the relationship between different concepts of capital (e.g. physical capital, human capital, cultural capital or social capital) need be clarified and similarities as well as differences underlined. In the discussion about the nature of social capital (closure vs. betweenness), two sorts of social capital – support and leverage capital – finally emerge that account for the different relational contents in social networks.

In a second step the characteristics of social capital are used to reformulate the typology of ideal types of brokerage roles of Gould and Fernandez (1990) against the background of Merton’s (1968) examinations on Local and Cosmopolitan influentials. In combining the concept of different sorts of social capital with the results of Merton’s analysis, the basis for an operationalization of these broker roles is arranged within the framework of Hummell and Sodeur’s census of triadic role patterns. After having operationalized different broker roles, the instrument is calibrated by applying it to a small fictitious data set so devised as to take into account a number of difficulties that could impede the identification of brokers. By means of a discriminant analysis the instrument is finally validated before use in the context of an empirical application.

Different Conceptions of Capital

If we accept the idea that human action is generally carried out by using different kinds of resources, the overall importance of the capital concept becomes clear: the notion of capital is a means to

² In this regard one has to differentiate between decentralized and centralized solutions to the collective action problem. Homans (1974, p. 104) describes the strong tie mechanism for the provision of collective goods in a decentralized case: “If multiple individual exchanges among the members of a group are rewarding enough, that fact may increase the similarity among members in the sense that more of them conform to a group norm than we should have expected if the direct reward of conforming, that is, the attainment of a collective good, were the only one at work.” The centralized solution is represented through institutions which can be regarded as a “rule enforcing mechanism” in case of absence of strong ties (Elster, 1990, S. 147). See also Flache (1996) for a discussion on the provision of collective goods within dense groups.

explain factors of production when describing social action. As Wellman and Wortley (1990, p. 558-59) have stated, the

[...] social support that community members provide is a principal way by which people and households get resources, along with market exchanges (as purchases, barter, or informational exchanges), institutional distributions (by the state or bureaucracies as citizenship rights, organizational benefits, or charitable aid), and coercive appropriations (by interpersonal or institutional bullies).

Lindenberg (1989, 1986) has in this regard pointed to the fact that production as well as distribution of status and income as resources for the individual depend on different social structural realities. Furthermore, Lindenberg states that human behavior can be understood as being oriented towards the attainment of two main goals: *physical well-being* and *social approval*. To achieve these two goals, individuals use resources on which they have either direct control or to which they have indirect access through other persons. The notion of capital accounts for the variety of different resources. It unites them in a single category that allows an analysis of aspects such as accumulation or substitution of resources for the benefit of a person's situation with regard to the main objectives: physical well-being and social approval.

For a more systematic idea of social capital characteristics, the similarities and dissimilarities of different capital concepts are studied followed by the examination of aspects of capital like *accumulation, duration of accumulation, possibilities of substitution, duration of decay and transferability*.

Human Capital

Examples of the use of economic concepts in the field of social phenomena were often provided by economists themselves. Gary Becker's (1993) formulation of the human capital concept for example tries to explain social phenomena in terms of the neoclassical terminology of markets. In this context, the private household is not solely regarded as a place of private consumption but it occupies a productive function in the economy, too: By making use of different resources it contributes to the socialization of individuals.³ Therefore, in a manner similar to enterprises, households can be regarded as investors in fixed assets, long lasting goods and capital thus ensuring to household members a part on the labor market. The human capital stock of a person is the result of the knowledge and capabilities acquired in the family as well as on the education or labor market. The amount of human capital a person accumulates is therefore the result of his "overall" market behavior. In other words, individual decisions on investment and consumption are decisive as regards the size of a person's human capital stock. From this perspective time is held as a scarce resource for individual productivity in relation to human capital. As Becker (1982) states, not only is it important to acknowledge that productivity of non-market time influences consuming behavior but also that the effect of human capital on the non-market production is a source of returns from investments in human capital.

Wellman and Berkowitz (1988, p. 11) comment on the concept of human capital and point to one of its major shortfalls with regard to its explanatory power for structural analysis:

If social factors enter into conventional studies of mobility at all, it is because persons with similar attributes possess similar resources and motivations and hence move through social systems in similar ways. Human capital theory (Becker, 1975) and the

³ Becker (1993, p. 21) points out that "No discussion of human capital can omit the influence of families on the knowledge, skills, values, and habits of their children. [...] Large differences among young children grow over time with age and schooling because children learn more easily when they are better prepared".

classic Wisconsin studies of intergenerational mobility (Sewell, Haller and Portes, 1969) are based on this model. Although such models often deal with large aggregates, their underlying assumptions are derived from the experiences of persons moving through the system as apparently isolated individuals.

This criticism underpins the necessity of taking into account an actor's connections (as well as the relations between those contacts) in order to arrive at a proper structural account of social phenomena – this aspect is at the core of the proposed measurement procedure for social capital which will be clarified further in the discussion.

Clearly, the general possibility of *accumulation* of human capital exists in a manner similar as to physical capital. The same seems to hold for the *duration of decay* of capital stocks; as with physical capital high rates of human capital decay seem possible - for example one may think of drastic shifts in labor market demand, often requiring additional or even totally new qualifications of former job holders. However, one difference between human and physical capital is the *higher duration of accumulation* in human capital. A higher education starts to pay off only from the moment one gets the right job whereas physical capital is immediately active and effected by the dynamics of markets. A human capital stock is ultimately associated with a certain actor, human capital as an objective quality exists only in connection with its bearer. This is why human capital is considered of limited *transferability* and *substitutability*. The question of how far human capital can be transferable rests on the similarity of fields of investment. Something similar to transferability of human capital exists only if knowledge and skills acquired in one field of action can be used in other fields.⁴ For the same reasons there are limited possibilities for substitution of human capital; because of the scarcity of the production factor time, individuals cannot substitute human capital as easily as physical capital.

Cultural Capital

In the fields of neo-Marxism Bourdieu and Passeron (1977, p. 30) formulated the concept of cultural capital which refers to the “cultural goods transmitted by the different family PAs (pedagogical actions) whose value qua cultural capital varies [...] within different groups or classes.” From this* perspective capital is interpreted as being attached to social characteristics such as status or social class. The emergence of cultural capital has thus to be thought of in the context of the development of social classes. In the theoretical tradition point of view of the Marxist doctrine, availability of capital in general is just a problem of being a member of a certain social class which determines the quantity that can be accumulated by an individual. Prevailing inequalities with regard to possession of cultural capital lead to an intensification of property conditions. Therefore, not only the generation, but also *accumulation* and *transferability* of cultural capital are regarded as being phenomena immanent to social strata.

Because the dynamic processes between social classes always lead to a reproduction of certain distribution patterns of resources, the existing power structure is continuously reestablished. The pedagogical work in education is understood as a means by which the leading class designates the governed people social positions.⁵ Bourdieu also uses several other capital terms in this context like symbolic or linguistic capital (Bourdieu, 1992) which can be understood as productive factors for

⁴ The principle non-transferability of human capital is also stressed by Milgram and Roberts (1993, p. 313): “A person's skills and knowledge are assets that can only be owned by the person alone. In the absence of slavery, workers are not free to transfer ownership rights permanently to someone else. The non-transferability of human capital is problematic when those skills are specific to an organization or physical assets.”

⁵ Diekmann (1993) refers from this apparent proximity to human capital theory that cultural capital can be understood as a specific form of human capital.

cultural capital. In this regard an official language may be seen as linguistic capital that assures certain people symbolic power. Because these factors can be interpreted as having by and large properties similar to cultural capital, they are not dealt with separately. Accordingly, cultural capital may – in opposite to physical capital – be characterized by its enormous *time span of decay* since it passes on from one generation to the next in certain classes.

Against the background of this short summary it is clear that *substitution* of cultural capital seems almost impossible. The acquired competencies of individuals are determined through the membership of a social class. One possible substitution of cultural capital in the Marxist theory may be found in the idea of a revolution that unifies cultural capital in a classless society. The transfer of cultural capital also seems impossible due to its specificity; the members of a social class have no possibilities to use their cultural capital on other markets.

Social Capital

For Coleman (1988) the concept of social capital holds the promise of reconciling the social structural aspects that are stated in sociological theories with the rational choice model of economics in a common conception.⁶

Based on a theory of rational action in which every actor has a) control over some resources and b) interest in resources that are controlled by others, social capital is a special resource that allows – as with physical and human capital – certain actions that would otherwise have been impossible. The concept of social capital is fundamentally based on *relational* aspects of actors as opposed to human capital which describes a given equipment of resources as an individual attribute. By connecting the idea of social capital with insights from behavioral psychology, Homans (1974, p. 363) stresses the general importance of social capital in the development of institutions:

All of these innovations, whether at the top of society or at the bottom, possess the following characteristics. They require some form of social capital before men can attempt them at all, for their payoffs at best are not immediate but deferred. The capital must increasingly take the form of generalized rewards like money or status, generalized in the sense that leaders can distribute them so as to induce people to perform some mix of a wide variety of activities.

Social capital like physical capital can be found in different sectors and in diverse forms. The common characteristic is always the idea that the available quantity of such resources determines the scope of human activity. Whereas physical capital as a quality can exist distant from specific individuals, social capital refers to different social structural characteristics of individuals. In addition to its emergence as collective goods, social capital also accounts for the quantity of relations that an individual might manipulate to specific ends. Therefore, two sectors of social life are differentiated: in one sector, social capital is generated and maintained as an unintended consequence of human action. This kind of social capital is often called “support capital.” Support capital is constituted of relations between people socially similar and serves mainly as the emotional stabilization of individuals.

In the other sector, social capital appears as an instrumental resource that allows actors to make use of it to certain intended ends, so as to improve their occupational carriers (N. Lin, M. Ensel and J.C. Vaughn, 1981); in this case the term “leverage capital” is frequently used. By connecting this dichotomy with the previously mentioned idea of Lindenberg of the universal goals of human action, one

⁶ Coleman (1988, p. 95) regards social capital as part of a general theoretical strategy in which we are “taking rational action as a starting point but rejecting the extreme individualistic premises that often accompany it. The conception of social capital as a resource for action is one way of introducing social structure into the rational action paradigm.”

could say that social approval is the core of support capital and that the strive for physical well-being is the basic ingredient for leverage capital. More will be said about this systematic in the context of a discussion on broker roles.

Support capital is typically generated in informal groups with dense relations that are the result of a high frequency of interaction between socially similar persons. Therefore, such a setting allows only modest possibilities for an *accumulation of support capital*, due to restricted time resources of individuals. The expression of a high similarity between the group members suggests that in addition there are no large status differences within such groups because of a similar resource access for all members. The *time span of decay for support capital* is assumed, for the same reasons, to be very lengthy. Because of the high time consuming investment in socio-emotional relations, people are little inclined to break up such relations. Lastly, *transferability* and *substitution* of support capital are both problematic. Again, the fact of having a restricted time budget gives way to the assumption that support capital can be transferred only under considerable time commitments. With regard to substitution, one possible compensation can be an intensification of other existing relations in a socio-emotional context. Nonetheless, possibilities for substitution of support capital appear to be rather scarce.

Leverage capital comes into existence when an increasing differentiation of a group (as a result of its size) leads to growing distances with less frequent interactions between some of the group members. With widening gaps between smaller groups of high internal density, structural holes (Burt, 1992) come into existence allowing actors that bridge such gaps to exploit weaker relations for their own sake. Because of a lower time expenditure necessary for keeping often highly formal relations going on, *accumulation of leverage capital* seems much easier than is the case of support capital, and also leaves more space for status differences. Since one of the main reasons to keep up relations that serve instrumental interests is the flow of scarce resources, the *time span of decay for leverage capital* is assumed to be relatively short.⁷ The moment one can obtain the same resources for a lower commitment, the former relation is likely to break up. Contrary to what has been said with regard to support capital, *transfer* and *substitution* of leverage capital can broadly be understood as being unproblematic and somehow close to what defines physical capital. Their transfer for use on different markets seem possible.

Table 1 on the next page adds up the aspects of the different capital conceptions discussed so far.

Brokerage Roles and Social Capital

The idea of different sectors or spheres of social action also plays an important role in Merton's (1968) research on brokers (or "influentials" in his terminology) in an American community ("Rovere-town"). Due to their structural embeddedness, Merton distinguishes two sorts of brokerage roles referred to as *Locals* and *Cosmopolitans*. The difference between these two types stems from how they are oriented towards Rovere:

The Localite largely confines his interests to this community. Rovere is essentially his world. Devoting little thought or energy to the Great Society, he is preoccupied with Local problems with the virtual exclusion of the national and international scene. [...] Contrariwise with the Cosmopolitan type. He has some interest in Rovere and must of course maintain a minimum of relations within the community since he, too, exerts influence there. But he is also oriented significantly to the world outside Rovere, and regards himself as an integral part of that world. (Merton, 1968, p. 447).

With regard to the dynamics of social process it can be assumed that Locals are particularly important in the integration of a group while the Cosmopolitan comes into existence as a result of social differ-

⁷ Burt (2001) speaks in a similar vein of "bridge decay."

entiation: In this sense, the Local guarantees the group members a common base to interpret the “outside world” by highly frequent interactions. As the group becomes larger, the number of contacts between its members drops down as a result of scarce time resources. With the departure of individuals who now find themselves members of different groups, gaps or structural holes appear filled out by Cosmopolitans. If the Cosmopolitan is the only possible connection between groups and if some resources become scarce (e.g. *information*), then the returns for the Cosmopolitan are increased, having provided resources, and his status raised.

The differences in the orientation of the two types of influentials are equally reflected from their positions on the network as well as their exchange relationships. Whereas the Local stands in the center of frequent exchange relations to socially similar others, visible to one another, exchanging similar resources (hence, not scarce), the Cosmopolitan connects to more remote actors themselves unable to reach one other. As the actors connected to Cosmopolitans are not directly reachable, the resources flowing from one to another via a Cosmopolitan can be regarded as scarce resources. The Local is engaged in exchange relations with actors connected to one another who dispose of similar resources. Thus, because all concerned are socially similar, the possibilities of realizing social capital gains that allow accumulation are restricted. The social capital of a Local is a specific group resource which is the result of reachable connecting actors, but not perfectly connected - possibly due to minimal time commitments.⁸ Therefore, the Local can be perceived as having mainly control over the previously mentioned support capital which is a productive factor for social approval.

Table 1: Characteristics of different capital conceptions

	Possibility of Accumulation	Relative Time Span of Accumulation	Relative Time Span of Decay	Degree of Generalization
Physical Capital	Yes	Short	Short	High
Human Capital	Yes	Long	Short	Low
Cultural Capital	Restricted	Long	Long	Low
Social Capital as Support Capital	Restricted	Long	Long	Low
Social Capital as Leverage Capital	Yes	Short	Short	High

(Due to their significance in the degree of generalization of capital, transferability and the possibility of substitution are treated here as one category.)

From what has been said hitherto, it appears that two defined sorts of social capital can be attributed to two kinds of brokerage roles: In the context of socio-emotional relations in particular, Locals are brokers making extensive use of support capital, whereas relations of a higher instrumental content establish leverage capital handled by Cosmopolitans.⁹

Obviously, to measure the social capital of Locals and Cosmopolitans one needs information on their relations as well as on the actors with whom they are connected; more detailed descriptions of brokerage roles are necessary.

⁸ In this sense the fact of not being (strongly) connected is not a matter of structural peculiarity – the option to build or intensify such a direct relation exists for both actors while it is in a latent state.

⁹ Of course, differentiating between socio-emotional and instrumental contents of relations is rather a gradual more than a categorical affair.

Concepts of Brokerage Roles

As previously mentioned, if actors with whom the Cosmopolitan relates are amongst themselves not directly reachable, then a scarce resource is formed utilized by the Cosmopolitan. Hence, because of his competence to control resource flows between actors, the Cosmopolitan can realize higher rates of return in his exchange relations than the Local. With regard to the distinction of different sorts of social capital, one may say that the Cosmopolitan has leverage capital at his disposition which is a productive factor for physical well-being.

The integration of both sorts of social capital within a network results from the relational connection between Locals and Cosmopolitans: The fact that the Local is more interested in high *quantities* of relations (which constitute his support capital stock), he likely will maintain contacts with actors unconnected to the rest of the members of his group. This opens up the opportunity to contact the Cosmopolitan, who is in turn more interested in the *quality* of a contact. In comparison to a Local, the Cosmopolitan gains remote access to the group without being an immediate member of it. Until now, the notion of a “group” has been used in an undefined manner. In order to clarify the relational contexts of brokers, sociometric “cliques” are described as entities of higher relational densities which constitute larger groups. From this point of view, Cosmopolitans are considered as *brokers between different cliques*. They equally connect these cliques indirectly via relations to Locals as *brokers within such cliques*. Together with the theoretical relational characteristics of the Local, a Clique is defined as a *recursive 2-clique*: In this clique, each member can be reached by the others with a maximum of two steps, whereby all paths of length two involve identical third actors. Thus, while the Local might reach *every* clique member in one step and vice versa, clique members sometimes contact one another through the Local (two steps).

Because a proper analysis on influence relations has to take into account the direction of resource flows, the following operationalization of broker roles is based on directed relations. In general such relations can be differentiated according to their strength. Following Granovetter’s (1973, p. 1361) definition, the strength of a tie “is a (probably linear) combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and reciprocal services which characterize the tie.” By adopting this view and relating it to the above mentioned dichotomy of social capital, strong (symmetric) relations can be distinguished from weak (asymmetric) relations, whereas the former – in the sense of support capital – accounts for a higher degree of these factors, the latter – in the sense of leverage capital – refers to smaller amounts.

The operationalization of brokerage roles is understood in accordance with Marsden’s statement (1982, S. 202) that “any brokered exchange can be thought of as a relation involving three actors, two of whom are the actual parties to the transaction and one of whom is the intermediary or broker.” By taking up Gould and Fernandez’ (1989) typology of broker roles and conceptualizing it within the *census of triadic role patterns* (Hummell and Sodeur, 1987; Burt, 1990) the position of an actor is described on the basis of his relations to two alters as well as the relation between those alters.

The Local

To begin with the Local type two triadic positions¹⁰ are identified depicting the relations of a Local within the previously defined clique:

¹⁰ All numberings of triadic positions correspond to Burt’s (1990) representation of the census of triadic role patterns. All positions are described from the perspective of “ego” as the underlined actor on the left.

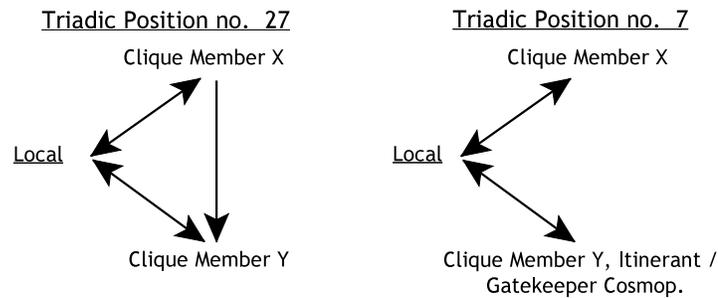


Figure 1. Triadic positions of Local in relation to clique members within a recursive 2-clique and in relation to an Itinerant / a Gatekeeper Cosmopolitan.

Against the background of the above description of the relational characteristics of a Local, we defined symmetric relations between this broker and the clique members. The broker potential stems from weak (position no. 27) or nonexistent relations (position no. 7) between socially similar alters.

In anticipation of the operationalizations of cosmopolitan roles, two triadic positions are referred to (no. 7, which has already been shown above, and no. 10) that depict the relation between a Local, a clique member and different types of Cosmopolitans. Depending on the kind of Cosmopolitan role with which a Local has contact, the relation can be described as symmetric (strong) or asymmetric (weak).

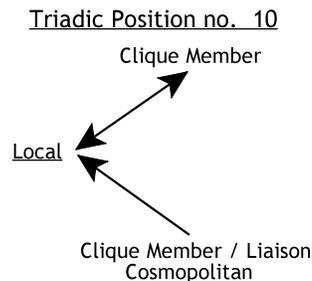


Figure 2. Triadic position of Local in relation to clique members and Gatekeeper / Liaison Cosmopolitan.

Due to the reflections on the relational characteristics of a Local, two kinds of brokers are differentiated:¹¹

- Locals without contacts with Cosmopolitans; in this case, according to Gould and Fernandez they are known as **Coordinator** Locals (which deal with “isolated” cliques);
- Locals in relation to Cosmopolitans, which are called **Representative** Locals.

The Cosmopolitan

Depending to what degree a Cosmopolitan is able to monopolize his capacity to connect otherwise unconnected Cliques, he can realize higher rates of returns in providing scarce resources, which is constitutive of a higher status. An important characteristic between the high status of a Cosmopolitan and of a Local lies in the continuous provision of scarce resources by the Cosmopolitan, whereas the returns in form of support capital are transmitted out of the clique via the Local only from time to time.

¹¹ It should be stated, however, that these Local roles are practically identical. The only distinguishing aspect lies in the existence or non-existence of a relation to a Cosmopolitan.

However, in case of availability of alternative Cosmopolitan services for Locals the returns for Cosmopolitans drop off rapidly due to the diminished scarcity of the goods provided. In this situation the Cosmopolitan – for whom the relation is still advantageous even if his returns are reduced – might compensate losses in gain from purely instrumental leverage capital by substitution of leverage capital through an increase of socio-emotional support capital. Concerning the relational characteristics of a Cosmopolitan, this compensation takes place by turning weak (asymmetric) outgoing ties (which characterize the higher Cosmopolitan status) to the Locals into strong (symmetric) ties (which account for no particular status differences). This process results from the availability of alternative Cosmopolitan services to Locals. In other words, subject to the offer of Cosmopolitan services, mechanisms of integration can become active leading to the establishment of a strong tie between Cosmopolitan and Local.

As a consequence of these substitution effects, different Cosmopolitan roles of various respective status seem possible. The more a Cosmopolitan maintains (asymmetric) relations of high instrumental content (leverage capital), the higher his status. Contrariwise, the more leverage capital becomes substituted through (symmetric) relations of socio-emotional content (support capital), the more the status of the Cosmopolitan declines. A general characteristic of all Cosmopolitan roles lies nonetheless in the unconnectedness of the Representative Locals to whom they are directly connected.

To begin with a Cosmopolitan of a high status level, the *Liaison* Cosmopolitan, the following triadic positions can be identified:

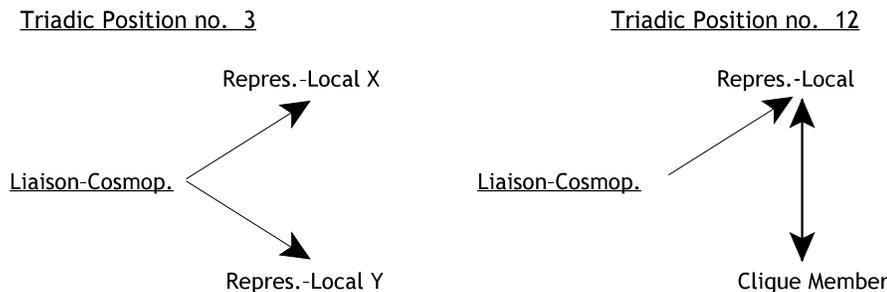


Figure 3. Triadic positions of a Liaison Cosmopolitan.

Due to the fact that the Liaison Cosmopolitan often provides scarce resources for Locals who are themselves not connected, his relations are described as asymmetric outgoing relations (position no. 3).¹² Position no. 12 describes the relation between the Liaison Cosmopolitan, a representative Local and a respective clique member from the perspective of the Cosmopolitan (see above also position no. 10 for the same aspect from the perspective of the Local).

In case of substitution of leverage capital through support capital in relation *to only one* representative, a second version of the Cosmopolitan appears who, according to Gould and Fernandez, is called the *Gatekeeper* Cosmopolitan shown in Figure 4.

¹² To be certain, the depiction of these relations as asymmetric does not imply that the Cosmopolitan receives nothing in return for his services. The support capital supplied by cliques from time to time (via a Local), may be used by the Cosmopolitan as an instrumental resource on another “market” - to clarify this, one may think of a Cosmopolitan as a politician that supplies scarce resources for certain interest groups (cliques). In return for his services the local might spread the slogan for whom to vote while the members of the interest groups vote at a given moment for the favored politician. From the perspective of the respective clique members, the Cosmopolitan provides leverage capital for which they provide support capital in return. Note however, that this support capital may be used by the politician as leverage capital for gaining access to certain formal positions.

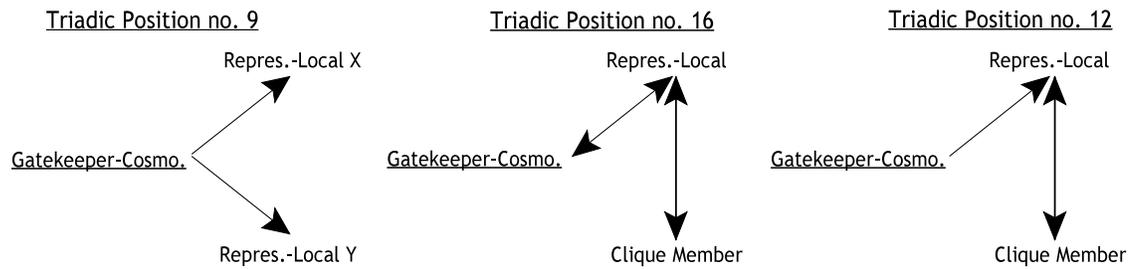


Figure 4. Triadic Positions of Gatekeeper Cosmopolitan in relation to two representative Locals, and in relation to representative Local and respective clique member (with either symmetric or asymmetric relation to representative).

Position no. 9 reflects the generic relational situation of a Gatekeeper Cosmopolitan in relation to Representative Locals. Position no. 16 depicts the relation between a Gatekeeper, a representative and a clique member situated in a symmetric relation (more socio-emotional content / support capital) between the Gatekeeper and the representative, while position no. 12 shows the same actors situated in an asymmetric relation (leverage capital) between the latter two. Partly due to substitution of leverage capital through support capital, the Gatekeeper is of lower status than the Liaison Cosmopolitan.

Finally, if the substitution of leverage capital through increasing amounts of support capital takes place simultaneously in relation to more than one Representative, the Cosmopolitan has a low status level that it appears - with regard to his resource settings - almost similar to all other clique members. This is the case for the *Itinerant* Cosmopolitan shown in Figure 5.

Because of the high integrative forces to which the Itinerant cosmopolitan is exposed, this Cosmopolitan role is not likely to be very stable. In fact, on the basis of Cartwright and Harary's (1956) generalizations of Heider's (1946; 1958) Theory of cognitive balance, one could suppose that in this setting a tendency to establish a relation between the unconnected representatives is shown.¹³ Once the direct contact between the former unconnected representative Locals is initialized, the Cosmopolitan role ceases to exist.

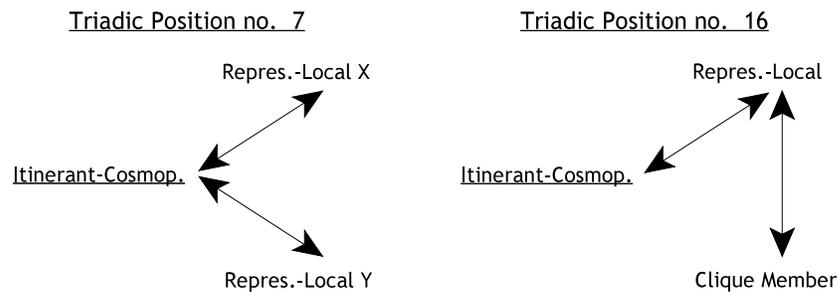


Figure 5. Definition of triadic positions of Itinerant Cosmopolitan

¹³ In addition to the depiction of the relations of an Itinerant Cosmopolitan to two Representatives, position no. 7 was also used above to account for the relations between a Local and clique members. In fact, there seems to be something like a "supra clique" in the integration process of an Itinerant Cosmopolitan, which can equally be understood as a process of integration of different cliques into a new social entity. The supra clique seems to establish the core of a new Clique with the former Itinerant Cosmopolitan in its middle, probably as the Local of the new clique (for a more detailed account, see Täube, 2001).

Adjustment of the instrument

In the course of the operationalization of the ideal types of broker roles, a number of identical triadic positions are used to account for different aspects of different brokers. Because the above-defined positions for each respective broker have to be united in a multivariate analysis, identification problems for broker roles should considerably be reduced. However, the instrument will be tested on a small fictitious data set which was constructed around possible misinterpretations in the context of detecting the defined triadic positions. Problems may arise because of non-systematic distortions, which can result from the relations of actors of no particular interest in our analysis (e.g. relations of clique members or brokers to otherwise isolated actors in the network), or from the previously stated definition of identical triadic positions of some broker roles (Local-Itinerant / pos. 7, Itinerant-Gatekeeper / pos. 16).

We constructed a thirteen person network in order to clarify further these problematic issues. The graph for the network is shown in Figure 6 and a binary matrix is in Table 2.

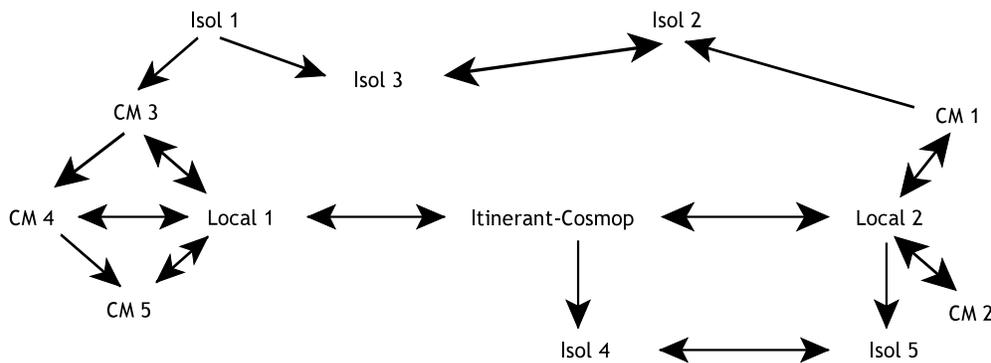


Figure 6. Fictitious thirteen-person network with problematic triads

Legend: Isol = isolated actor (no clique member)
CM = ordinary clique member (no broker)

As can be seen in the graph, the network is constructed around three recursive 2-cliques:

(Supra-)Clique 1: Local1, Itinerant-Cosmopolitan, Local2

Clique 2: Itinerant-Cosmopolitan, Local1, CM3, CM4, CM5

Clique 3: Itinerant-Cosmopolitan, Local2, CM1, CM2

Whereas brokers Local1, Local2, and the Itinerant can – following our definitions – be identified as *de facto* brokers, a number of actors appear erroneously in triadic positions of brokers:

Problem 1) - Iso1 (appears as Liaison): In triadic position no. 3 (relation to CM3/symmetric and Iso3/asymmetric); in triadic position no. 12 (symmetric relations between CM3 and Local1; null-relation between Iso1 and Local1; or, symmetric relation between Iso3 and Iso2 and null-relation between Iso1 and Iso2).

Problem 2) - Local2 (appears as Itinerant and Gatekeeper): In triadic position no. 7 (symmetric relations to Itinerant, CM1 and CM2); in triadic position no. 16 (relation between Itinerant and Local1); in triadic position no. 9 (symmetric relations to Itinerant, CM1 and CM2, asymmetric relation to Iso5); in triadic position no. 12 (asymmetric relation to Iso5, symmetric relation between

Iso4 and Iso5, and null-relation between Local2 and Iso4); in triadic position no. 16 (symmetric relation between Itinerant and Local1, and null-relation between Local1 and Local2).

Problem 3) - CM1 (appears as Gatekeeper): In triadic position no. 9 (relation to Iso2/symmetric and Local2/asymmetric, null-relation between Iso2 and Local2); in triadic position no. 12 (asymmetric relation to Iso2, symmetric relation between Iso2 and Iso3, and null-relation between CM1 and Iso3); in triadic position no. 16 (symmetric relation between Local2 and Itinerant, null-relation between CM1 and Itinerant).

Problem 4) - Itinerant Cosmopolitan (appears as Gatekeeper): In triadic position no. 9 (symmetric relation to Local1 and Local2, asymmetric relation to Iso4); in triadic position no. 12 (asymmetric relation to Iso4 and null-relation to Iso5, null-relation between Itinerant and Iso5); in triadic position no. 16 (symmetric relations between Local1, CM3, CM4, CM5 and null-relations between Itinerant and CM3, CM4 and CM5, symmetric relations between Local2, CM1, CM2 and null-relations between Itinerant and CM1, CM2).

Having acknowledged these potential problems as to the detection of broker roles through the census of triadic role patterns, our constructed network will now be analyzed by means of the defined triadic positions from the user perspective.¹⁴ Consequently, we hope to gain further insight into the reliability of the classification procedure.

Clique Detection

Before being able to calculate the recursive 2-Cliques within *UCINET* (Borgatti, Everett and Freeman, 1992), one has to symmetrize first the original binary matrix of the network (which contained symmetric and asymmetric relations) and deleting the remaining asymmetric relations.¹⁵ Then one calculates (1-) Cliques in *UCINET* in order to get the recursive 2-Cliques. The results are shown on the next page.

Table 2. Binary table of a fictitious 13 actor network (Figure 6) with problematic triadic positions.

Person Id.	Loc1	Loc2	Itin.-C.	CM1	CM2	CM3	CM4	CM5	Iso1	Iso2	Iso3	Iso4	Iso5
Loc1	0	0	1	0	0	1	1	1	0	0	0	0	0
Loc2	0	0	1	1	1	0	0	0	0	0	0	0	1
Itin.-C	1	1	0	0	0	0	0	0	0	0	0	1	0
CM1	0	1	0	0	0	0	0	0	0	1	0	0	0
CM2	0	1	0	0	0	0	0	0	0	0	0	0	0
CM3	1	0	0	0	0	0	1	0	0	0	0	0	0
CM4	1	0	0	0	0	0	0	1	0	0	0	0	0
CM5	1	0	0	0	0	0	0	0	0	0	0	0	0
Iso1	0	0	0	0	0	1	0	0	0	0	1	0	0
Iso2	0	0	0	0	0	0	0	0	0	0	1	0	0
Iso3	0	0	0	0	0	0	0	0	0	1	0	0	0
Iso4	0	0	0	0	0	0	0	0	0	0	0	0	1
Iso5	0	0	0	0	0	0	0	0	0	0	0	1	0

¹⁴ It should be noted that the Local, Itinerant, Clique members etc. names are kept for our actors even if one pretends ignoring their present function in the network.

¹⁵ The preparation of the binary matrix to use in *UCINET* was done in *NEWSTEP* (Sodeur, 1984).

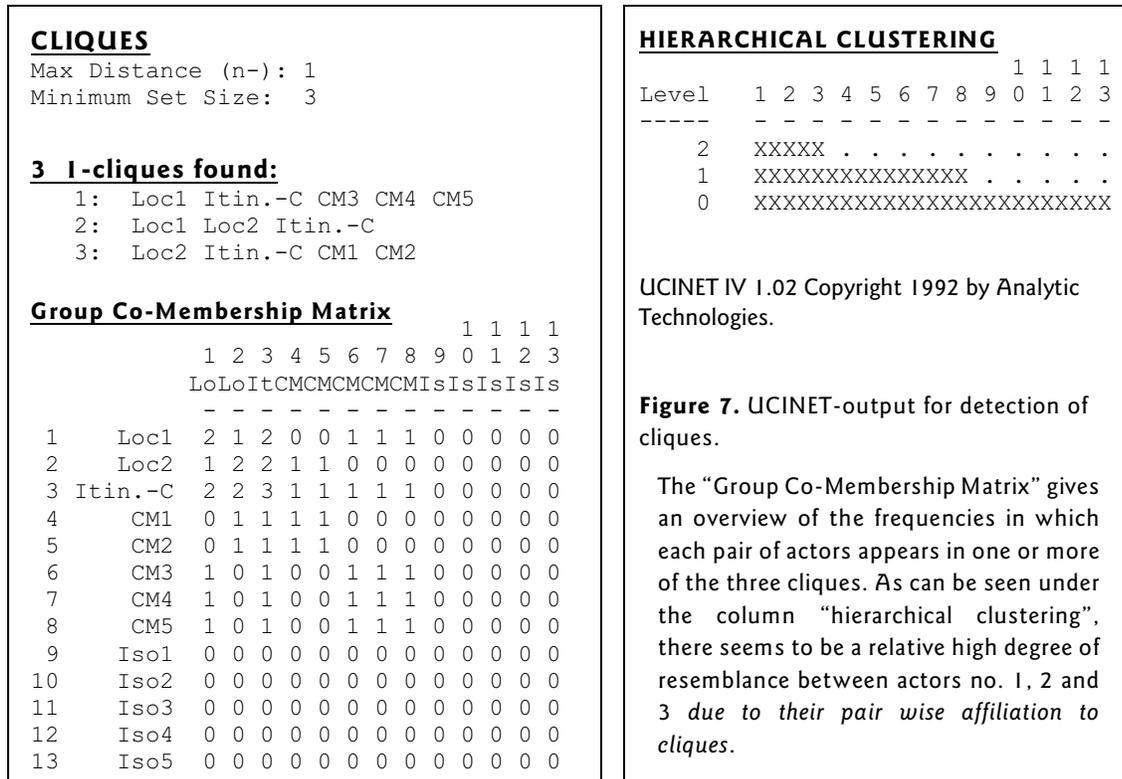


Figure 7. UCINET-output for detection of cliques.

The "Group Co-Membership Matrix" gives an overview of the frequencies in which each pair of actors appears in one or more of the three cliques. As can be seen under the column "hierarchical clustering", there seems to be a relative high degree of resemblance between actors no. 1, 2 and 3 due to their pair wise affiliation to cliques.

Detecting Brokers with the census of triadic role patterns¹⁶

After having detected the cliques of our 13 actor network, the census of triadic role patterns is calculated in NETZDIAL. By applying a multivariate classification procedure such as k-means cluster, a first impression is given of the classification power of the census: If brokers can be seen as actors with certain structural characteristics that are described within a triadic setting, identical broker roles must be contained within the same clusters. In this sense, actors are grouped on the basis of their resembling ties to their structural environment. At first, the results of the procedure with five clusters are presented as they are able to account for Liaison, Gatekeeper and Itinerant Cosmopolitans as well as for Locals and Non-Brokers.

As is evident in Table 3, the differentiation of broker roles based solely on triadic positions is not overall successful. Besides the fact that the two Locals appear as members of different clusters, CM1 and the Cosmopolitan also occur in a common cluster.¹⁷

From these results the conclusion is that some additional defining characteristics for broker roles are needed. These additional characteristics introduced centrality measures should supplement the census of triadic role patterns in order to increase the power of the instrument.¹⁸

¹⁶ Although the presented 13 actor network here only shows the Itinerant Cosmopolitan, the actual analysis was repeated with the Gatekeeper and the Liaison, located at the same place in the network as the Itinerant. These settings showed no substantial differences between Itinerant and Liaison Cosmopolitans and only slight differences for the Gatekeeper with regard to the presented results.

¹⁷ From the perspective of ignoring the actual functions of the members in the network, it is not certain that Cluster no. 4 contains no other brokers. Therefore, the original analysis proceeded by reducing the number of clusters to four and, finally, to three clusters allows further differentiation.

¹⁸ With the introduction of centrality measures we pass from triadic on to dyadic characteristics of actors.

Table 3. K-means cluster classification on the basis of triadic role patterns with five clusters.

Case Number	Actor	Cluster	Distance
1	Local1	1	0
2	Local2	2	0
3	Itinerant	3	0
4	CM1	3	2.466
5	CM2	5	2.424
6	CM3	5	1.405
7	CM4	5	2.096
8	CM5	5	2.424
9	Iso1	4	0
10	Iso2	5	0
11	Iso3	5	0
12	Iso4	5	0
13	Iso5	5	0

The Inclusion of Centrality measures

For the purpose at hand, the measure of closeness-centrality (Freeman, 1979) was chosen as well as betweenness-centrality (Sodeur, 1987). Firstly, closeness centrality is used for the general distinction between brokers and non-brokers on one hand and for the differentiation between Locals and Cosmopolitans on the other hand.¹⁹ To calculate the closeness-centrality, longer geodesic distances play a smaller role than do short geodesics. Therefore, Locals are expected to show higher closeness-centrality values due to their capacity to reach all members of their clique within one step, whereas Cosmopolitans need at least two steps to reach clique members. In addition to the previously defined triadic positions, the following descending succession of actors is expected with respect to closeness-centrality values:

1. Local
2. Cosmopolitan
3. Non-Brokers

The calculation of betweenness centrality which is based on geodesics can erroneously lead to higher betweenness values of Locals compared to Cosmopolitans. Thus, one refers to a betweenness-centrality measure that counts geodesics between two actors on which a third person lies, but that also rests on *all contacts* of a person realized through third (intermediate) persons. Such a betweenness measure is provided in *NETZDIAL* (Sodeur, 1987). In the case of the Liaison Cosmopolitan, no members of a clique can reach those of another clique via this Cosmopolitan. Therefore, we make use of this betweenness measure mainly to differentiate the Itinerant from the Gatekeeper Cosmopolitan. With regard to the described ability to connect different actors, the following descending order of betweenness-values is expected for actors:

1. Itinerant
2. Gatekeeper
3. Local
4. Liaison / Others

¹⁹ Closeness centrality has been calculated by means of UCINET IV. (Borgatti, Everett and Freeman, 1992).

Through repeated cluster analyses using triadic role patterns *and* closeness measures with different numbers of clusters (5, 4 and 3 clusters), solutions were found, of which only the main one is presented:

Table 4. K-means cluster classification on the basis of triadic role patterns and closeness measures with three clusters.

Case Number	Actor	Cluster	Distance
1	Local1	1	0
2	Local2	1	0
3	Itinerant	1	0
4	CM1	2	2.466
5	CM2	2	2.424
6	CM3	2	1.405
7	CM4	2	2.096
8	CM5	2	2.424
9	Iso1	3	0
10	Iso2	2	0
11	Iso3	2	0
12	Iso4	2	0
13	Iso5	2	0

As is evident in Table 4, Locals and Cosmopolitan are grouped within a common cluster in a setting with three clusters. The assignment of actor no. 9 (Iso1) to a proper cluster is still problematic and could indicate the presence of another broker in the network.

The last step in the procedure consists in the examination of the relational characteristics of the individual actors which were so far identified as potential brokers.²⁰ At this point in the analysis, a potential Local is regarded as true if he has the kind of relations to or from a Cosmopolitan which has already been described through the triadic positions above. In turn, a certain Cosmopolitan can be perceived as true if he shows the respective relations to or from a Local.²¹ This procedure allows one to finally determine the different kinds of brokers that actually exist in the network.

For the possible brokers of the 13 actor network shown in Table 3 the following *incoming* relations can be noted:

Actor no. 1 (Local1)

Incoming relations node no: 1
From actors: 3, 6, 7, and 8

Actor no. 2 (Local2)

Incoming relations node no: 2
From actors: 3, 4, and 5

Actor no. 3 (Itinerant-Cosmo)

Incoming relations node no: 3
From actors: 1, 2

Actor no. 9 (Iso1)

Incoming relations node no: 9
From actors: none

Obviously, actor no. 1 (Local1) and actor no. 2 (Local2) show one incoming relation from a possible broker (actor no. 3 / Itinerant Cosmopolitan). Because actor no. 9 shows no incoming relations, the only possible broker role for this actor might be the Liaison role.

²⁰ The identification of incoming and outgoing relations was conducted by means of *NETZDIAL*.

²¹ This procedure resembles the determination of an actor's coordinates on the Eigenvectors.

The *outgoing* relations of these actors are as follows:

Actor no.1 (Local1)

Outgoing relations node no.: 1
To actors: 3, 6, 7, and 8

Actor No. 3 (Itinerant-Cosmopolitan)

Outgoing relations node no.: 3
To actors: 1, 2, and 12

Actor No. 2 (Local2)

Outgoing relations node no.: 2
To actors: 3, 4, 5, and 13

Actor No. 9 (Iso1)

Outgoing relations node no.: 9
To actors: 6, 11

Actors no. 1 (Local1) and no. 2 (Local2) show respectively only one outgoing relation to a possible broker and therefore have to be classified as Representative Locals. Actor no. 3 (Itinerant Cosmopolitan) shows two outgoing relations to the potential Representative Locals and can thus be identified as an Itinerant Cosmopolitan. The remaining actor no. 9 (Iso1), till now regarded as a potential Liaison Cosmopolitan shows no outgoing relations to actors identified as possible Locals, and consequently has to be classified as a non-broker.

In order to evaluate the discriminating power of the first two main classification steps (determination of the census of triadic role patterns plus centrality measures) a discriminant analysis will be made presently.²²

To show the importance of the single characteristics the results of the tests of equality of group means will be given first. Values of Wilk's Lambda vary from 0 to 1.0 with the small values showing the largest differences between groups. As the relative high Lambda values for the variables "triadic position no. 10", "betweenness" and "closeness" indicate, these variables only contribute on a low level to the separation of the groups, despite their highly significant values:

Table 5. Tests of Equality of Group Means.

	Wilks' Lambda	F	df1	df2	Sig.
Pos3	0.23	61.128	4	73	0
Pos7	0.268	49.876	4	73	0
Pos9	0.551	14.882	4	73	0
Pos10	0.812	4.233	4	73	0
Pos12	0.251	54.507	4	73	0
Pos16	0.485	19.416	4	73	0
Pos27	0.542	15.442	4	73	0
close	0.814	4.180	4	73	0
between	0.657	9.528	4	73	0

Fig. 9 shows a visual representation of the classification results in a territorial map which is based on the first two classification functions that account for 93.1% of the explained variance as can be seen in Table 5 on the next page.

²² Because at least two cases were needed in each possible class for this procedure, the 13 actor network was doubled and the two identical nets were connected via an outgoing relation from relation between Iso26 and CM2 to one network of 26 actors. This enlarged network was produced three times with each of the respective Cosmopolitans (Liaison, Gatekeeper and Itinerant) in the place of the Itinerant Cosmopolitan in Fig. 6.

Table 5. Explained variance by discrimination function

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	70.587	77.5	77.5	0.993
2	14.175	15.6	93.1	0.996
3	5.399	5.9	99	0.919
4	0.91	1	100	0.69

First 4 canonical discriminant functions were used in the analysis.

Although all classes of brokers are close to at least three other classes of actors, the tangential points of the Gatekeeper class with that of the Liaison, the Itinerant and the non-brokers seem to be specially distinct.

Another problematic issue is the situation of the centroid of the Itinerant class (marked through an asterisk besides the digit row 5555334 in the upper right quarter of the map) which seems to be situated within the Itinerant class. This detail is interpreted as the result of the conceptual proximity of the two broker roles as well as the result of an inclusion of solely two of the four identified classification functions in this representation and is therefore not of a substantial weight.

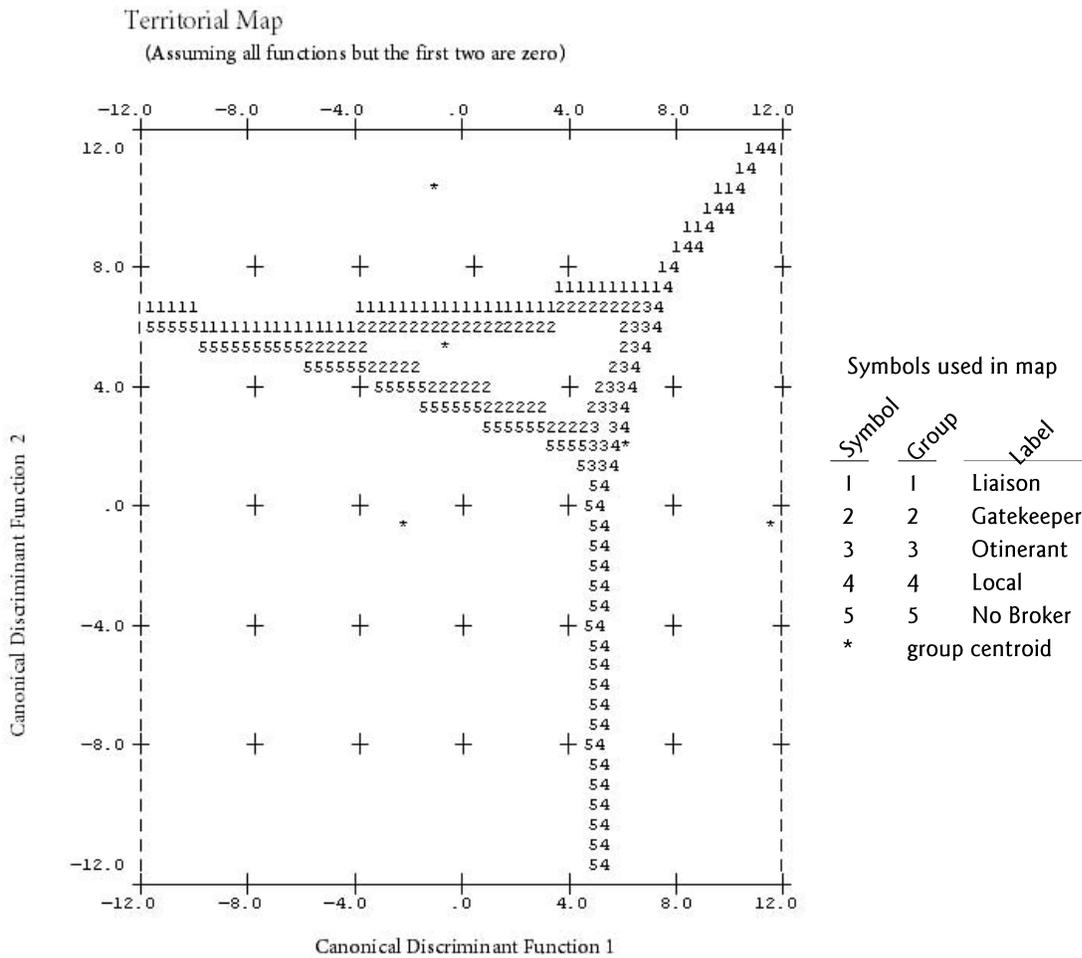


Figure 9. Classification results based on the first two classification functions.

Results of an Empirical Application: Newcomb's Student Fraternity

Some empirical results will now be discussed that stem from an application of the instrument to the well known Newcomb Fraternity, a network that consists of 17 students living together in a hostel. The development of the network was followed up for 15 weeks except for a holiday break of one week between the ongoing weeks 9 and 10. Every week the students were asked to list all other 16 students with regard to their preferences in friendship.²³

Instead of reproducing the whole classification procedure which has already been shown, focus will now be on the presentation of some results against the background of certain characteristics of the social capital of brokers.²⁴

Table 6. The brokers of the Newcomb fraternity

<i>Broker Role</i>	<i>Actor No. (Ongoing Week No.)</i>
Liaison Cosmopolitan	None
Gatekeeper Cosmopolitan	6 (1), 13 (12),
Itinerant Cosmopolitan	13 (2), 1 (12), 9 (12)
Representative Local	4 (1), 9 (1), 12 (1), 13 (1), 1 (2), 17 (2), 9 (10), 17 (10), 6 (12)*, 17 (12)*
Coordinator Local	2 (1), 12 (1), 7 (2), 4 (2), 9 (2), 12 (2), 13 (2), 1 (3), 4 (3), 6 (3), 7 (3), 9 (3), 13 (3), 17 (3), 1 (4), 4 (4), 7 (4), 9 (4), 13 (4), 17 (4), 1 (5), 4 (5), 9 (5), 17 (5), 1 (6), 4 (6), 9 (6), 13 (6), 17 (6), 4 (7), 9 (7), 17 (7), 4 (8), 9 (8), 13 (8), 17 (8), 12 (9), 17 (9) 1 (11), 6 (11), 9 (11), 17 (11), 4 (12), 13 (13), 17 (13), 9 (14), 17 (14), 4 (15), 6 (15), 9 (15), 17 (15)

* are connected indirectly through two Cosmopolitans with other Locals

The fact that the Newcomb fraternity represents a *friendship network* is of importance for the interpretation of the results of the analysis. Following what has been said with regard to the distinction between the two sorts of social capital, friendship ties are expected to be of a higher socio-emotional content and hence contain rather more support capital. This leads to the conclusion that if the above depiction of the different sorts of social capital is in any way substantial, then the Cosmopolitan roles, which drew on leverage capital, especially in highly differentiated structures, will less probably appear

²³ The comprehensibility of such a small network and facilitation of access to the data for possible reproductions of the results (which are part of *UCINET II.*) were reasons that guided the choice for this data set as a means of demonstration.

²⁴ For the analysis, the number of choices was fixed to an average of three per week. Although more could be said about problems with arbitrarily fixing outdegrees, the principle results of the empirical analysis are maintained.

in the Newcomb fraternity. As it can be inferred from the detection of recursive 2-cliques in the Newcomb data, there seems to be a strong overlap of cliques, which supports the assumption of a highly integrated network. Against this background, the appearance of cosmopolitans within the first two weeks of observation and after the holiday break (between week 9 and 10) in week 12. These occurrences seem to reflect the dynamics of the network: in the beginning there is a disintegrated structure as a result of unsteady individual investment decisions (time investment in relations to potential brokers) followed by an increase in homogeneity up to week 9. A new decrease in the number of relations seems to be the result of the holiday break later followed by an increase in the number of relations due to the group's integration.²⁵

Against the background of what has been said about the different aspects of Social Capital (see Table 1), a closer look will be taken at the brokers shown in Table 9. Contrary to a Cosmopolitan, the resources a Local provides are not scarce. This is the reason why a Local can only realize small gains for his services and, because of the nature of support capital, only long after having delivered services. Longer time commitments to accumulate support capital as well as a long time span for its decay presumably result in a *relatively high persistence* of these roles.

Even if the total number of Locals per week varies between a frequency of 2 (weeks 9, 10, 13 and 14) and 7 (week 3) over all 15 observation weeks, especially actors no. 1, 4, 9, 13 and 17 appear more or less continuously as Locals.²⁶

As opposed to the Locals, the Cosmopolitans occur only during short periods: Actor no. 6 as a Gatekeeper connects four cliques in week 1. Already in week 2, actor no. 13 (as an Itinerant) has taken the place of a Cosmopolitan for just another week. In the following weeks 3, 4, 6 and 8 the same actor no. 13 appears as a Local, which can be interpreted as evidence for the assumed integrative forces, that renders the Itinerant role unstable.

After the holiday break between the 9th and 10th week, actors no. 9 and 1 occur as Itinerants and actor no. 13 as a Gatekeeper. All three actors disappear as Cosmopolitans in weeks 13 to 15, totally or occur once more as Locals.

Even if a certain evidence for the assumed *time courses for accumulation and decay of social capital* of brokers seem to hold, the early appearance of Cosmopolitans contradicts somehow the idea of occurrences of Cosmopolitans as the result of a differentiation process *after* the integration of a group. Instead, with regard to the high overlap of cliques, it seems that Cosmopolitan brokers come into existence already in the early stages of the development of social structures and contribute to the integration of cliques. It remains unclear whether this result is particular to a friendship network.

Aspects from economic price theory are discussed with regard to *substitution of social capital*. In the context of the description of cosmopolitan roles different social structural scenarios can be inferred depending on the offer and demand of broker services. In this sense, the transition of a broker role into another is described as a substitution of purely leverage capital through an increase of support capital. In turn, this is interpreted as being the result of increased competition between Cosmopolitans (given a constant demand from clique members for these services). In other words, a drop in prices (in units of social subordination) for Cosmopolitan services, will lead to an increasing substitu-

²⁵ In this sense a higher density of relations signifies more common evaluations of group members on time investments into brokers (see also Blau, 1964).

²⁶ Actor no. 17 appears in all 15 weeks as a Local, actor no. 9 in 12 weeks, actor no. 4 in 10 weeks, and actor no. 1 in 6 weeks.

tion of leverage capital through support capital. As a consequence of price cuts, clique members and Cosmopolitans become more equal with the latter probably passing through different phases of development (Liaison – Gatekeeper – Itinerant). The probable result will be the integration and finally the absorption of the former Cosmopolitan into the clique, where he may become a new Local.²⁷

Because the high status level Cosmopolitans, like the Liaison, do not appear in the Newcomb fraternity, the examination of a possible conversion of Cosmopolitan roles into Local roles is limited to the appearance of the Gatekeepers (actor no. 6 / week 1 and actor no. 13 / week 12) and Itinerants (actor no. 1 / week 12; actor no. 9 / week 12 and actor no. 13 / week 2).

Before checking for the individual relations of potential brokers, the Gatekeeper in week 1 (actor no. 6) was also classified as an Itinerant in week 2 but was removed as such due to a symmetrical relation between the two Locals. In week 3, actor no. 6 appeared then as a coordinator. With the exception of a missing Itinerant role in week 2, actor no. 6 seems to follow the predicted transition from a Cosmopolitan to a Local role.

Equally, the change of actor no. 13 from an Itinerant in week 2 to a Local in week 3 and, later in week 12 from a Gatekeeper to a Local in week 13 shows some evidence for the assumed tendency of substitution of social capital. However, it is problematic that actor no. 13 occurring as an Itinerant in week 2 is classified as Local in week 1 (see footnote 24). On the contrary, the appearance of actor no. 13 as a Gatekeeper in week 12 seems less problematic because of his lost Local role in week 8 already.

The fact that actors no. 1 and 9 are classified as Itinerants in week 12 while both actors occur in week 11 as Locals also contradicts the assumed dynamic with regard to the impossible direct transformation of a Local into a Cosmopolitan. Furthermore, actor no. 9 only occurs as a Local two weeks after having been an Itinerant in week 12, and actor no. 1 never turns out to be a Local during the observation period at all. Because the appearance as a Local was not defined as a *necessary* characteristic, the latter two observations seem irrelevant.

Lastly, the *transfer of social capital* was a means to account for the use of such capital in contexts other than those in which it was accumulated. The theoretical reflections mentioned above lead us to the assumption that transfer of social capital is only possible in the case of leverage capital. In this regard, we interpret the relations passing from identical Cosmopolitans to different Locals as an indication for the transfer of leverage capital. This is the case for actor no. 13 (Itinerant), which shows in week 2 relations with actors no. 6 and 17 (Locals), whereas actor no. 13 as a Gatekeeper in week 12 shows relations with actors no. 1 and 17 (Locals).

Conclusions

Apart from the small number of Cosmopolitan brokers in the Newcomb data, which we attribute to fact that one deals with a friendship network, the results of a first empirical application are worthy of note: In accordance to the theoretical expectations, only modest status differences occurred as can be seen from the total exclusion of Liaison brokers in all 15 observation weeks. The identifiable Cosmopolitans were found in the early development stages of the network within the first weeks of observation or after the holiday break between week 8 and 9. Furthermore, in line with the theoretical

²⁷ Whereas the descending dynamic from a Cosmopolitan with high status to a Local with lower status seems to be possible, the inverse development - from a Local to a Cosmopolitan - appears to be less probable, due to a lack of possibilities for accumulation of leverage capital.

reflections on the dynamic of differentiation and integration, some of the identified brokers showed the assumed tendencies of role transitions.

The unsatisfactory high number of Coordinators may be more the result of high overlapping structures than of isolated cliques in the network. Consequently, the concept of the Coordinator in our theoretical scheme as well as in the context of the operationalization through triadic positions should be reconsidered. Of course, the small sample of brokers allows statements on tendencies only and is far from being conclusive.

The Census of Triadic Role Patterns as an instrument of analysis has proven to be a suitable means - partly in addition to centrality measures and control of individual relations - of accounting for different structural aspects of actors in broker roles. This point has been specially underlined by Hummell and Sodeur (1987) as the decisive criteria for its evaluation from a practical point of view: How far can the different positions of two persons be reproduced in the overall relational network with sufficient clarity?

If we follow Wasserman and Faust (1994, p. 5) in their assessment that “the key feature of social network theories or propositions is that they require concepts, definitions and processes in which social units are linked to one another by various relations,” the importance of the instrument for the description of social processes becomes clearer: Assuming that the representation of the relational settings between three actors gives a proper account of structural relevant aspects, then the census of triadic role patterns is an instrument which allows an operationalization of concepts such as social capital within an exchange theory and makes them applicable to networks of different sizes. However, the workability of the proposed measurement procedure for social capital remains to be confirmed as well as its applicability in the context of larger networks.

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