Seven rules for applying Language/Action Perspective and Organizational Semiotics Successfully

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Abstract: The Language/Action Perspective and Organizational Semiotics are scientific fields in which the relation between communication/information and organization are studied. The empirical basis is the same: both start from elementary social acts between human beings, acts through which the business processes actually take place. Both theories have an immense potential for being beneficial in solving practical problems related to communication/information and organization. The practical application however appears to lie considerably behind the theoretical achievements. A ten year's experience with the DEMO methodology has brought forward seven rules that help the LAP or OS practitioner in becoming more successful and in offering real benefits to an organization. The effectiveness of these rules is illustrated by means of a small example.

Key words: Communication, Semiotics, Ontology, Business Processes, Orgnizational Engineering

1. INTRODUCTION: ORGANIZATIONAL ENGINEERING

The Language/Action Perspective (LAP) (e.g. [Dignum e.a., 1996], [Dignum, Dietz, 1997], [Goldkuhl e.a., 1998]) and Organizational Semiotics (OS) (e.g. [Stamper e.a., 1997], [Liu, Dix, 1997]) are well-established scientific fields now in the area of organization and information studies. Although developed quite separately, their objectives are very similar and their achievements fit well together. These achievements are theoretically sound and extremely relevant for the practice of developing and exploiting

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information systems. However, their practical application seems still to be in its infancy. There are only a few successful methodologies in which the LAP and/or OS insights are incorporated. It is the purpose of this paper to contribute to the diffusion of the LAP and OS knowledge into practice. We try to achieve this by presenting a set of rules that serves to guide the business and information analysts in applying the powerful findings of LAP and OS to solving organizational and informational problems. These rules have emerged from a ten years' experience with the DEMO methodology in numerous varied practical projects [Dietz, 1994, 1999], [Van Reijswoud, Mulder, Dietz, 1999].

Concerning the understanding of the potential benefits of digital (electronic) technology, the informatics community faced a paradigm shift around 1970. Until then, the focus was on the efficient transforming, storing and processing of syntactic items. The common term to denote this application of the digital technology was EDP (Electronic Data Processing). In other words, the technology was deployed as a substitute for existing technologies, like analog technology and mechanical technologies. After 1970 the focus moved onto the content of the processed and transmitted signs. Because of the conscious separation of content and form, drawn from the field of semiotics, the path was cleared for the innovative deployment of ICT. The notions of database and application logic emerged, as well as new analysis and design methodologies. The focus of the practitioner shifted from the bits and bytes to the provision of information that was intended to support the execution of tasks by people in organizations. Meanwhile the term 'EDP' was replaced by 'IP' (Information Processing) and 'IS' (Information Systems). In retrospect, one could appropriately coin the term 'documental engineering' for the work of the informaticians in the era up to 1970, and the term 'informational engineering' for everything after 1970.

During the 1990's the term 'IT' has gradually been replaced by 'I/CT', thereby emphasizing the integration of technologies for processing, for storing, and for transmitting information. Meanwhile, the demand to develop and implement applications was replaced by a drive to help organizations become more effective, more efficient and more flexible. The deployment of I/CT may be worthwhile in achieving these ends but it is not necessary and not sufficient. So now the informatics community appears to be making another paradigm shift right, a shift from the content of information and communication to its inter-subjective or social effect. No longer are we asking which knowledge is transferred between communicating parties but rather, which social acts are performed in communication, which commitments the communicating parties are going to be engaged in. The 'working principle' of organizations is being discovered and revealed. Because of this shift of the focus to the organization itself, we might call this

new era one of 'organizational engineering'. The scientific fields of LAP and OS are explicitly concerned with the kind of understanding of organizations needed in this era. The researchers and practitioners in these fields may not have thought about their work yet as being primarily organizational engineering instead of informational engineering. It is our conviction though that this is the case, and the content of this paper may help to change their minds. Seven rules to guide this process are presented and discussed - one basic rule and six rules derived from it. The latter are divided in two groups: three systemization rules and three integration rules. The basic rule is presented and discussed in section 2, the systemization rules are presented and discussed in section 3, and the integration rules in section 4. Section 5 concludes the paper.

2. THE OER-RULE

Extract essence from realization

This basic rule is known as the OER-rule. The Dutch word "OER" means "primal, original, essential". It expresses that one seeks to find the essence of an organization, abstracted from all realization issues. (Note for non-Dutch speaking readers: the word "OER" can also be explained as the acronym for "Organizational Essence Revelation"). A very effective 'trick' to achieve the needed abstraction is to conceive of the organization under investigation in its OER-state, i.e. as it was or would have been at the time that there was no information technology whatsoever, even no pencil and paper. In this OER-state, the people in the organization can only communicate by speaking and listening. In order to remember the current state of the world for future use, the relevant facts in this state have to be memorized.

Two groups of people instantly vanish from the scene. Firstly, everyone who is currently involved in 'manipulating forms' disappears -for instance, the internal postmen and the archive employees, but also the data entry typists and the computer center staff. So, at this first level of abstraction all 'documental actors' get 'ruled out'. This reduces the complexity of the observed (current shape of the) organization already enormously. In the second abstraction step, all 'rational actors' are 'ruled out'. These are the people who serve the organization by being memorizer and/or calculator. They are the employees in an organization who memorize facts not for their own sake but for telling other people, and who produce new information by logical deduction or by computation - for instance, the secretaries who remind their bosses on their appointments, and the whole department of

management information producers. Again the complexity is reduced enormously. What is left are what we call the essential actors, the employees that apparently constitute the core business of the organization, the people who enter into and comply with commitments in order to run the primary business functions. Only what these people do is relevant for understanding the organization deeply and essentially. Figure 1 exhibits the distinction between the three abstraction levels.

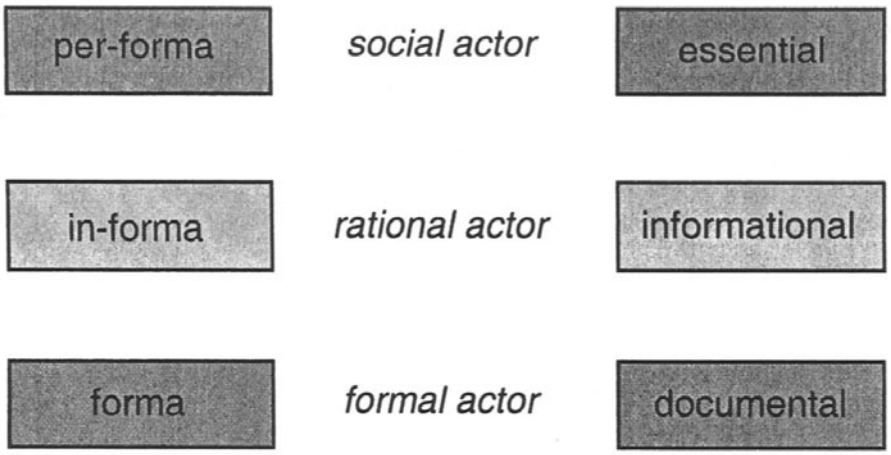

Figure 1. The three abstraction levels of communication

3. THE SYSTEMIZATION RULES

Since the object of investigation is the organization, it is crucial then to apply an appropriate system notion for this investigation and to construct according models. This is not so obvious as it may seem. Practitioners appear to apply preferably the notion they are most familiar with, not necessarily the notion that is most appropriate. Therefore we postulate three systemization rules, S1, S2 and S3, to guide the conception and appropriate understanding of the organization as a system.

Rule S1: Don't think behavior or function
Think operation and construction

Both in LAP and in OS one is concerned with elementary business acts and the way they are interrelated. In other words, one is concerned with the (internal) 'working' and the 'construction' of an organization. This is quite unlike the traditional organizational sciences in which the focus is on the function of an organization (or an organizational unit) with regard to its environment, and on its (external) behavior. The analogy with a car

mechanic and a car driver respectively, may clarify this important distinction. A car driver (representing the traditional approach) is perfectly well able to drive a car. He (or she) knows how to get the very best out of it. He does so on the basis of his functional knowledge of cars, i.e. on the basis of knowing the effects of manipulating the control organs, taking into account various external conditions, like the surface of the road and the weather conditions. A car mechanic is perfectly well able to maintain a car. He knows how to repair it and how to tune the car for optimal performance. He does so on the basis of his constructional knowledge of cars, i.e. on the basis of knowing how the constituent parts, like the engine, the gears, and the transmission chains, collectively realize the car's function, and how this is influenced by various external conditions, like the temperature and the air pressure. (LAP and OS similarly deal with the construction of the organizational unit.) A car driver does not need to be able to maintain or repair a car, and a car mechanic does not need to be able to drive a car. Actually, the combination of a (good) car driver and a (good) car mechanic in one person is rare. The two kinds of knowledge, functional knowledge and constructional knowledge, are of a very different nature. The functional knowledge of a system is founded in a black-box model of the system. The car driver knows all the input variables and all the output variables, and by manipulating the control variables (which constitute a subset of the input variables), he controls the behavior of the car (i.e. the manifestation of its function in the course of time). The value ranges of both the control variables and the output variables are determined by the way the function is realized, thus by the way the car is constructed and by the way its constructional components work. The constructional knowledge of a system on the other hand, is founded in a white-box model, i.e. in a model that completely and precisely shows the mutual influences among the constituent components. The car mechanic knows how the components of the car work, how they interact, and how they constrain each other's operation. The (dynamic) properties of the components, and the way these components are assembled, determine the possible processes (i.e. manifestations of construction and operation in the course of time). With the new approach we can build better cars (organizations), not just drive the old ones better.

Rule S2: Don't think information or data
Think original facts

Along the lines of Bunge's Ontology [Bunge, 1977,1979] we define a system as any thing that has the following properties. First, it has a composition, i.e. there is a non-empty set of elements of a particular kind. This kind determines the category to which the system belongs. Examples of

system categories are: physical, biological and social. Second, it has effect, meaning that the elements perform actions, of which the results are state changes in some world. Third, it has a boundary, meaning that the composition is divided in two parts, called the kernel and the environment of the system. Fourth, it has structure, by which is meant that the elements exert influences upon each other, such that the effects of the elements differ from what they would have been if the structure had not been there. For every element in the kernel, it holds that it has at least one structural relationship with some other element in the kernel (such that there are no 'isolated' subsystems). For every element in the environment, it holds that it has at least one structural relationship with some element in the kernel.

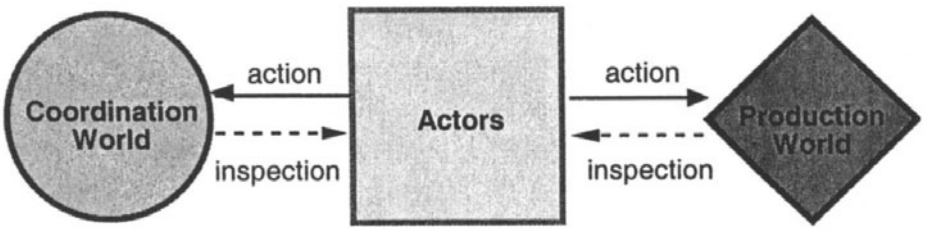

Figure 2. White-box-model of an organization

An organization then is defined as a system in the category of social systems. This means that the elements are social individuals or subjects. These (essential) actors exert two kinds of actions: production actions and coordination actions. The production actions generate the effects of the system, which are related by means of coordination actions. Since the result of any action can be conceived as a change of state in some world, it seems appropriate to apply a white-box-model of an organization as depicted in figure 2, which shows the actors causing state changes in two worlds, the production world and the coordination world, represented by the action arrows. These state changes or transitions take place instantaneously, and the number of transitions in any finite time interval is finite.

The result of a production act is the creation of a fact in the production world; the result of a coordination act is the creation of a fact in the coordination world. Acts are instances or occurrences of actions. The dashed inspection arrows represent the actors taking the state of both worlds into account when acting. This is the simple way in which the sharing of existing factual knowledge between actors is modeled. The facts that are inspected are by definition original facts, i.e. they cannot be derived by logical deduction or computation from other facts. The common notion of information (or data) lacks this property of being exclusively original; it can

be derived information as well. At the essential abstraction level however, there is no 'room' for rational actors, there are only social actors.

Rule S3: Don't think event or trigger
Think agendum

Both the production world and the coordination world are at any moment in a particular state, where a state is simply defined as a set of facts. A world is completely defined by the set of possible or allowed states (the state space) and the set of possible or allowed state transitions (the transition space). The occurrence of a transition at a particular point in time is called an event. The notion of event is intrinsically a passive notion; it is something that occurs as the effect of some cause. The common understanding of an event as something that initiates or triggers action, is appropriate for explaining the dynamics of a physical or biological system, but it is definitely not appropriate for social systems. In a social system, cause and effect (or act and fact) are separated. Social actors do not react mechanistically to changes in the world, they observe these changes and they may take them into account when acting, but they are not 'triggered' by them. An appropriate model for the dynamics of a social system therefore is that an actor is conceived as constantly looping in an actor cycle in which he tries to deal with the commitments he has entered into. A fact in the coordination world then serves as an agendum for some actor (Note: 'agendum' is the singular form of the Latin plural noun 'agenda'. It means: a thing to be done; an agenda therefore is just a to-do-list, mostly including the time at which the things should be done). To illustrate this, consider the well-known situation of a customer and a supplier. Many modeling approaches conceive of this situation as a flow of customer orders where the arrival of a customer order is an event that triggers the supplier to handle it. This is a too mechanistic conception, which also leaves an important question unanswered: what is exactly the arrival event? Is it the dropping of an envelop in the postal mail box, or the putting of the order form in someone's in-basket, or the filling out of the order form by the supplier while talking to the customer by telephone? When abstracting to the essential level, only the next conception seems to fit this level. Placing an order means performing a request by the customer. The fact of the request being made is an agendum for the supplier, which he has to deal with. When looping through his actor cycle, he will 'see' the agendum and deal with it at the time he considers appropriate, taking into account the other agenda, and probably being constrained by priority rules.

4. THE INTEGRATION RULES

From figure 2, it follows that there are three aspects of or views on organizations. Firstly, there are the actors, the (only) active elements of an organizational system. In this view one is concerned with the individual persons in an organizations, as well as with their functions and tasks, and with their 'organization' into departments, business units etc. Secondly, there is the production of goods or services by these actors. In this view one is concerned with the products and with the production processes. Production should be understood in a broad sense. It encompasses not only the manufacturing of goods but also their transport and delivery. Furthermore, it applies not only to physical goods but also to immaterial products, like judgments or decisions or services in general. Thirdly, there is the coordination among the actors, necessary for the production of the goods or services. In this view one is concerned with all communication among the persons and organizational units, and with the environment, irrespective of the way it is realized. Figure 3 exhibits the three views.

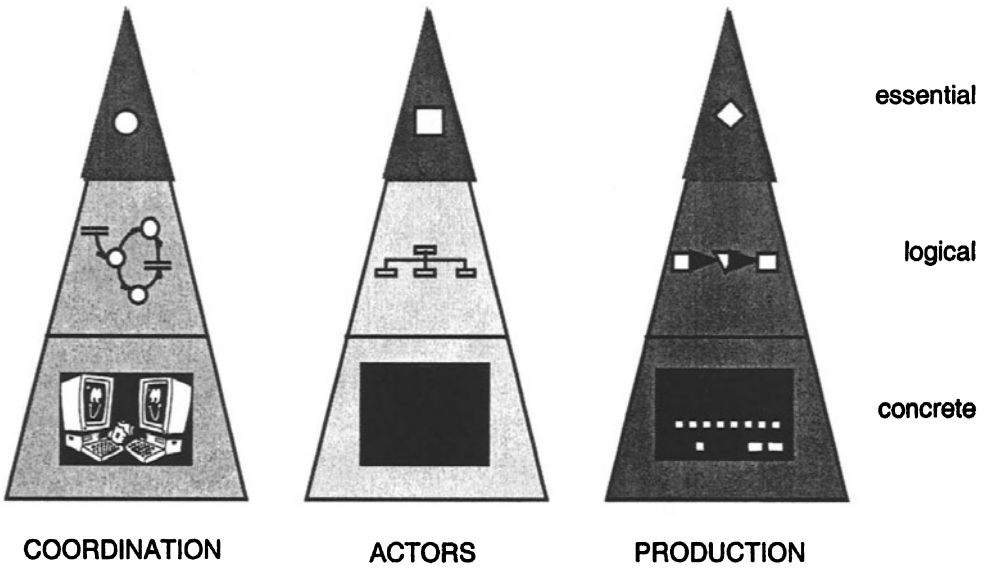

Figure 3. The organizational views

The common logical abstractions from the individual (concrete) actors are the organizational units and their interrelations, often expressed in an organizational chart. It is possible however to make a next abstraction step and arrive at the essential level that we already know. The notion of actor at this level is basically a particular 'amount' of authority (for performing particular actions), together with the responsibility accorded to that person for exercising this authority in a correct way. To complete the picture, this

'amount' of authority corresponds with a particular 'amount' of competence, needed for a person in order to perform the actor role. To achieve this abstraction we postulate the first integration rule:

Rule I1: Don't think person or organizational unit
Think authority + responsibility + competence

In the production view we have at the concrete level the concrete products and the production means. At the logical level, one may conceive of activities or steps in the production process and their interrelationships. Often this level is represented by logistic flows, by sequences of production steps and storages. The next level of abstraction is, again, the essential level. Here we only conceive of the facts in the production world that are considered relevant. Note that we have completely abstracted from all physical details (the concrete level) as well as from all references and 'reminiscences' to these details (the logical level). This is very helpful in understanding every organization in the production view, but it is particularly helpful for all non-material organizations. In fact, the essential level is the only level at which one can 'see' immaterial products and immaterial production. What is commonly but wrongly taken for the logical level and the concrete level regarding immaterial production, namely information flows and documents, are really the informational and the documental levels, as discussed in section 2. For the purpose of achieving the essential abstraction level in the production view, we postulate the next rule:

Rule I2: Don't think production flow
Think creation of facts

Lastly, in the coordination view we have at the concrete level the concrete communication means by which coordination is realized. At the logical level, one usually conceives of information flows, processes and stores, which are mostly represented in data flow diagrams. Again we go one abstraction step further to reach the essential level. There, only facts in the coordination world exist, facts like something being requested or promised, stated or accepted. We have seen in section 2 already, that there is no need to model informative conversations (questions and assertions or denials) at the essential level, because they can be performed completely by rational actors. At the essential level, these conversations can be represented as inspection links to information bases. For the purpose of achieving the essential abstraction level in the coordination view, we postulate the next rule:

Rule I3: Don't think coordination flow
Think entering into commitments

5. CONCLUSION

The community of professionals dealing with organization and information has entered into the era of organizational engineering. The paradigm shift that is taking place entails that the core object of study is no longer the information system (even when serious attention is paid to its being embedded in the organization), but the organization itself. Both the Language/Action Perspective and Organizational Semiotics have taught us that the empirical basis for deeply understanding the 'working' and 'construction' of organizations is constituted by the elementary social acts, acts like requesting, promising, stating and accepting production results. This basic insight is independent of the way in which the acts are realized, e.g. in oral communication or in writing or by electronic means, as well as the way in which facts are stored, e.g. memorized, written on paper, or coded in bits. The practical application of the powerful outcomes of LAP and OS research however seems to be still in its infancy.

One of the few successful methodologies that are rooted in LAP and OS, is DEMO. This methodology has been applied over the past ten years in about 60 projects in a variety of application domains (material production industry, service industry government, trade, banking, health care, consultancy etc.). Drawn from the practical experiences with DEMO, seven rules are postulated that appear to be very helpful for the professional in applying the LAP and OS insights in a most effective way, and consequently making projects successful. The so-called OER-rule is the most important one, and in a sense encompasses the other six rules: extract essence from realization. It could also be formulated as: surpass the logical level. It is our conviction that this surpassing of the logical level (at which most practitioners operate at present) is the major challenge for the future of LAP and OS!

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