The procedure of group work in two- and three-dimensional dynamic networks

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Key terms: dynamic networks, group work, cross-groups, group dynamics, coordination group, personal conflict, socio-political organizations.

Abstract:

Our article describes tools for managing group dynamics in primary units of different organizations by implementing suggested algorithms and rules of interaction for its members that together make up a dynamic network. A dynamic network is a variable structure of organizations that regulates and maintains free of conflicts the interaction of all its members by their cyclic restructuring into little groups of different functional designation according to a certain algorithm that ensures production, coordination and taking of collective decisions by the members from the positions of “equal-to-equal” and their implementation in a complex of temporary hierarchical project, executive and process groups headed by executors in charge.

The algorithm of production, coordination and taking of collective decisions was developed by way of combining two components:

1) the procedure of classic brainstorming, when at the first stage participants voice their suggestions without any criticism and at the second stage the suggestions are discussed in groups consisting of other members;

2) the method of cross-groups applied in pedagogy that implies learning parts of a certain scope of information in primary groups and teaching each other these parts by the members in cross-groups.
The work of the participants is free of conflict thanks to the algorithmic reproduction of their interaction as that of representatives of the earlier dissolved functional groups – bearers of consensual group decisions, rather than that of individual persons. Potential intergroup conflicts are overcome due to the continuous altering of the content of the cross-groups, which helps to establish a field of trust among all participants and makes it impossible to fix an internal group framework.

Decisions are implemented in accordance with the provisions of contemporary project and process management.

The suggested algorithm of production, coordination and taking of collective decisions in a dynamic network may be used for holding seminars, conferences, meetings or forums – i.e. events that involve large groups of people.

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Our article «Managing group dynamics in primary units of socio-political organizations» [1] describes tools for managing group dynamics in primary units of socio-political organizations by implementing suggested algorithms and rules of
interaction for its members that together make up a dynamic network. A dynamic network [2] is a variable structure of socio-political organizations that regulates and maintains free of conflicts the interaction of all its members by their cyclic restructuring into little groups of different functional designation according to a certain algorithm that ensures production, coordination and taking of collective decisions by the members from the positions of “equal-to-equal” and their implementation in a complex of temporary hierarchical project, executive and process groups headed by executors in charge.

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Decisions are implemented in accordance with the provisions of contemporary project and process management.
The suggested algorithm of production, coordination and taking of collective decisions in a dynamic network may be used for holding seminars, conferences, meetings or forums – i.e. events that involve large groups of people. Depending on the number of meeting participants, an algorithm of work of a two- or three-dimensional dynamic network is chosen. The choice of the dynamic network type is made on the basis of calculations originating from the well-known thesis of the optimum number of team members – a small group of 7 (+/-2) people. Social psychology suggests that the most effective group is that consisting of 5 people, since such groups do not develop cliques and thus the chances of intra-group conflicts are rather low. However, practice proves that a 9 member group is capable to work too, and the maximum number of members in one work group should not exceed 12 persons. Apart from that, the number of equal in their scope issues to be discussed in detail and settled with concrete decisions within one 2-3 hour meeting should not exceed 5. If there are more such issues, the natural fatigue of the members results in the decrease of the discussion quality, and correspondingly the quality of the generated solutions diminishes as well. Thus, the maximum size of a group that can work in a two-dimensional dynamic network on 5 issues is 40-60 persons. As it will be demonstrated below, a three-dimensional dynamic network, which may integrate up to 12 two-dimensional dynamic networks, can simultaneously involve over 700 members. In some cases, by making the algorithm more complicated and increasing the discussion time, number of issues and the size of work groups, it is possible to involve up to two thousand participants in the work. Besides, it is expected that all those involved can discuss all issues. If such a restriction is not mandatory, the numbers of issues to be discussed may be increased to a couple of dozens and the number of participants may range from a couple of hundred to a couple of thousand people. It should be pointed out that each individual case of
collective work in a large group of participants implies a choice of a network type, designing the most advantageous algorithm of its work, determining the size of the work groups and drawing personal protocols of the participants.

**Scheme 1.** Algorithm of work in a two-dimensional dynamic network

The **two-dimensional dynamic network** represented in figure 1 includes the following work stages:

1. **Plenary session**, where the problem is defined, the procedure of joint work on it is described and participants are subdivided into special-purpose groups. For this purpose, the participants are structured into small groups of more or less the same size according to their competence by the directions or special-purpose of activity or by other criteria stipulated by the type of tasks to be solved. The duration of the first stage is 10-30 minutes.

2. **Work in special-purpose groups** by the method of brainstorming when participants discuss their tasks and generate alternatives or components of solutions without critically analyzing them. This makes it possible to virtually avoid conflicts, which has a positive effect on interrelations of the participants and promotes personal fulfillment of each of them. The result of work at the second stage is a list of alternatives or components of solutions generated by the group in the personal protocols.
of all participants. The duration of the second stage is 20-40 minutes and depends on the complexity of profile issues.

3. **Work in cross-groups**, where each participant represents his/her own special-purpose group. Here they in turn report on the alternatives or decision components generated in their special-purpose groups and in the process of discussion they receive remarks, criticism, advice, amendments, new alternatives or decision components from their colleagues and these are recorded in the personal protocol. Work in cross-groups corresponds to the second stage of the brainstorming procedure – discussion of the generated alternatives or decision components in groups with other participants. The special feature of this step is objective criticism of alternatives or decision components from the impersonalized list by cross-group participants – since they didn’t take part in generating these alternatives, they have no personal interest in advancing one of them so as to reinforce their rank. Under such conditions the speaker has a chance to estimate the colleagues’ attitude to each of the alternatives or decision components they represent regardless of their source, as well as receive additional information in the process of discussion. Moreover, in cross-groups everyone in turn works as a representative of his/her own special-purpose group and as an expert who along with colleagues discusses the reports of other participants.

Since every speaker represents the ideas of his special-purpose group (i.e. a set of produced alternatives or decision components) no participant of the cross-group can make the speaker change them due to irrational factors – such as his charisma, authority or psychological and emotional influence. Even the collective opinion of the cross-group cannot predominate over the opinion of the special-purpose group since the latter consists of the most competent members of the given special-purpose direction.
The described division of role positions of the interaction of cross-group participants and the algorithm of their alteration rules out conflicts that accompany the ranking process or in other words appearance of informal leaders, stabilizes the dynamics of social and psychological processes in the group, provides every participant of the primary unit with a chance to rationally influence the formation of decisions on the stage of discussing alternatives or their components and also lets all the participants form their own attitude to each alternative or decision component based on the analysis of all available information that freely circulates in the organization as well as on results of comparison of the positions of different groups in general and positions of each colleague in particular. The duration of the third step is 30 to 60 minutes and depends on the number and complexity of the questions under consideration.

4. **Work in initial special purpose groups**, where the participants generalise, discuss and finalize all information generated in the cross-groups and on its basis produce a project (or alternative project) of the final decision and elect or appoint a speaker. The specific feature of work at this stage is a radical change of the participants’ status – this time each of them represents their cross-group, which reinforces his position and levels the pressure both on the part of potential informal leaders and group pressure in general, and this lets avoid the necessity to manifest conformism. Thus every participant is empowered to actively oppose even recognized authorities, which would be impossible in a group with classic dynamics of development of socio-psychological processes. The duration of the fourth step is 20 to 40 minutes and depends on the complexity of profile issues.

5. **Plenary session** where representatives of special-purpose groups present agreed decision projects that are adopted by consensus or, if required, put to vote without discussion and are adopted by the qualified majority of 2/3 or 3/4 depending on
the requirements for adoption of this or that type of decisions. The duration of the fifth step is 20 to 40 minutes and depends on the number and scope of decision projects.

The optimum duration of the work of a dynamic network is 2–3 hours and depends on the number of participants as well as the number and scope of the issues to be discussed.

A three-dimensional dynamic network includes the first three stages of work of the set of two-dimensional dynamic networks that are implemented simultaneously, as well as some additional steps for coordination of the produced decisions.

**Scheme 2.** Algorithm of work of a three-dimensional dynamic network

For instance, scheme 2 represents the algorithm of work of a three-dimensional dynamic network for discussing four profile issues created on the basis of three two-dimensional dynamic networks. Below another four stages are described that make it possible for the participants of such a meeting to discuss all set issues, approve and make a common decision on each of them (the numbering continues from the first four stages of the two-dimensional network):
5. **Work in coordination groups**, where every participant of uniform special purpose groups of two-dimensional dynamic networks presents the result of their work in the form of a decision project (projects). During the presentation, other participants find similarities and disparities with their own decision projects and take note of them in their personal protocols. Personal conflicts during the work in coordination groups are eliminated due to the above described mechanisms for cross-groups. The duration of the stage is 30 – 60 minutes and depends on the number and complexity of profile issues.

6. **Work in the initial special purpose groups**, where the participants generalise and discuss all information generated in the coordination groups and on its basis produce their suggestions as to a project (or alternative projects) of the final decision and elect or appoint a member of the editorial board – representative of their special purpose group. Personal conflicts during the work are eliminated due to the mechanisms described for stage 4 of the two-dimensional dynamic network. The duration of this stage is 20 to 40 minutes and depends on the complexity of profile issues.

7. **Work of the editorial board** in the groups of the same number as that of the issues to be discussed. The participants of each of them represent corresponding special purpose groups of the parallel two-dimensional dynamic networks. During the discussion, they produce a joint project (projects) of the final decision which is further distributed among all participants. Personal conflicts during the work in the editorial group are eliminated due to the above described mechanisms for cross-groups. If necessary (for instance, to finalize project of decisions on various profile issues) and if time allows, the work of the editorial board may be conducted according to the
algorithm of the work of a two-dimensional dynamic network. The duration of the stage is from 30 to 120 minutes and depends on the number and complexity of profile issues.

8. **Plenary session**, where representatives of special purpose groups in the editorial board present the approved decision projects adopted by consensus or, if required, by the qualified majority of 2/3 or 3/4 depending on the requirements for adoption of this or that type of decisions. The duration of the fifth step is 30 to 60 minutes and depends on the number and scope of decision projects.

The optimum duration of work of a three-dimensional dynamic network is 4–7 hours and depends on the number of two-dimensional dynamic networks that make up its basis as well as the number and scope of the issues to be discussed.

See a sample form of a personal protocol for the work of a three-dimensional dynamic network in scheme 3. The same protocol exclusive of the third column for approval of project decisions is used for the work of a two-dimensional dynamic network.

### Scheme 3

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<table>
<thead>
<tr>
<th>Dynamic network</th>
<th>Profile issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special purpose group (at the first stage, brainstorming is held)</td>
<td>The result of work: list of components of alternatives of solution of the profile issue</td>
</tr>
<tr>
<td>Cross-group</td>
<td>The result of work: list of remarks, objections, proposals to the components or alternatives suggested by the special purpose group</td>
</tr>
<tr>
<td>Coordination group</td>
<td>The result of work: forming and coordinating of common approaches and divergences in the decision of another special purpose group, list of recommendations for the editorial board members</td>
</tr>
</tbody>
</table>
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Photo and video reports on the participants’ work in two- and three-dimensional networks are available at the site of public organization Center for Development of the Ukrainian Culture and Self-Organization [4].
Instruction for a participant in the work of a two-dimensional network

The algorithm of work in a two-dimensional dynamic network includes 4 stages:

Stage 1. Work in special-purpose groups. Duration 20 to 45 minutes.

Members of the special purpose group work in the mode of the first phase of brainstorming when they express their ideas (alternatives or solution components), which are noted by all those present in their personal work protocols without criticism.

Every participant is involved in arranging the work of the special purpose group:
- makes sure all participants in turn have a chance to express their vision of alternatives or solution components (first ALL in turn and then those who are willing);
- represents every expressed idea as a brief thesis, noting it down and suggesting! that other participants note it down as such in their personal protocols;
- avoids criticizing expressed ideas and makes sure other participants do not criticize or discuss them – whenever a discussion develops, everybody should be reminded that the work is conducted in the mode of brainstorming, which rules out criticism and discussion of expressed ideas;

Before the work at the first stage of the dynamic network is over, experienced participants introduce freshmen to the procedure of work in cross-groups!

Stage 2. Work in cross-groups. Duration 30…60 minutes. Participants in turn report on the results of work in their own special purpose groups and discuss them expressing criticism, remarks, suggestions and new ideas (alternatives or components of solution of the special issues) according to the following scheme:
- A participant’s report – 5 minutes;
- Discussion of the presented report: criticism, remarks, suggestions and new ideas from other participants – 7-10 minutes. The reporter notes down the results of discussion in his/her personal protocol in the corresponding section.

Every reporter notes down in his/her protocol only the results of discussion of his/her report!

- Switch to presentation and discussion of the report on another participant.

**Stage 3. Work in special purpose groups.** Duration of work 20…45 minutes.

Members of the special purpose group choose the reporter. Next, one by one every member reports on the results of the discussion of their reports in cross-groups, presents the generated criticism, remarks, suggestions and new ideas. Other members of the special purpose group express their ideas as to willingness or unwillingness to accept components of the presented reports. The reporter notes down whether the special purpose group accepts the result of the cross-group discussion or not.

Every participant is involved in arranging the work of the special purpose group:

- Assists in as quick as possible election of the reporter – participant capable of making the finest presentation of the results of work in the special purpose group;

- Makes sure all participants (in turn) present information on the results of discussion of their reports in cross-groups and actively participates in the process of discussion of these results and notes down the acceptance/non-acceptance of their components. (They should also watch the time!)

**Stage 4. Plenary session.** Duration 15-50 minutes. The duration of report of every special purpose group is 3…10 minutes.
**Instruction for the moderator of the special purpose group in a two-dimensional network**

The algorithm of work in a two-dimensional dynamic network includes 4 stages:

**Stage 1. Work in special-purpose groups.** Duration – 20…45 minutes.

Members of the special purpose group work in the mode of the first phase of brainstorming when they express their ideas (alternatives or solution components), which are noted by all those present in their personal work protocols without criticism.

**The moderator’s task:**
- to give a chance to every participant in turn to express their opinions (first ALL in turn and then those who are willing);
- to represent every expressed idea as a brief thesis, and suggest! that other participants note it down as such in their personal protocols;
- make sure that there is no criticism of expressed ideas or their discussion;

whenever a discussion develops, everybody should be reminded that the work is conducted in the mode of brainstorming, which **rules out criticism** and **discussion** of expressed ideas;

**At the end of the work at the first stage of the dynamic network, the moderator should inform the participants about the procedure of work in cross-groups!**

**Stage 2. Work in cross-groups.** Duration 30…60 minutes. Participants in turn report on the results of work in their own special purpose groups and discuss them expressing criticism, remarks, suggestions and new ideas (alternatives or components of solution of the special issues) according to the following scheme:

- A participant’s report – 5 minutes;
Discussion of the presented report: criticism, remarks, suggestions and new ideas from other participants – 7-10 minutes. The reporter notes down the results of discussion in his/her personal protocol in the corresponding section.

Every reporter notes down in his/her protocol only the results of discussion of his/her report!

Switch to presentation and discussion of the report on another participant.

Stage 3. Work in special purpose groups. Duration of work 20…45 minutes.

Members of the special purpose group choose the reporter (as an option, it may be the moderator, however, it is more efficient if the reporter is elected from among the group members). Next, one by one every member reports on the results of the discussion of their reports in cross-groups, presents the generated criticism, remarks, suggestions and new ideas. Other members of the special purpose group express their ideas as to willingness or unwillingness to accept components of the presented reports. The reporter notes down whether the special purpose group accepts the result of the cross-group discussion or not.

The moderator’s task:

- Assist in as quick as possible election of the reporter – the person capable of making the finest presentation of the result of work in the special purpose group;
- Arrange a successive presentation of reports on the results of discussion in cross-groups and provide for effective discussion of these results by special group participants and note down the acceptance/non-acceptance of the report components.

(They should also watch the time!)

Stage 4. Plenary session. Duration 15-50 minutes. The duration of every report is 3…10 minutes.
References


3. Internet-site of public organization Center for Development of the Ukrainian Culture and Self-Organization// Available at http://samoorg.wordpress.com/