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Stafford Beer's Syntegration as a Renascence of the Ancient Greek Agora in Present-day Organizations

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Abstract: Over some forty years, Stafford Beer (1926 - 2002) has published a steady stream of seminal books and papers in which he has applied cybernetic science to organizational problems. In all of these he has explained underlying principles and developed new theories and recorded a great variety of practical applications. In his last book, published in 1994 [Beer, 1994b] he presents a cybernetic approach to knowledge management within large groups of about 30 people, called Syntegration®. Syntegration is a structured, non-hierarchical process for highly effective and efficient dialogue that leads to much faster, much more informed outcomes and aligns people behind the resulting decisions, messages and action plans with a high chance for implementation. Since its invention this powerful method has been very successfully applied more then 200 times in the organization of normative, directional, and strategic planning, and other creative decision processes. The underlying model is a regular icosahedron. This has 30 struts, each of which represents a person. Each of the 12 edges represents a topic that is being discussed. An internal network of interactions is created by a set of iterative protocols. A group organized like this is an ultimate statement of participatory democracy, since each role is indistinguishable from any other. There is no hierarchy, no top, no bottom, no sideways. Beer illustrates how continued dynamic interaction between persons causes ideas and resolutions to hum around the sphere, which reverberates into a kind of group consciousness. Mathematical analysis of the structure shows how the process is determined by the even spread of synergy. The aim of this article is to present to managers and their advisors a new planning method that captures the native genius of the organization in a non-political and non-hierarchical way. That produces the best possible results in the shortest possible time from the largest possible number of people, by making optimized use of the knowledge these people have. Knowledge management at its best.

Keywords: Syntegration, Team Syntegrity, managerial cybernetics, Stafford Beer, Ross W. Ashby, synergy
Category: H.1.m

1 Introduction

"Master and slave, squire and servant, boss and employee, ruling classes and proletariat … the notion of hierarchy is endemic to the human experience of social system. And yet it seems never to suffice as an organizing principle" [Beer, 1994a:3])

These are the opening phrases to Stafford Beer's seminal work on participatory democracy based on applied cybernetics. In his book "Beyond Dispute: The Invention of Team Syntegrity" [Beer, 1994a], Beer proposes a three-dimensional geometric model for knowledge dissemination in large groups, that has its provenance in a multitude of different sciences including biology, psychology, mathematics and architecture. This icosahedron model has no hierarchy, no top, no bottom and no

sideways and can be regarded as a highly pragmatic and innovative tool for knowledge sharing, consensus building and conflict resolution whenever a large number of people is involved: in business, in politics and in every societal body, panel or committee [Bavelas, 1952]. Hence the Syntegration® can serve as an effective driving belt for the transfer of Agora-style thinking into contemporary planning and decision making.

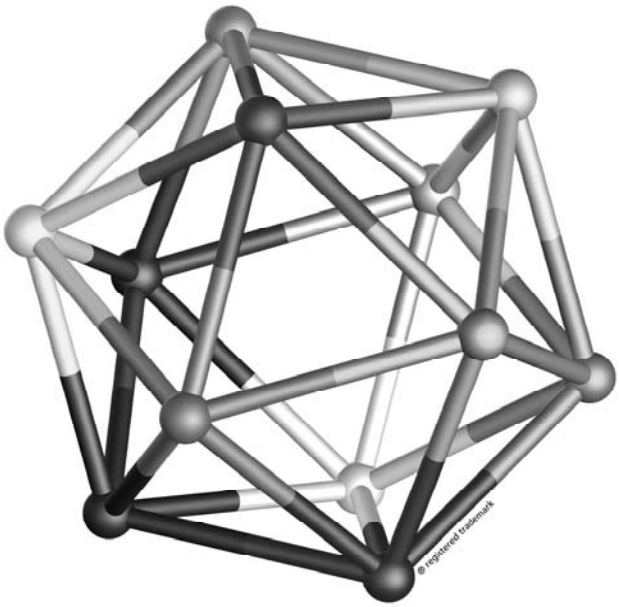

Figure 1: The icosahedron, communication structure for a Syntegration®

The Agora was the heart of ancient Athens, the focus of political, commercial, administrative and social activity, the religious and cultural centre and the seat of justice. Dating back to the 6th century B.C. the Agora has witnessed countless convocations, reflecting the true meaning of democracy, of governance by the people. Politicians, philosophers and citizens have gathered to discuss issues of common interest and relevance. Dialogues were held and disputes were fought. But the Greeks were at a huge advantage in comparison with modern day interlocutors as they convened against the background of a world much less complex than the one which is host to our present global village. Political, economic and societal systems and their subsystems were by far less interlinked and embedded in each other whereas the delimination of today's systems and subsystems has become more and more obnoxious.

Complex problems require complex thinking in order to find accurate, holistic and sustainable solutions. R.W. Ashby [Ashby, 1952] proposes that only variety can absorb variety, hence control in a system can only be obtained if the variety of the controller is at least as great as the variety of the system to be controlled. In practice

this requires the integration of the entire knowledge of a system that is concealed in the brains of its members with a minimum amount of time and management. Syntegration offers a highly intelligent design that combines the effectiveness of small groups with the efficiency of large gatherings in terms of knowledge dissemination.

This article analyses the prerequisites for a resurgence of the Greek idea of problem solving by dialogue within the Agora and proposes the Syntegration model to transfer Athenian thinking into modern organizations, communities and societies and to get *Beyond Dispute*.

2 The Origins

In Beers Syntegration® model, effective communication is implicit in the structure on which the communication is based. It comes into being automatically and necessarily if the Syntegration structure is used. The participants in a Syntegration (the term is derived from the words synergy and integration) are free to discuss what in their view needs to be discussed. The structure, however, lays down for them who discusses what with whom, when, for how long and in what role.

Beer found the ideal structure in the icosahedron, the most complex of the five platonic solids. The icosahedron is a regular polyhedron having 20 faces, 12 edges and 30 struts. America's 'Leonardo da Vinci of the modern age', Richard Buckminster Fuller had discovered even before Beer that this structure co ntains Nature's principle of construction: the equilateral triangle.

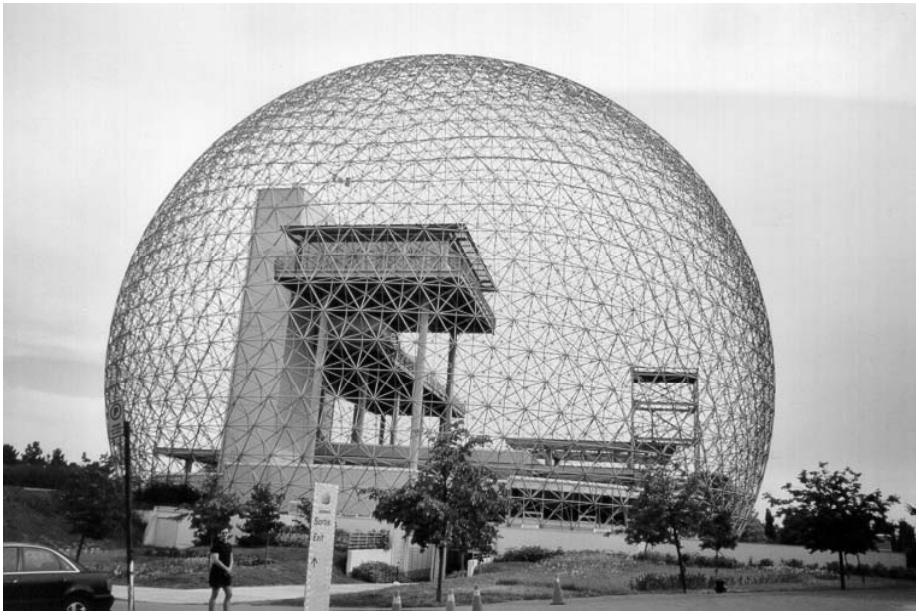

Figure 2: Fuller's Geodesic Dome, constructed in Montreal in 1967

Fuller had shown that the equilateral triangle is the most efficient and robust structure that can be used to connect and construct things. He gave practical proof of this by erecting dome structures (geodesic domes) constructed in the 60-degree style of the equilateral triangle that were not only many times larger than domes of conventional construction but were also many times more robust and efficient in terms of resource input.

The revolutionary idea that Beer had was to use the same structure for efficiency and robustness in communication. He placed the topics for discussion at the twelve vertices of the icosahedron and the people at its thirty struts. With this model, thirty brains are - as it were- networked together in such a way that they operate as one joint brain that is that much more powerful. Each of the topics that relate to an opening question is covered by a group of the optimum size of five people. In this case the topics are networked via the people, because each person is involved in a number of topics. As well as his or her role as a team member for two topics, each person also performs in two other roles: as critic for two other topics and as observer for four others. This means that each topic is not only discussed by five members but is also added to by five critics and observed by up to ten observers.

Figure 3: Five people discuss one topic, 30 people discuss twelve topics

3 The Syntegration Protocol

Prior to the start of a Syntegration® an Opening Question must be formed that represents the issue upon which participants will focus their best thinking, discussion and debate. An example could be: "What must we do to become a highly efficient and effective organization and benchmark for our industry"? The participants in a Syntegration (usually a group of between 15 and 40 people) are typically selected to represent a broad group of stakeholders within an organization or amongst organizations. Participants represent different levels within the organization, and can be subject matter experts, leaders, managers, employees, partners, customers, clients, etc. The participants provide the 'requisite variety' and critical mass of individuals necessary to make much more informed decisions.

The Syntegration, designed as an intensive workshop of 2-3,5 days, has no predetermined agenda. The participants themselves set the agenda at the very beginning of the Syntegration as no one of the group would be able to define what everybody else finds relevant to discuss in regard to the Opening Question. This agenda setting requires about half a day and consists of different steps within an *Importance Filter* that leads the group via Brainstorming, Marketplace and

Consolidation from some hundred individual statements down to twelve key agenda items. The specific number of topics is important - not too many to lose track of things during the discussions and not too few to under represent the complexity of the Opening Question. Then each participant is being asked to bring these topics into an order of preference against the background of the question to which topics one can contribute the most. Finally a computer program based on an algorithmic calculation selects among some 10^{40} possibilities of allocation of participants and topics within the icosahedral structure the best option.

Each participant is being assigned Member in two Topic Teams, Critic in two other Topic Teams and Observer in up to four more Topic Teams. Whereas the Members are responsible for their topic and have the task to arrive at clear actions in regard to their topic by the end of the Syntegration®, the Critics are responsible for criticising the content that is being developed by the Members, and for making the process a self-managing one.

Figure 4: One of twelve team meetings including team members, critics and observers, being supported by a facilitator

Observers, finally, may not intervene at all during the discussions and may only listen. They play, however, an important role as networkers of knowledge: They take on what is being discussed in the teams they observe and carry the new insights and ideas into their own groups if that information is relevant for the discussions. And, because they are not allowed to speak during the time that they are gathering this information, Observers filter their own thoughts and responses instead of speaking them aloud immediately. These different roles of Member, Critic and Observer ensure that everyone has the same rights and opportunities to participate in the debate: Positional, hierarchical or rhetorical dominance that prevails in the organizational

context and often inhibit equality of thought are not being totally neglected but are being dampened very effectively through the protocol.

When a Topic Team meets, there is at least one representative of all other 11 Topic Teams present in the meeting room. This *reverberation* ensures that every thought, every new idea, is being transferred automatically to all other Topic Teams via the short term memory of the participants and also via the statements that are being written by trained Facilitators who take notes during the discussion, monitor the adherence of the participants to the "rules of the game" and support the group in arriving at clear solutions.

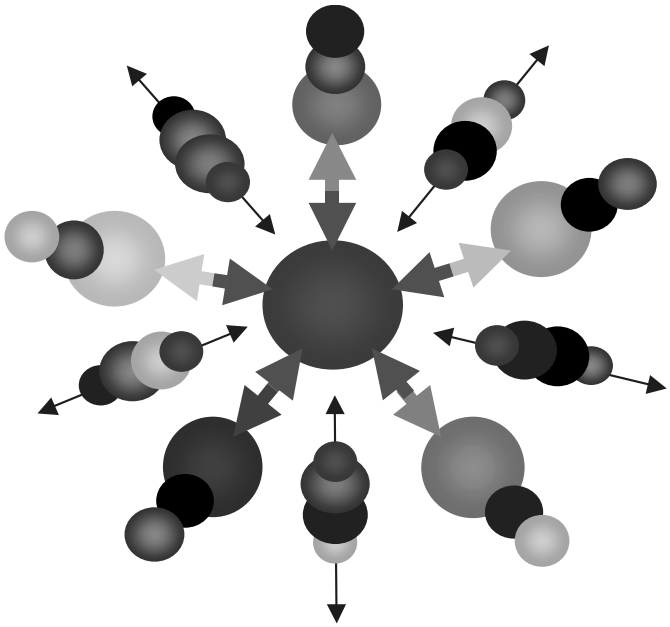

Figure 5: Illustration of the Reverberation effect that occurs during a Syntegration. The spheres represent topics, the arrows represent participants.

Each group meets for three times during a Syntegration® with the same constellation of people. In the first meeting the group defines the status quo in regard to their topic and the relevance for answering the Opening Question. In the second meeting, the Topic Teams discuss how the ideal situation would look like and what would be done in a "Greenfield approach". The third meeting of each team finally focuses on the actions: "What do we as Topic Team … propose to the board of directors for implementation." One run of all twelve topics (which requires usually a full day) is called *Iteration*. A Syntegration necessarily consists of three Iterations because only after each Topic Team has met for three times and has networked with all other teams, a dissemination of relevant knowledge of some 90% can be realized and the proposed actions fit together like the pieces in a jigsaw.

Results are being achieved through a Syntegration® on four different levels:

- A clear action plan has been developed that integrates the best knowledge of all participants.
- The participants share a strong commitment for implementation of what has been jointly developed.
- The participants are highly networked after a Syntegration, team building has occurred.
- Participants learn from each other and better understand the other participants' positions and constraints.

4 The relevance for present-day organizations

Organizations of any kind face an extremely high internal and external complexity which they need to manage in order to survive in their specific competitive environment. According to Ross W. Ashby [Ashby, 1952] they can only do so if the directive and regulatory mechanisms that are in place can cope with the complexity they need to manage, i.e. if the variety of the management is at least equal to the variety caused by the organization and its environment. This could be achieved, if the entire knowledge that is available in the organization were combined. But as a matter of fact, organizations consist of an accumulation of scientists and specialists that have undergone different types of education in different areas and now occupy highly focused niches of expertise within their organizations. The word *science* has its etymological roots in the Greek prefix *ski* as in schizophrenia or schism and means to separate or to distinguish. Hence science itself separates reality into different areas and looks at our world from a mathematical, a biological, a psychological or a theological point of view. Transferred to the context of organizations we have a marketing perspective, a sales perspective, a R&D perspective, a quality management perspective, a customer or supplier perspective, etc. But only by integrating the knowledge and experience of these specialists in a way that they can network into one large biological brain, the necessary variety is being assembled that is required in order to manage complex organizations in their complex environments.

The Syntegration method can be applied to all kinds and sizes of organizations regardless of their level of internal competence, communication culture or industry. Two prerequisites, however, need to be observed to make a Syntegration a success: The topic of the Syntegration, reflected in the Opening Question must be of high relevance for the organization and the participants must be selected very carefully: Whom do we need for knowledge generation (the experts) and whom do we need for the implementation of the actions proposed (the "drivers").

Areas of application are commonly strategy definition or implementation, project kick-off, post merger integration, change management or conflict resolution.

5 Conclusions

Organizations need to make every effort to integrate and to network the knowledge which is available in the organizations, i.e. in the brains of its collaborators. Syntegration® can be regarded as an effective catalyst for knowledge generation and dissemination. The methodology raises organizations to a new level of communicative competence and operative effectiveness. It thus opens the door to a new world of competitive advantages achieved by speed, accuracy of targeting, strength of consensus and organizational intelligence. Thus Syntegration depicts the genetic code of effective communication [Pfiffner, 2004].

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