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Networks in Drug Demand Reduction Policy and Practice

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CHAPTER 10

Networks in Drug Demand Reduction Policy and Practice

Patrick Kenis and Stefan Loos

1 Introduction

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In the previous chapters the organizational field of drug demand reduction (DDR) policy and practice in the four countries studied has particularly been described and analysed in terms of so called attribute variables. This means that these chapters have presented the DDR field in terms of (aggregates of) characteristics of the organizations involved, such as their size, their legal status, the type of activities they provide, their opinions and attitudes. Such an analysis has produced interesting insights on the degree of differentiation within the national and local DDR field as well as information on how different characteristics are linked to each other. For example, it has become clear which type of organization does what, to what extent opinions and attitudes differ within a country or across different types of organizations and how these characteristics are linked to each other. In this chapter an additional dimension will be added to the description and analysis of the DDR fields. We will analyse the extent and forms of *integration* within the different national DDR fields.

Analysing integration is important as such, but becomes particularly interesting when combined with an analysis of differentiation. Characteristic for a field like DDR is that its effectiveness is not only contingent on its degree of differentiation (e.g. the range of activities provided) but also by the way the relations or the network among the different organizations is

structured. Drug demand reduction is typically a field where organizations are dependent on each other (e.g. for resources or expertise) and where the effectiveness of outcomes could consequently be more contingent on the structure of the relationships between the organizations than on the sum of effectiveness of the different organizations. In a field like DDR, outcomes can often not readily be attributed to the activities of individual organizations but are contingent on integrated and co-ordinated actions of many different agencies (see also Provan and Milward, 1995). What is proposed here is thus a structural analysis of the DDR field in the four countries studied (on structural analysis, see Wellman and Berkowitz, 1997 and Emirbayer, 1997).

In what follows we will present such a structural analysis by studying the structure of different types of relationships between the organizations at the national level in the four countries. The principal aim is to present a number of characteristics of these networks, to compare them with each other and across countries as well as to produce some tentative statements on the causes and consequences of these networks.

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2 Analysing networks in DDR policy and practice

The unit of analysis to be studied here is what recently has been called organizational field networks or field nets (see Kenis and Knoke, forthcoming). An organizational field net is a configuration of interorganizational relations among all the members of an organizational field. An organizational field being "... those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, producers, regulatory agencies, and other organizations that produce similar services or products" (DiMaggio and Powell, 1983: 148). The aggregate of national organizations active in the field of DDR in a country can clearly be regarded as a recognizable area of institutional life. In the present chapter we will concentrate on this organizational field in the four countries studied.

The next step in our relational analysis is to consider the thus defined institutional fields as field nets. A field net "... consists of a particular pattern of both present and absent links among the entire set of organizational dyads occurring in a specified organizational field" (Kenis and Knoke, forthcoming). Consequently the organizational field net concept explicitly focuses

analytic attention on the dyadic relations, or ties, between every pair of organizations in a field. In the present study we have collected data on 8 types of relationships (see Table 1). These are the type of relationships which are commonly considered when studying relational patterns in organizational fields (see e.g. Knoke, 2000 and Provan and Milward, 1995).

Table 1: Types of relationships studied

<i>exchange of clients</i>	This means that an organization is either referring clients to another organization or an organization is receiving clients which have been referred by another organization
<i>exchange of support</i>	This means that an organization either provides support to another organization or that an organization receives support form another organization
<i>exchange of expertise</i>	This means that an organization either provides expertise to another organization about DDR or that an organization receives epertise form another organization about DDR
<i>exchange of resources</i>	This means that an organization either provides resources (i.e. financial, facilities, equipment) to another organization or that an organization receives such resources form another organization
<i>common activities</i>	This means that two organizations are engaged in common activities in the field of DDR
<i>strategic co-operation</i>	This means that two organizations are consulting each other before making important decisions on DDR programmes
<i>informal communication</i>	This means that the organization's employees exchange information on DDR programmes on an informal basis
<i>prominence attributed</i>	This means that an organization is naming another organization as one of which the interests, goals or opinions are taken into account when taking decisions concerning DDR programmes

Information on these types of relationships has been collected through the questionnaire (see the Annex of this publication) and in which an organization was asked to indicate which of these relationships it has had recently with which other organization in the organizational field it is part of. On the basis of this information 8 NxN matrices resulted in which a 0 is marked for an absent relationship and a 1 for a present relationship (where N is the number of organizations in the organizational field).

Combinations of such present and absent relationships in such a matrix aggregate into various network sub-structures, for example, the occurrence of such components as cliques, groups, positions, action sets, structural holes, as well as into structural attributes of the entire field, such as density, connectivity, and centralization (Wassermann and Faust, 1994 and Knoke, 2000). Consequently, on the basis of the data collected at least 32 networks (i.e. 8 types of relationships in 4 countries) could be described in terms of the concepts mentioned before. In the analysis below we have chosen to describe the different networks in terms of two of these concepts: density and centralization. As spelled out in more detail below, these indicators of network structure primarily demonstrate the intensity in which organizations within an organizational field communicate and are indicative for the hierarchical or power structure of the organizational fields. For the time being this seems to be the type of information which in combination with the descriptions on the degrees of differentiation of the organizational fields provides a good picture of the "organization" of the DDR fields in the different countries.

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Table 2 presents the four national-level organizational fields, which form the basis for the network analysis to be presented further on. Data on the 8 different types of relationships between all national organizations in these fields have been collected and subsequently been analysed using two computer programmes for analysing networks (i.e. UCINET¹ and Visone²).

Table 2: Number of national-level operating organizations in the field net studied and some aggregate characteristics of the organizations involved

	Number of organizations	Legal status (public/non-profit/private)	Orientation (exclusive/inclusive)	Founding year (median)	Drug related attitude (mean/St.dev.) ¹
Czech Rep.	15	10 / 5 / 0	4 / 11	1993	2,79 (=P) / 0,83
Hungary	24	14 / 9 / 1	6 / 18	1992	3,50 (=R) / 1,03
Poland	37 ²	11 / 25 / 1	10 / 27	1987	3,82 (=R) / 0,88
Slovenia	23	12 / 10 / 1	3 / 20	1993	2,78 (=P) / 1,13

Notes: ¹ Source: Dekleva and Zamecka in this volume. P means "permissive" and R means "restrictive". The basis for this calculation is all organizations included in the national surveys.

² Originally 38 national organizations had been identified. One organization at the national level refused to participate in the study.

3 Density in the DDR fields

Network density is a macro-level property, defined as the proportion of present dyadic ties to all potential ties. Density is an important network property with respect to how “close” the different actors are to each other. For example, the speed with which information may be transmitted among the organizations of a field varies inversely with the density of communication ties. A very low-density communication network implies that messages are likely to propagate only slowly through the field via lengthy chains of intermediaries, because relatively few alternative routes are available to link particular dyads indirectly. The average path (the minimum number of indirect steps necessary to connect a dyad) is likely to be longer in low-density networks, meaning that both the time required to transmit messages and the potential for distorted communication are greater than in high-density networks whose path-lengths are much shorter. Many members of low-density fields may be only tenuously connected to one another, and thus they will find it difficult to gain access to information or other resources available elsewhere in the field. By contrast, in a high-density network, the average path length between pairs of organizations are likely to be quite short (including numerous direct ties); multiple alternative routes link the relatively fewer dyads that lack direct ties; and few or no organizations likely remain completely out of the field’s information or resources loop (see Kenis and Knoke, forthcoming).

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Table 3: Density for the different types of relationships

<i>Type of relationship</i>	Czech Republic	Hungary	Poland	Slovenia
Client exchange		4,3	7,5	37,2
Support exchange	14,3	4,4	7,7	58,5
Expertise exchange	11,4	24,3	15,2	71,5
Resource exchange	1,9	7,6	6,4	22,5
Common activities	16,2	22,8	24,6	62,1
Strategic co-operation	19,1	23,2	10,4	57,7
Informal communication	17,4	43,8	18,4	100
Average	13,4	18,6	12,9	58,5

The density of a network ranges between a minimum of 0 (when no relation is present) to a maximum of 100 (when all possible relationships actually exist). Network density is presented in Table 3 in percentages. Since the

size of the network enters into the denominator of network density, one should always look at the size of a network separately when interpreting density measures.

On the basis of Table 3 a number of observations can be made. The network with the lowest density is the Czech resource exchange network (1,9%) and the network with the highest density is the Slovenian network on informal communication. All types of relationships taken together, Slovenia has the highest density (58,5%), followed by Hungary (18,6%), the Czech Republic (39,3%) and Poland (12,9%). This result might be biased given the different number of organizations in the different organization fields. It is obvious that the larger a network is (in terms of number of organizations) the smaller the chance becomes that more organizations are linked to each other. This might partially explain the relative low density in Poland. It can be stated, however, that Slovenia seems to have an exceptional high density. What is also interesting to see is that there is not one country which scores highest or lowest on all types of relationships compared to any other country. This is an indication for significant variations between relationships within countries.

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The density of relationships in the Czech Republic are highest in the networks of strategic co-operation, information communication, and common activities. The exchange network is the least dense while exchange of support and resources lie somewhat in-between the others. In Hungary, informal communication is the most frequent form of relationship, while the density of the client and support networks is very low. Compared to other countries, the Polish networks score lowest in the network of strategic co-operation and second lowest in all other networks but common activities, which seem to be quite frequent. The Slovenian pattern of relationships in the national organizational field can generally be considered as rather dense. What is especially interesting is that all organizations communicate informally amongst each other.

4 Network Centralization and Actor Centrality in the DDR fields

One of the most prominent structural characteristics in the analysis of organizational fields is the notion of centrality since it gives an answer to the question: "Who has the power?". Centrality is considered a fairly good in-

indicator for power in networks. The network literature distinguishes between centralization as a macro-level property (i.e. at the level of the network) and ego-centric concepts of "actor centrality" that characterize a specific ego's power relative to other network alters. Analysts conventionally consider three types of centrality – degree, closeness, and betweenness (Wasserman and Faust, 1994: 169-219). Variations among the basic centrality measures take into account differences in the directionality of ties (sending or receiving), and the "quality" of the other actors (in terms of their own centralities) to which an ego is connected.

Degree centrality is the simplest definition of actor centrality stating that central actors must be the most active in the sense that they have the most direct relations to other actors in the network. In a directed relation, such as clients received respectively send, one can distinguish between the out-degree and in-degree of an actor. The in-degree of an actor is the number of relations that are adjacent to that actor, which means that in-degree can be seen as a measure of receptivity or popularity of an actor. The out-degree of an actor is the number of relations adjacent from that actor, which implies that out-degree can be seen as a measure of expansiveness of an actor. For example, if actor A says he is sending resources to five other actors, the out-degree of that actor is 5. If nine actors say that they receive resources from that same actor, its in-degree is 9. A relationship, such as informal communication, is by its very nature undirected but differentiating between the in- and out-degree of an actor in such a relationship still makes sense. It now tells us whether or not the statement of actor A about his relation to actor B is confirmed by actor B. For example, actor A says that he or she informally communicates with all other actors in a network, but none of these other actors confirm this relationship. The way we treated this situation is by awarding an unconfirmed relationship half of the value of a confirmed relationship and, consequently, calculate the degree of an actor as the average of his in- and out-degree. To make actor degrees comparable among networks of different sizes, the degree of an actor is standardized by dividing it by the total number of relationships in a network. This standardized actor centrality index ranges from 0 (when the actor has no relationships with other actors) to 1 (when the actor has direct relationships with all other actors in the network and all other actors have no direct relationships among each other). Usually it is expressed as a percentage.

The measure of *closeness centrality* is based on the closeness of an actor to all other actors in the network. It is assumed that the closer an actor is to

another actor, the quicker he or she can interact with that actor. Closeness centrality is also a measure for the autonomy of an actor. The closer an actor is to another actor, the less he or she has to rely on other actors to interact with that actor. Generally, closeness centrality of an actor is standardized and made comparable across networks of different sizes. A (standardized) closeness centrality of 1 indicates that an actor has direct ties to all other actors in a network.

Interaction or the flow of information between two non-directly linked organizations often depends on the actors that lie between them. For example if an organization *i* informally communicates with an organization *j* and *j* informally communicates with *k*, but *i* does not informally communicate with *k*, then *j* controls the flow of information between *i* and *k*. Thus, the more often actor *j* lies between actors, the higher his or her *betweenness centrality* and the more influential he or she becomes. In its standardized version, the index ranges from 0 (the actor does not fall on any 'shortest paths' among other actors) to 1 (the actor falls on all shortest paths among all other actors).

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For all three centrality measures macro-level centralization measures can be calculated on the basis of the actor centrality measures. Centralization measures tell us, in general, how variable or heterogeneous the actor centralities in a network are.

4.1 Network Centralization

To derive corresponding macro-level *centralization* measures, the ego-actor centrality measures can be aggregated, thus revealing the extent to which the information transmission ties in a field-net tend to concentrate around a single organization, with the other members substantially more peripheral. For example, the maximally centralized "star" network concentrates all relations on one central organization that communicates directly with the others. No direct connections link the $N-1$ non-central actors. In contrast, a "circle" network is completely decentralized: each organization communicates with just two partners, each of which also exchanges information with another unique actor, thus forming a closed chain with no central organization. Freeman (1979) proposed a mathematical definition of a normed group-level centralization index for a network of N actors. It basically ranges between 0 and 1, with the lowest score occurring when all actors have the

same centrality value and higher scores reflecting the tendency of one actor to dominate the others. Thus, network centralization reflects the extent of relational inequality in a network (variation or dispersion among the ego-level centralities), and permits comparison of changes over time or differences across networks.

Table 4: Network centralizations for the different types of relationships

Country	Czech Republic			Hungary			Poland			Slovenia		
	DC ¹	CC ²	BC ³	DC ¹	CC ²	BC ³	DC ¹	CC ²	BC ³	DC ¹	CC ²	BC ³
Client exchange				20,3	5,5	52,8	8,8	2,7	61,0	9,9	2,5	25,2
Support exchange	5,5	4,6	25,8	18,2	3,5	35,9	4,3	1,7	24,7	13,4	2,3	39,6
Expertise exchange	14,3	6,2	42,9	7,9	2,0	24,4	4,7	1,9	16,9	8,1	1,70	26,9
Resource exchange	25,0	14,3	100	45,0	4,3	100	10,4	2,6	37,5	15,4	1,5	25,7
Common activities	9,4	3,4	21,3	6,1	1,2	22,1	6,4	2,4	30,5	9,40	1,60	31,7
Strategic co-operation	14,8	5,3	50,4	6,7	1,7	24,4	6,2	2,0	24,4	9,2	1,7	19,8
Informal communication	13,2	4,7	54,7	7,3	2,5	39,9	3,1	1,3	14,7	11,4	1,8	48,5
Prominence				15,0			20,6			9,8		
Average centralization	13,7	6,4	49,2	15,8	3,0	42,8	6,1	2,1	30,0	11,0	1,9	31,1

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Notes: ¹ DC = Degree Centralization
² CC = Closeness Centralization
³ BC = Betweenness Centralization

Table 4 presents the scores for three different centralization measures: degree centralization, closeness centralization and betweenness centralization. Centralization scores are presented in percentages. A score of 0% means that there is no centralization at all (all actors are equal), whereas a centralization of 100% indicates a maximum centrality (one actor has a direct link to any other actor and those other actors have no link among each other).³

In general it can be observed that most networks presented are rather decentralized. The average degree of centralization is 11,3%. This means that in most networks there are no organizations which have much more direct and/or indirect relationships to other organizations. The co-operation in the networks can generally be characterized as horizontal. An exception seems to be especially resource exchange and to a smaller extend exchange of clients. This reflects the fact that there are often only a small number of organizations, which provide financing for DDR activities (e.g. a ministry) for a much larger number of organizations. The same may apply to referral of clients where one organization (e.g. a hospital) refers clients to a larger and

broader range of specific services. It is especially interesting to see that the Slovenian system, which could on the basis of density scores be labelled as “full co-operation” is a very decentralized system. This indicates that the dense co-operation in the field is of a rather bottom-up nature and is not particularly “organized” by any central actor. In contrast the Hungarian organizational field turns out to be less “organized” than we would have expected on the basis of the density scores. Here the centralization in the more formal types of relationships is somewhat higher than in the other countries but less so than one would have expected.

4.2 Actor centrality

380 As explained before, actor centrality refers to an ego-actor’s visibility or popularity, as indicated by its involvement in many direct and indirect relations. An actor with many ties enjoys greater centrality compared to an actor with relatively fewer ties. In the following we will present for each of the countries the three actors, which enjoy the highest level of actor centrality for the different types of relationships. We will only present the actor centralities based on degree, i.e. degree centrality (direct ties). The reason is that the different centralization measures are in three of the four countries highly and significantly correlated (in the Czech Republic, Hungary and Slovenia). They seem to measure the same phenomena. In Poland the different measures are, however, not correlating. This indicates that the actors in Poland with many direct relationships are not necessarily the same actors which reach a lot of organizations indirectly through these direct relationships and that these organizations also not necessarily have an important broker position in the network. Not taking into consideration the effect of indirect relations limits somewhat the analysis of the Polish case but is certainly representative for the other three countries.

Czech Republic

Table 5 presents the actor centrality of the three most central actors in the different networks and some of their characteristics. The calculation of centralities is based on direct ties only (degree centrality). In the second column of Table 2 the identification numbers of the organizations are mentioned. We decided that for reasons of anonymity, the names of the organi-

Table 5: Actor Centralities and characteristics of the most central organizations in the Czech Republic¹

	Organi- sation ²	Centrality (in %) ³	Legal status ⁴	Orientation ⁵	Founding year	Attitude ⁶
<i>Support exchange</i>	1	13.3	GOV	EX	1993	3,5
	15	13.3	GOV	IN	1993	3,5
	10	13.3	GOV	IN	1918	2,8
	6	13.3	NGO	EX	1995	4,0
<i>Expertise exchange</i>	1	25.0				
	10	20.8				
	13	12.5	NGO	EX	1995	3,4
	3	12.5	GOV	IN	1925	3,1
<i>Resource exchange</i>	6	50.0				
	2	25.0	NGO	EX	1990	3,9
	15	25.0				
<i>Common activities</i>	1	17.7				
	10	17.7				
	2	11.8				
<i>Strategic co-operation</i>	1	22.5				
	15	12.5				
	10	12.5				
	2	12.5				
<i>Informal communication</i>	1	20.5				
	15	11,4				
	2	11.4				
<i>Number of organizations in top 3</i>	21		GOV: 14 NGO: 7	IN: 9 EX: 12	Founded before '89: 5 Founded after '89: 16	
<i>Number of different organizations in top 3</i>	7		GOV: 4 NGO: 3	IN: 3 EX: 4	Founded before '89: 2 Founded after '89: 5	Mean: 3,46

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- Notes:
- 1 For the Czech republic no data are available on the exchange of clients and prominence.
 - 2 Here an anonymous number for the organization appears. Same numbers in this column refer to the same organization.
 - 3 Percentage of organizations in a network to which the organization has a relation.
 - 4 NGO = Non Governmental Organization; GOV = GOVERNMENTAL Organization.
 - 5 EXclusive = Organization is active in the field of ddr only; INclusive = Organization is also active in fields other than ddr.
 - 6 On a scale ranging from 1'very permissive' to 5'very restrictive'.

zations should be omitted and be substituted by numbers. Whenever the same number appears in this column the same organization is referred to. As such it becomes possible to see how often an organization appears in the top 3 across the different types of relationships. When the organizations appears a second time in the table its centrality score is mentioned but all other organizational characteristics have been omitted (since they are always exactly the same).

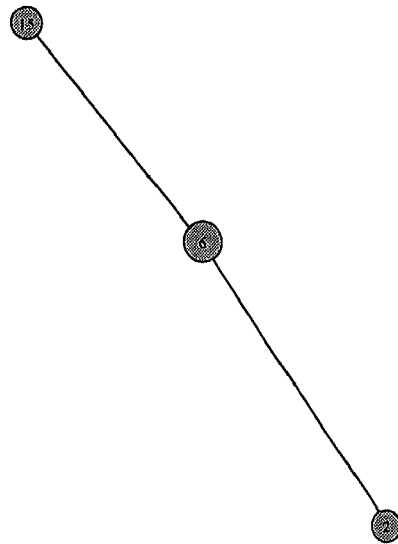
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Table 5 indicates that in 5 out of the 6 types of relationships organization 1 is the most central actor, followed by organizations 2, 10, and 15, each of whom is central in 4 different networks. Organization 1 is a governmental organization and has an exclusive orientation, which means that its specific task is drug demand reduction. The organization is as such, however, not very central since it has in all cases relations with less than one fourth of the other organizations. In the list 21 central positions appear (for some relationships more than three organizations appear because they have equal centrality scores) but only 7 different organizations can be identified in this list. Of these 7 organizations 4 organizations are exclusive and 3 are inclusive. This might be an indication for the fact that drug demand reduction has been developed as a specialized and distinguished field of activity in the Czech Republic. Other indications for this are that among these 7 organizations there are 4 governmental organizations and that 5 of the organizations have been founded after 1989. The organizations in charge appear, however, not be representative compared to all organizations in the Czech Republic in terms of their attitude. They have an average attitude of 3.46 (which has been classified as restrictive) whereas the Czech Republic overall – i.e. including local organizations – scores 2.79 (which has been classified as permissive).

Given the fact that as we have learned from the previous chapters that the availability of resources seems to be a crucial aspect in the field of DDR in all countries involved it is interesting to have a closer look at the overall resource exchange network.

The data available represent a very small resource exchange network consisting of two exclusive NGOs and one inclusive governmental organization.

Figure 1: Structure of resource exchange at the national level in the Czech Republic



Hungary

Table 6 presents the actor centrality of the three most central actors in the different networks based on the relational data for the Hungarian national organizational field.

The most central actor in the Hungarian national networks seems to be the exclusive NGO 217. This organization is the most central organization in three different networks and the second and third most central organization in two other networks. The reason seems to be that it has a central position in the funding of DDR activities. Centrality scores for the most central actors are in some of the networks rather high (less so, however, for common activities, strategic co-operation and exchange of expertise). This means that generally speaking the Hungarian network seems to be characterized by some "leading" organizations. It is striking, however, that the three organizations, which have the highest scores on "prominence" do not appear as one of the most central organizations in any of the other types of relations. All organizations of the most "prominent" group appear to be governmental organizations. This indicates that organizations strongly feel the influence of public organizations on their functioning.

Table 6: Actor centralities and characteristics of the most central organizations in the Hungary

	Organi- sation ¹	Centrality (in %) ²	Legal status ³	Orientation ⁴	Founding year	Attitude ⁵
<i>Client exchange</i>	244	29.2	GOV	IN	1979	3,6
	209	16.7	GOV	IN	1988	3,9
	214	12.5	NGO	EX	1983	3,6
	226	12.5	Private	IN	1994	3,5
<i>Support exchange</i>	227	25.0	NGO	IN	1984	3,5
	217	20.8	NGO	EX	1992	n.a.
	224	12.5	NGO	EX	1996	3,4
<i>Expertise exchange</i>	217	11.9				
	244	8.2				
	221	8.2	GOV	IN	1992	3,4
<i>Resource exchange</i>	217	47.6				
	224	4.8				
	216	4.8	NGO	IN	1990	3,8
<i>Common activities</i>	214	10.3				
	205	8.7	NGO	IN	1992	3,0
	211	7.9	GOV	IN	1987	4,3
<i>Strategic co-operation</i>	221	10.9				
	224	8.6				
	217	7.8				
<i>Informal communication</i>	217	11.2				
	221	8.7				
	220	8.3	GOV	IN	1992	3,4
<i>Prominence</i>	204	19.5	GOV	IN	1999	3,8
	202	11.9	GOV	IN	n.a.	4,3
	225	11.9	GOV	IN	1994	3,6
<i>Number of organizations in top 3</i>	25		GOV: 11 NGO: 13 Private: 1	IN: 15 EX: 10	Founded before '89: 7 Founded after '89: 17 n.a.: 1	
<i>Number of different organizations in top 3</i>	15		GOV: 8 NGO: 6 Private: 1	IN: 12 EX: 3	Founded before '89: 5 Founded after '89: 9 n.a.: 1	Mean: 3,6

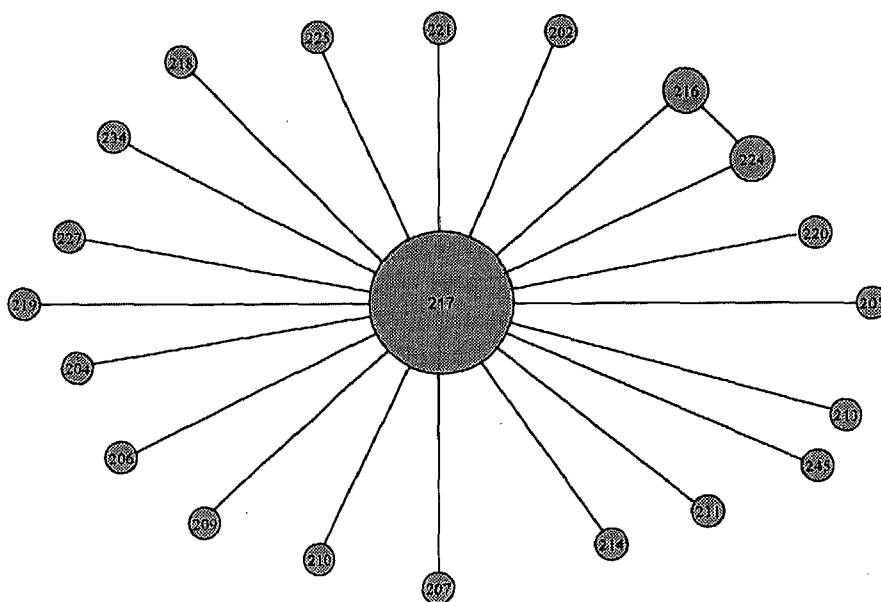
Notes:

¹ Here an anonymous number for the organization appears. Same numbers in this column refer to the same organization² Percentage of organizations in a network to which the organization has a relation³ NGO = Non Governmental Organization; GOV = GOVERNMENTAL Organization⁴ EXclusive = Organization is active in the field of ddr only; INclusive = Organization is also active in fields other than ddr⁵ On a scale ranging from 1 'very permissive' to 5 'very restrictive'

Overall, there is more variation in the core groups between the different networks than in the Czech networks, indicating a greater degree of functional differentiation (i.e. there are 15 different organizations appearing). As in the Czech Republic, Hungarian networks are also more dominated by governmental organizations than by NGOs. However, in contrast to the situation in the Czech Republic inclusive organizations are here the more dominant ones. Nevertheless, the three exclusive organizations seem to play a crucial role in integrating the different networks, since they occupy 10 out of the 25 top places. It can also be observed that generally speaking, most central organizations are rather young. The majority of the organizations have been founded after 1989.

Given the high score on the exchange of resources (financial, facilities, equipment) it is interesting to have a closer look at the structure of that network (see Figure 2). In this visualization the dominant role of organization 217 becomes clear.

Figure 2: Structure of resource exchange at the national level in Hungary



Although this network is rather large compared to the Czech networks, all organizations are reached by this central organization directly. This structure might be effective and especially efficient in cases where the central or-

ganization has enough resources to distribute, can handle all the exchanges taking place with other organizations, and will distribute the resources whenever the other organizations need them (see Provan and Milward, 1995). But there is also the danger that the central organization might be a bottleneck, which hinders the necessary, timely and sufficient flow of resources to the other organizations. In such case, a more decentralized network structure or – as a special case – a structure with several intermediate organizations would be preferable.

Poland

Table 7 presents the actor centralities of the most central actors in the different Polish networks.

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What is interesting is that in Poland obviously a couple composed of a non-profit and a public organization are rather dominant in most of the networks (organization 9 and – to a lesser extent – organization 15). They have in common that they are both exclusive organizations and have both a rather restrictive attitude with respect to drugs in common. While the client exchange network is dominated by NGOs, governmental organizations are most central in the support exchange and expertise network. In general the variation of organizations between the different networks is smaller than in Hungary which indicates a stronger integration between the different networks. This is also indicated by the fact that the organizations with the highest score in prominence also appear in the other networks.

A closer look at the resource exchange network reveals a picture, which is very different from the ones we have seen before for the Czech Republic and Hungary (see Figure 3).

What we see here is a nearly bi-polar structure with two central organizations: On the one side, we have the exclusive governmental organization (9) and, on the other side, we see an inclusive NGO (29) with a more permissive attitude. While there are several organizations with which they both exchange resources, there are also several organizations exclusively exchanging resources with one of them. This network design not only decreases the burden on each central organization, it also allows for more diversity in the exchange of resources. This figure also illustrates nicely the fact that, as mentioned before, the different centrality measures do not correlate very high in the case of Poland. Organizations in this structure are not only dependent on direct relations but indirect relations play an important role in these kind of structures. For example, it becomes clear that this network is char-

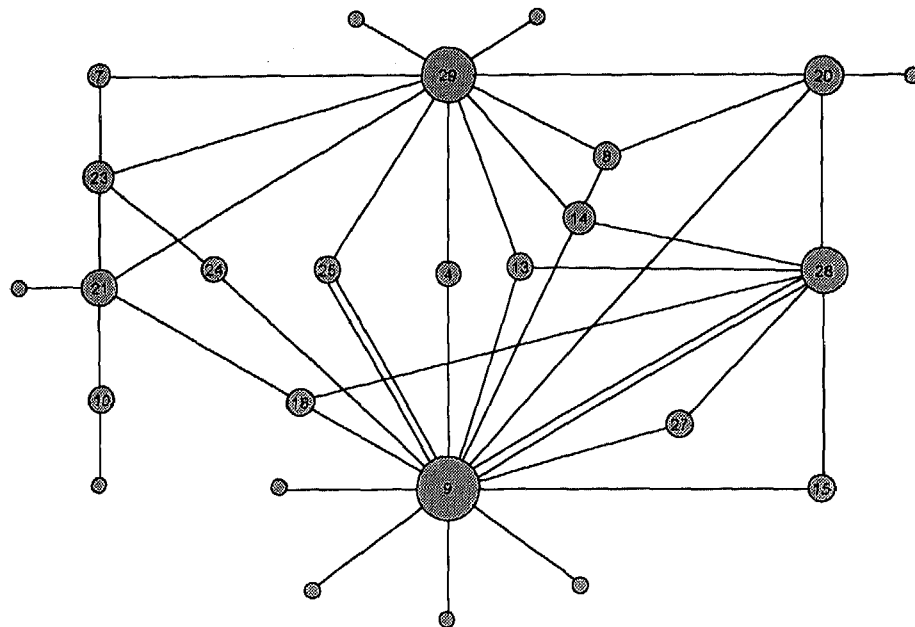
Table 7: Actor Centralities and characteristics of the most central organizations in the Poland

	Organi- sation ¹	Centrality (in %) ²	Legal status ³	Orientation ⁴	Founding year	Attitude ⁵
<i>Client exchange</i>	15	14	NGO	EX	1986	3,8
	21	13	NGO	IN	1978	3,0
	20	9	NGO	IN	1993	4,0
	25	9	NGO	EX	1993	3,1
<i>Support exchange</i>	9	16.7	GOV	EX	1993	4,0
	1	11.8	GOV	IN	1996	2,5
	8	7.9	GOV	IN	1918	3,4
<i>Expertise exchange</i>	9	10.9				
	28	8.3	GOV	IN	1953	3,4
	6	7.4	GOV	IN	n.a.	2,8
<i>Resource exchange</i>	9	18.6				
	29	12.8	NGO	IN	1987	3,0
	28	9.3				
<i>Common activities</i>	9	11.9				
	21	6.7				
	15	6.4				
<i>Strategic co-operation</i>	9	12.3				
	15	12.3				
	30	8.0	NGO	IN	1960	3,1
<i>Informal communication</i>	9	13.8				
	15	6.9				
	21	6.9				
<i>Prominence</i>	9	22.8				
	15	11.4				
	21	9.8				
<i>Number of organizations in top 3</i>	25		GOV: 12 NGO: 13	IN: 12 EX: 13	Founded before '89: 14 Founded after '89: 10 n.a.: 1	
<i>Number of different organizations in top 3</i>	11		GOV: 5 NGO: 6	IN: 8 EX: 3	Founded before '89: 7 Founded after '89: 4 n.a.: 1	Mean: 3,4

Notes: ¹ Here an anonymous number for the organization appears. Same numbers in this column refer to the same organization
² Percentage of organizations in a network to which the organization has a relation
³ NGO = Non Governmental Organization; GOV = GOVERNMENTAL Organization
⁴ EXclusive = Organization is active in the field of ddr only; INclusive = Organization is also active in fields other than ddr
⁵ On a scale ranging from 1'very permissive' to 5'very restrictive'

acterized by a number of brokers. It is interesting to note, that organization 29 is not very central in the other networks, while organization 9 is – as has been described above – the most central national organization.

Figure 3: Structure of resource exchange at the national level in Poland



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Slovenia

Finally, Table 8 presents the actor centralities of the three most important actors in the different networks in the case of Slovenia.

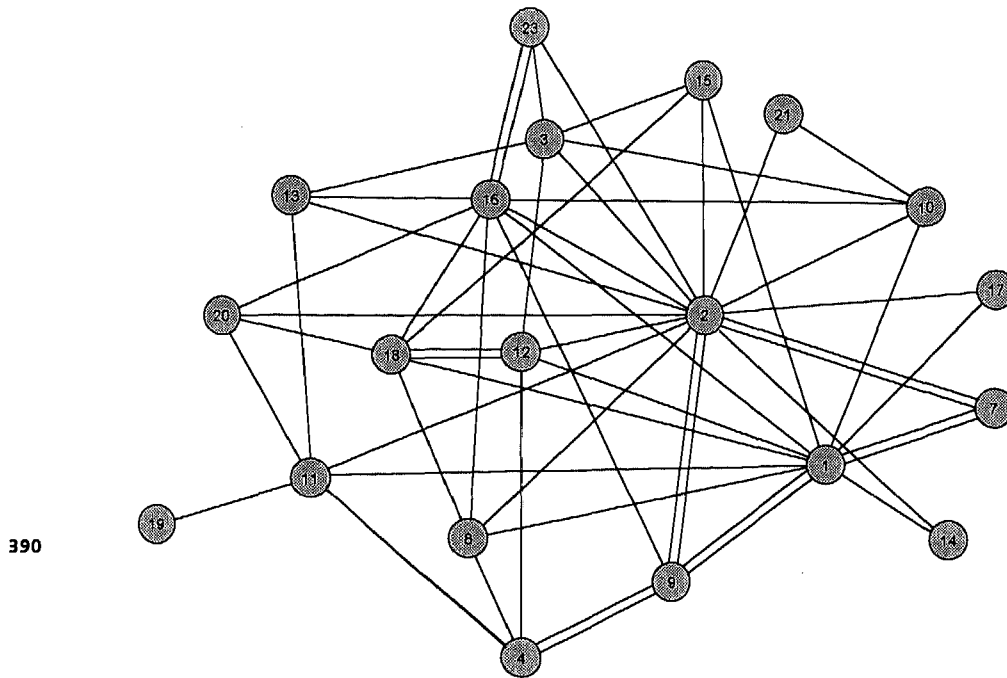
Given the high density of Slovenian networks it is not surprising that the most central organizations in these networks do not have very high actor centrality scores. The score of the most central organizations is never above 15% and most of them are around 10%. The most central organizations in the Slovenian networks are three inclusive governmental organizations: organization 6, founded in 1998, and organizations 1 and 2, both founded in 1991. These three organizations alone occupy 17 out of the 29 top positions in the Slovenian networks, so inter-network core group variability in Slovenia is low. Contrary to the networks in the other three countries, exclusive organizations are not among the most central organizations in the Slovenian national DDR network.

Table 8: Actor centralities and characteristics of the most central organizations in the Slovenia

	Organi- sation ¹	Centrality (in %) ²	Legal status ³	Orientation ⁴	Founding year	Attitude ⁵
<i>Client exchange</i>	6	12.8	GOV	IN	1998	3,2
	23	8.5	GOV	IN	1995	3,4
	16	8.5	NGO	IN	1998	2,1
<i>Support exchange</i>	1	8.5	GOV	IN	1991	3,9
	6	8.5				
	18	8.1	NGO	IN	1993	3,4
	20	8.1	GOV	IN	1955	2,9
<i>Expertise exchange</i>	3	8.8	GOV	EX	1995	3,4
	16	7.7				
	6	6.9				
	2	6.9	GOV	IN	1991	3,0
	20	6.9				
<i>Resource exchange</i>	2	14.9				
	1	11.4				
	16	8.8				
<i>Common activities</i>	2	10.5				
	6	8.9				
	3	8.0				
	1	8.0				
<i>Strategic co-operation</i>	6	10.3				
	2	8.9				
	16	7.2				
	3	7.2				
<i>Informal communication</i>	6	7.3				
	1	6.9				
	2	6.7				
<i>Prominence</i>	2	13.7				
	1	12.7				
	6	9.7				
<i>Number of organizations in top 3</i>	29		GOV: 24 NGO: 5	IN: 26 EX: 3	Founded before '89: 3 Founded after '89: 26	
<i>Number of different organizations in top 3</i>	8		GOV: 6 NGO: 2	IN: 7 EX: 1	Founded before '89: 1 Founded after '89: 7	Mean: 3,14

Notes: ¹ Here an anonymous number for the organization appears. Same numbers in this column refer to the same organization.
² Percentage of organizations in a network to which the organization has a relation
³ NGO = Non Governmental Organization; GOV = GOVERNMENTAL Organization
⁴ EXclusive = Organization is active in the field of ddr only; INclusive = Organization is also active in fields other than ddr
⁵ On a scale ranging from 1 'very permissive' to 5 'very restrictive'

Figure 4: Structure of resource exchange at the national level in Slovenia



Contrary to the Czech network, the Slovenian exchange network is rather large; unlike the Hungarian network it is not very centralized although central organizations are clearly recognizable. Because of the high density no clear structure can be detected, in contrary to the Polish resource exchange network. What distinguishes it from all other networks visualized so far, are the seven reciprocal relationships.

5 Conclusions

The national organizational field of DDR in the Czech Republic can be characterized as a small, newly developed field with a mixture of non-governmental, inclusive and exclusive organizations in charge. Although there is one clearly dominating organization that is integrating the different networks, overall network density – and therefore integration – is very low.

Hungarian national networks are networks of about the same size – or even smaller – than Slovenian networks. Although the most central organization is an NGO, Hungarian networks are dominated by inclusive governmental organizations. The overall core-group variability is rather high, indicating a lack of central co-ordination and integration, even more so since the most prominent organizations are no central players in the other networks. This might be partly compensated for by the medium density of most Hungarian networks.

Polish networks are certainly the largest and oldest networks analysed here. One central exclusive governmental organization is dominating and bridging the different networks; but its centrality as well as the centrality of other dominating organizations is very low. Since the density of all Polish networks is also low, it seems that integrative forces are weak in the Polish national organizational field.

The low inter-network core group variability, together with the very high density of Slovenian networks indicates that Slovenian networks are highly integrated. The Slovenian national level could, consequently, be characterized as “full cooperation”.

Taken together, these networks in the four different countries have shown a wide variety of network structures. Although one might tend to assume that the “content” of a network would have a great influence on its structure (i.e. patient exchange networks are smaller than other networks because only a minority of organizations will be able to deal with patients properly), the results presented so far seem to suggest otherwise. It might be suggested on the basis of these data, that the country is a more important factor than the type of relationship in determining the structure of these networks.

But what has been presented above is rather preliminary and has in the first place an illustrative character. Only basic characteristics of the different networks have been presented. This should be seen as a first step for more detailed and comparative analysis. On the basis of the data presented first vague profiles of the “organization” of the different national organizational fields have become visible. These are very tentative and will have to be sharpened on the basis of subsequent analyses.

Notes

- 1 See <http://eclectic.ss.uci.edu/~lin/ucinet.html>.
- 2 See <http://www.visone.de/> and Brandes, Kenis and Wagner (2001).
- 3 The degree centralities from which the degree centralization measure is derived, were calculated as the average of an actor's in-degree centrality and his or her out-degree centrality.

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