
From workshop to Syntegration®: The genetic code of effective communication

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Malik on Management (MoM 10/04)
October 2004

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Meetings and workshops determine success

Communication is an old and omnipresent topic in all organizations. The particular aspect of the topic that is usually considered in this case is communication between individuals or **communication in small groups**. This is something that, today, we know a very great deal about – this is homework that has been done. Something that we know only a little about, on the other hand, is what makes **communication in a large group** of people effective. Only to a very limited degree can the findings from small systems, where the relationships are direct "face-to-face" ones, be transferred to large groupsⁱⁱ. They may be necessary there as well but they are not sufficient. If a large number of people are to communicate effectively in a large group, entirely different success factors become important.

In a small group, communication is comparatively easy to arrange. Each person has direct and personal contact with the other people. They see how their opposite number reacts and they receive direct feedback on their own actions. As in a **jazz combo**, the behavior of others is at once picked up and one's own behavior adjusted to suit. The value of this direct contact is the very reason why jazz combos rarely consist of more than nine musicians.

In organizations, many subjects are dealt with by **small groups** of this kind in the form of **meetings**. We know how meetings have to be prepared and conducted and followed upⁱⁱⁱ. Even though this knowledge may not always be put into practice, we at least know how these things are done. It is true that good **meeting management** is not easy, but it is, nevertheless, relatively straightforward.

More complex subjects are almost always dealt with by **larger bodies** in the form of **workshops**. Conducting a good workshop involving more than nine people is already far more difficult, even though the number of participants is still relatively small. The success of workshops, however, plays a significant role in determining the success of organizations, be they companies, non-profit organizations or political organizations, ranging from the local authority up to the U.N. All important actions that are planned in organizations of this kind, such as the shaping of realignments of strategy, the development of innovations, the implementation of change programs, the boosting of productivity, the improvement of collaboration or the introduction of important innovations of any kind, are carried out in the form of projects, and **workshops are at the heart of any project**. To a significant degree, they determine the effectiveness and efficiency of an organization.

Really effective workshops are a rarity

The major **importance of such workshops** is, however, in marked **contrast to their effectiveness**. In practice, even meetings of only a few people are often unproductive. In most cases, however, the effectiveness of larger groups is even worse. This is shown in the aversion that experienced managers have to workshops.

The problems are ones that are familiar to every practitioner: **the sustainability of the decisions is questionable**. Plans are prepared at great effort and expense but they are then implemented in a dilatory fashion or not at all. The event itself is unproductive and lasts too long. Discussion amongst a large number of people makes **decision-making more difficult**, because people are faced with **more opinions** and, if the worse comes to the worst, with vehement **dissent**. Things are then left too much up in the air. Responsible parties are represented by **delegates, specialists** only concern themselves with the part of the problem that interests them as specialists, and the person who is listened to is the one who is best at putting himself in the limelight. The result tends to represent the **lowest common denominator** of all the participants and hence the solution that none of them really wants. What we need, however, is for the number above the fraction line to be optimized, namely the **highest common factor** of all the participants.

How we get to this factor **systematically** seems to be an unsolved problem. Essentially, the way we work in workshops is still the same as people did 100 years ago, except that in those days it bore the rather old-fashioned name of meeting. There has been virtually **no real advance**. Technological support and the invention of facilitation methods involving cards and pin-boards have not made any real changes.

This is all the more surprising because it is not only the **success of the organization** that depends to a major degree on the effectiveness of workshops but also the **personal success** of the managers who are responsible for the project. Any innovation involves personal risks, whether it is a matter of change management or the development of a new strategy. If managers have to run workshops, they expose themselves to an enormous degree in doing so. They lay themselves open to the risk of being perceived as ineffective by many colleagues and employees and by their own boss. Their own effectiveness or their own failure is shown up with enormous clarity. **Success**, however, is the only thing that any manager really needs.

Working with large groups is essential

The most obvious solution would probably be to follow E.F. Schumacher's dictum "Small is beautiful" and, whenever possible, to do without events involving large numbers of people^{iv}. However, the conclusion that a return to small, manageable units is needed because experience shows that events involving large numbers of people are risky is a deceptive one^v.

Who is needed to enable a correct and lasting decision to be made?

Because of the **progress there has been in the division of labor** in our present-day organizations, a restriction to a small number of people is often impossible. Light needs to be shed on complex situations from **different perspectives** for them to be grasped in their entirety. This calls for the input of different sorts of knowledge and for participation by different departments and different areas of responsibility in the organization. It is precisely the complex problems in an organization that can only very rarely be dealt with by a few specialists within one unit of the organization

Since Ross W. Ashby we know that complexity can only be mastered by complexity^{vi}. In other words: **complex problems require complex discussions**. Only by making **constructive use of dissent** and by taking account of differing opinions and other points of view rather than ignoring them can decisions be rendered correct and solutions lasting.

The question therefore arises of **whose opinion is needed to in fact enable a correct decision to be made**. Decisions are not made by top management alone – they are made at all levels of organizations, or at least they are prepared there. It is precisely decision makers at levels lower down in the hierarchy who are becoming more and more important in our increasingly **knowledge-intensive organizations**^{vii}. In fact, only few of the complex problems in an organization can effectively be solved by a few people because **in most cases, by the implementation stage at the latest, many people will not only be affected but will also have active demands made on them**.

Who is needed to enable things to become effective?

The prerequisite of the effectiveness of decisions and plans is that they are **correct**, or, in other words, that all the relevant aspects and opinions have been taken into account. This alone is still not sufficient, however. Executives are paid for results – plans also have to be executed. Results are a function of correct knowledge **and** effective action.

The most frequent reason for **non-execution** is that **the people responsible for implementation do not understand the decision and the plan or do not want them**. For this reason, Peter Drucker makes the demand that the **implementation must always be part of the decision**^{viii}. He states that a decision has not been made until it includes the name of the person responsible for implementing it and a final deadline, until steps have been taken to see that the persons affected know, understand and want the decision (or, at least, are not clearly against it), and until the persons who are not affected but need to have knowledge of the decision have been informed as well. Until then, says Drucker, decisions are nothing more than good intentions.

Knowledge-intensive organizations are held together not by "command and control but by information. As well as the question of who has to contribute to a decision for it to be correct, the question thus also arises of what people have to be informed, and when and how they have to be informed, if a good plan is to turn into **effective action**. In all important opinion-forming, decision-making and planning processes it is therefore advisable for all the **key people to be involved from the very**

beginning. In the first place, this ensures that all the relevant opinions are taken into account in the planning and, in the second place, it ensures that the decision is **understood and wanted.**

This, however, is the very point at which people necessarily make themselves dependent on the success of workshops involving large numbers of people. The more staff are involved in events of this kind, the more it is necessary to demand from them the very things that, in spite of all the efforts that are made and all the training that is given, most of them are not good at: a well-developed ability to communicate, a long attention span, plenty of discipline and outstanding skills as a moderator.

No dependence on moderators, creativity techniques or information technology

In most cases, the success of a workshop depends on the quality of the moderator. Poor or even only mediocre moderators are fatal. A discussion needs to be varied and they tend to reduce this variety from the outset by controlling the conversation. This, it is true, is well meant. A clear discussion following a clear procedure is necessary to move things forward. However, by so doing they cut down so much of the variety right at the beginning of a discussion that **possible results are largely anticipated.** The minutes of such an event could often be written right at the start. Interestingly, this latter is the standard practice nowadays at scientific conferences. To make life easier for the organizers, the "proceedings" are often collected and published *before* the conference has taken place. The conference itself largely consists of a **stringing together of presentations and self-promotions.** How can anything new arise in this case? The same is true of many workshops. It can often be said what, in essence, the results are going to be even before the event.

Any manager who has had some degree of experience knows very well that the outcome of a meeting can be predicted (or manipulated) with all the more exactness, the more precisely it is controlled by the **agenda and the actions of the moderator.** Agendas destroy variety, so that complexity can be kept under control. That is acceptable where the problems to be solved are comparatively simple ones and it is necessary for events where the result is already preordained to a significant degree. An orchestra, too, can only play in unison if the musicians keep precisely to the score and to the commands they are given by the conductor. When the **problems are complex and undefined,** however, the participants cannot have any idea at the beginning what it is they really need to talk about. They first have to get **from opinions to topics,** instead of going straight **from topics to opinions.**

Only the best moderators are capable of facilitating a really complex discussion which leaves the result undecided at the outset but is **nevertheless goal-oriented and effective.** Exceptional talents like this, however, are not usually available in one's own organization just at the time when they are needed. Generally speaking, there are quite simply too few of them compared with the number that are needed. And even these exceptional people find themselves reaching their limits when they are supposed to

induce thirty people, whose languages, training, functions and interests are different, to unite in taking a shared view of something.

Nor, contrary to what is often believed, should the success of workshops be sought in the use of **creativity techniques**. In most cases, there is no need whatever for orgies of writing on cards, the expression of feelings, the painting of pictures, morphological boxes and suchlike methods. Under normal circumstances, there is enough creativity available among the people involved. It will, however, be shackled rather than set free by moderators of only mediocre ability and by fixed agendas.

The same is true of taking refuge in sophisticated **information technologies**. The great hopes that were placed in these technologies during the past ten years have been disappointed. Attractive though they may be, and helpful though they are in certain situations, the degree of improved communication that is achieved with them is still, as a rule, modest. The consequence is that experienced managers find themselves looking at screens, rather than looking each other in the eyes.

The solution cannot be found either in the quality of the moderators, or in the good communication skills and discipline of the participants, or in creativity techniques, or in information technology. The success of workshops, therefore, has to be made independent of these things. **The question that is really to the point is how a large group can communicate effectively even when none of these things can be relied on?**

Cyberneticists and systems scientists have always been interested in how control is possible in complex systems. They have discovered that all higher forms of regulatory system produce the essential functions from the system and its structure themselves rather than adding them onto the system from outside^{ix}. So, is it also possible for **effective communication** in a large group **to be built into a communication structure as an implicit part of the structure**, so that it arises automatically from the fact of the people acting together? And if it is possible: what is the maximum number of people we can network together in this way to the maximum degree in a minimum of time so that a maximum of information transfer takes place?

The genetic code lies in the structure of the icosahedron

There is a genetic code that defines life and a genetic code that defines effective communication. Since Watson and Crick described the structure of DNA in 1953, we have known how genes exert a targeted effect on the structure and function of an organism. They produce the properties required for organisms to be viable. In the book *"Beyond Dispute. The Invention of Team Syntegrity"*^x that he published in 1994, *Stafford Beer*^{xi} described the genetic code of effective communication in a large group of people, the **code that produces the properties required for effective communication**, even when the moderators we have to work with are of only mediocre ability and the people we have to work with are ordinary human beings with average communication skills^{xii}. Publication of the book was preceded by a **more than twenty-year period of development**. As early as 1970, when he was the President of the Operations

Research Society, Beer made a first attempt with part of the syntegegration protocol at the "Marlow Seventy" conference on the future of the Society. The long development period and Beer's unique combination of sound scientific knowledge and practical experience produced a method whose efficiency can be shown to be unrivalled.

In Stafford Beer's syntegegration model, effective communication is **implicit in the structure** on which the communication is based. It comes into being **automatically and necessarily** if the syntegegration structure is used. The participants in a so-called syntegegration 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.

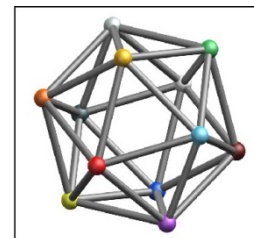
Beer found the ideal structure in what is called the **icosahedron**, the most complex of the five platonic bodies. The icosahedron is a regular polyhedron having 20 faces, 12 vertices and 30 edges. America's "Leonardo da Vinci of the modern age", *Richard B. Fuller*, had discovered even before Beer that this structure contained **Nature's principle of construction: the equilateral triangle**. 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 efficient and robust. 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 edges.



5 people ...



... deal with 1 topic



30 people deal with
12 topics

Fig. 1:

The syntegegration model, based on the icosahedron (on the right)

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 twelve topics is dealt with 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 two other roles: he or she is a **critic** for two other topics and an **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.

Properties of the icosahedron as a three-dimensional model for communication

It is not possible for the exact way in which a syntegegration operates to be described here. I have already described it in detail in an earlier m.o.m. Letter^{xiii}. However, note should be taken of the basic properties of the structure in question:

- a) Twelve aspects (topics) of one general topic are dealt with in a **networked and self-coordinating fashion**. The result obtained from each topic is a plan of action. Because of the self-coordination, the twelve part-results fit together like the pieces of a jig-saw puzzle to give a logically consistent and conclusive overall picture: a coordinated and comprehensive **overall plan of action with no conflicting goals**.
- b) The people are networked together to the maximum degree possible. Each person enters into the **maximum possible exchange** with all the other people. Alex Bavelas, a participant in the legendary Josiah Macy conferences in which significant foundation stones of cybernetics were laid in the nineteen-fifties, studied communication patterns in problem-solving groups^{xiv}. He developed what is called the **Bavelas measures** (connectivity, peripherality, etc.), which express the degree of networking present in a group of people. When applied to the syntegegration, **optimum values** are found for these measures! This networking causes **distributed knowledge to be brought together and integrated to create a shared way of looking at something**.
- c) The information distance between the topics is minimized. The equilateral triangle brings about the **shortest information paths**^{xv}. Creative ideas and good statements made about a topic are not lost – they have a direct influence on other topics. Insofar as they represent useful information, they are made use of.
- d) All the twelve topics are networked not only by members but also by critics and observers. Insights that have been gained are distributed via these people from one topic to other topics. The syntegegration model is a **learning organization**. Statements are no longer connected with the person who made them. They are heard by other people, picked up, multiplied and fed into other topics. Hence it is the **relevance** of statements that determines the weight given to them, rather than the **status** of the person who said something. This is important because it enables people who have knowledge to make their influence felt, even though they may be positioned fairly low down in the hierarchy. The structure is **non-hierarchical** – there is no top or bottom in the icosahedron. Each participant has the same opportunities for influencing the result.
- e) The division of the **roles** into three (member, critic and observer) makes possible a clear **division of tasks** and a clear focus of **concentration** for the people. Critics and observers are forced to **listen**, something which managers in particular often

seem to find difficult. In this way, they give themselves a chance of **understanding** why the conclusions reached by colleagues from other departments or areas may be different from their own and that there may be good reasons for these conclusions, too.

As well as the mathematical and geometrical elegance and efficiency of the structure, as well as psychological and neurophysiological aspects, and as well as principles of the theories of communication and information, we also find in the syntegegration many **principles of cybernetics applied in practice**: feedback, an iterative procedure (each group meets three times), real-time information, redundancy, recursivity, information completeness, self-organization, self-regulation, and so on.

This being the case, the syntegegration **does not make any special demands on the participants or on moderators**. It is true that when complex problems arise, *complex* means are required to solve them. However, this does not imply that the means have to be *complicated*. On the contrary. They have to be as simple as possible and at the same time capable of releasing a high degree of variety. For the participants, the syntegegration is very easy to carry out. They do not need to understand the principles that have been explained here. The syntegegration plan tells them when they have to discuss what, where and in what role. Everything else happens by itself – it is a product of the structure. The participants feel the "flow" of information and they note how the topics, controlled as if by unseen hands, become increasingly coordinated and join together to form a logical whole. The **simplicity of the syntegegration process** for the participants is, with others, one of the important factors in its success.

The practical guarantee of success

The syntegegration is an outstanding example of the effectiveness, in practical terms, of applied cybernetics. The result of a syntegegration consists not only of the vast numbers of **insights gained by individuals** but also of a **plan of action set down in writing**, which has been influenced by each participant and thus includes the knowledge and interests of all the participants and which they understand and want. In this way, all the essential prerequisites for effective implementation exist: the solution is a lasting (holistic) one, because the relevant points of view are covered in it and it is understood and wanted by the key people in its implementation. The result is **sufficiently concrete to allow implementation to be started on straightaway**. Experience shows that on average the **implementation quota** amounts to about 80% after twelve months – an outstanding figure when compared with the efficiency of conventional workshops, conferences, symposiums and the like.

Since 1999, the author has carried out getting on for a hundred syntegegrations in the most varied organizations and contexts. It is an impressive fact that among them there was not a single failure but that, on the contrary, almost all the syntegegrations sparked off enthusiasm – and not just immediately after the syntegegration but also after the implementation, and not just among, say, inexperienced managers but also among down-to-earth executives who had had decades of practical experience.

The **need** for the creation of will and for the finding of consensus for planning and decision-making processes is enormous. All organizations that have a relevance to society, be they companies, non-profit organizations, political organizations or public administration down to the individual local authority, are reliant on different ways of seeing things being integrated into a common plan. Because it is the **structure and not the quality of moderators that determines success**, the solution offered by the synte-gration **can be multiplied as desired**. There is no shortage of people who are able to carry out synte-grations, and there are no vast investments needed. The synte-gration can be applied in a vast variety of different contexts – wherever what is needed is **communication "beyond dispute"**.

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 - II. See Malik, Fredmund: Systemisches Management, Evolution, Selbstorganisation. Grundprobleme, Funktionsmechanismen und Lösungsansätze für komplexe Systeme [Systemic management, evolution, self-organization. Basic problems, operating mechanisms and approaches to solutions for complex systems], Haupt-Verlag, Berne/Stuttgart/Vienna, 1993, p. 208
 - III. See Malik, Fredmund: Managing Performing Living – Effective Management for a New Era, DVA, Stuttgart/Munich, 2003, p. 290 ff.
 - IV. Schuhmacher, E.F.: Die Rückkehr zum menschlichen Mass – Alternativen für Wirtschaft und Technik "Small is beautiful" [Return to the human scale – Alternatives for business and technology "Small is beautiful"], Reinbek bei Hamburg, 1977
 - V. See Malik, Fredmund: Systemisches Management, Evolution, Selbstorganisation. Grundprobleme, Funktionsmechanismen und Lösungsansätze für komplexe Systeme [Systemic Management, Evolution, Self-Organization. Basic Problems, Operating Mechanisms and Approaches to Solutions for Complex Systems], Haupt-Verlag, Berne/Stuttgart/Vienna, 1993, p. 209
 - VI. Ashby, W. Ross: An Introduction to Cybernetics; Chapman & Hall, 1970
 - VII. Drucker, Peter F.: What makes an effective executive? In: Peter F. Drucker, Peter Paschek (eds.): Kardinaltugenden effektiver Führung [Cardinal virtues of effective management], Redline Wirtschaft, Frankfurt 2004
 - VIII. Drucker, Peter F.: What makes an effective executive? In: Peter F. Drucker, Peter Paschek (eds.): Kardinaltugenden effektiver Führung [Cardinal virtues of effective management], Redline Wirtschaft, Frankfurt 2004
 - IX. See Malik, Fredmund: Strategie des Managements komplexer Systeme. Ein Beitrag zur Management-Kybernetik evolutionärer Systeme [The strategy of managing complex systems. A contribution to the management cybernetics of evolutionary systems], Haupt-Verlag, Berne/Stuttgart 1989, p. 387
 - X. Beer 1994. Team Syntegrity®, Synte-gration® and the Team Syntegrity Icosahedron are registered trademarks.
 - XI. Stafford Beer was a pioneer in the management of complex systems and the founder of management cybernetics (see the m.o.m. Letter for September 2002).
 - XII. I first encountered the idea that the genetic code of effective communication in large groups can be seen in Stafford Beer's invention in a conversation with Fredmund Malik.
 - XIII. Pfiffner, Martin: Team Syntegrity: Using Cybernetics for Opinion-Forming in Organisations, m.o.m. Letter of May 2001
 - XIV. Bavelas, Alex: Communication Patterns in Problem Solving Groups. In: Heinz von Foerster, ed., Cybernetics: Circular causal and feedback mechanisms in biological and social systems. Transactions of the 8th Conference, Josiah Macy Jr. Foundation, 1951
 - XV. To illustrate the point: there is no way of packing three tennis balls more tightly together than in an equilateral triangle, and the same is true of four tennis balls in a tetrahedron.