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The Motivation of Project Managers. A Study of Variations in Project Managers' Motivation and Demotivation by Triangulation of Methods.

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Summary

Both practical work and literature studies have confirmed that project work gives rise to many motivational reactions, and that for the project manager many of them vary in a particular, recognizable way in the different phases of the project life cycle. This was the recognition behind the decision to make a thorough, scientific analysis at the PHD-level of the process by which project managers are motivated. The phenomenon was studied from two different angles by socalled "triangulation" of methods. One angle was a typical qualitative method, in which through "open interviews" with a limited number of Norwegian project managers their motivational reactions were examined. The other one was to apply a typical quantitative method in which a computer simulation model of a project based on the principle of System Dynamics was built and run, from which variations in managerial motivation in projects could be studied. Both approaches were initiated by a questionnaire survey of factors assumed to be important for project managers.

The main conclusion was that for project managers special motivational variations take place, and that they also vary from one particular project phase to another. These variations also to a large extent influence the way project managers behave and react, and therefore they both directly and indirectly affect the success and failure of project work.

The practical outcome of these findings are that projects would greatly benefit from being planned and executed in such a way that project managers keep a high motivational level throughout their effort, and that this should be possible to accomplish by introducing the right stimuli in each project phase.

1. Change and Motivation

Our world is changing, and the speed of change is rapidly increasing. One immediate conclusion from this is that for organizations change is a natural and inescapable development if they shall fit an increasingly changing environment. That human behaviour in organizational settings accordingly must change is a natural result of this (Mcgregor;1960, Schein;1980, Kanter;1983, Elster;1989, et al).

Leavitt (1964:55-71) stated that an organization can be changed by altering its structure, its technology, and/or its people. Changing the organization's structure involves rearranging its internal systems, such as its lines of communication, its work flow, or its managerial hierarchy. Changing the organization's technology means altering its equipment, engineering processes, its research techniques, or its production methods. Changing the organization's people involves changing the selection, the training, the relationships, the attitudes, or the role of organization members.

This implies that a manager who desires to change his or her organization most probably must proceed cautiously, realizing that behavioural change is more difficult to establish than change in the systems or of the technology. Modern managerial approaches such as the "contingency approach" (Hersey and Blanchard;1969), "behaviour modification" theories, and Management By Objectives (MBO) (McGregor;1960, Humble;1976) have been tried in the effort to solve the many social conflicts embodied in change procedures. What is particularly interesting in this context is that managers seem to express different motivational behaviour dependent on the type of organizational model they belonged to (Joynt;1979), and Scofield et al (1968) characterized the major aspects of behaviour which are the most influential in the management process as: 1) learning, 2) perception, 3) motivation, 4) communication and 5) attitude formation and change. Others as Fiedler (1964:119) have then pointed to the problem of more precisely defining proper leadership under changing conditions.

These reasons lead to an interest to study in more detail the particular concept embodied in "the project approach", which by nature is created to facilitate change. It was thought that this could be obtained either by focusing on the end result of project work, which creates something "new" and different, and which generally alters existing patterns of producing things or doing things, or one could regard projects as means of enhancing the change process itself. By inspecting the prevailing literature in this area, one finds that "the project approach" was first launched as a special management technique some 30 years ago, and it has grown at a rate similar to the speed of change observed in society in general. The project concept itself embodies the need to accept change and also the need to master it. To accomplish this, "projects" have been subjected to a process of "definition", in a search for the most clear and distinct way of explaining the process, and for a way of "isolating" the concept from other ongoing endeavours in an organization. This has lead to that today the basic description of the "project concept" has been both sufficiently clear for use as a foundation for a behavioural research of this phenomenon, and is in tune with the widely held opinion that project work is some particular kind of step-by-step work, going through a limited number of identifiable phases.

Several authors have started to discuss how change and motivation combines in project settings. Ashley (1988:94) suggests that "resource" availability and "motivation" are necessary to focus on during project conception and initiation, that "endeavour" is required at project execution, and that "quality" performance was central during the project completion stage. Stuckenbruck (1983:37-40) recommends "interface management" in projects, saying that the multidisciplinary approach to project demands makes it necessary to manage diverse interfaces within the diversed project functions such as "planning, organizing, staffing, directing and controlling." Also Lord and Birchall (1988:192) use the term "interface management" in their explanation of why "project managers must take steps during project initiation to ensure that where formal procedures are inadequate, they (must be) either rewritten or superseded by informal agreements (during project development)". Similarly Birchall and Dingle

(1988:329) argue that "the root cause of project failure is often said to be poor project definition, so that any means of defining projects better would reduce the likelihood of project failure". Turner (1988:39-44) also points out that "the most innocent enquiries by the client may lead to unforeseen complications in the "logic" and "implementation" of project endeavours". Beck (1983:180-181) suggested "mid-course corrections" be instituted in projects, pointing to projects as endeavours having to adjust their code of conduct when forces such as the external market, top management redirection, resource constraints, and project management's own course directions successively affected their progression. Cleland and King (1983:209-221) used the term "Life Cycle Management" stating that "life cycle reflects very different managements' requirements at its (the project's) various stages." Adams and Barndt (1983:222-244) supported this view and identified four project phases, each with 5 - 6 different task accomplishment characteristics. They also ranked "conflict sources" and "conflict resolution modes" within each phase, finding "confrontation" dominating all phases, whilst "smoothing" was required more often than "forcing" in the Conceptual and the Termination phases, and "compromizing" more often than "withdrawal" during the Planning and Execution phases. They also recorded that "general satisfaction", which comes fairly close to "motivation", declined from Intiation through Planning, to Execution.

2. The Research Effort

These different and often conflicting views and observations on the relationship between change and motivation, and the extent to which elements in the project setting stimulate or discourage managerial motivation, was the rationale behind a more thorough analysis of this phenomenon (Jessen;1990). The approach to the investigation was based on the following:

1. A limited set of hypotheses set forth about motivational and demotivational variations amongst project managers in project developments.
2. An operationalization of these hypotheses and utilization of the method of "triangulation" to test their validity.

The general hypothesis set forth was that :

> "the motivation of the project manager varies in different ways and for different reasons in the differet phases of a project development".

This general hypothesis was then broken down into sub-hypothesis and sub-assumptions on managerial behaviour in projects according to literature findings and personal first hand experience. The research effort was executed using a three-step procedure, where the submission of questionnaires to an appropriate number of project managers was done, and after coding and evaluating the answers given, the research was brought further by a quantitative System Dynamics model, and a qualitative, interview approach involving people with solid, practical project management experience.

One was fully aware that even with such different, "triangular" angles of approach to the research, one could not cover every aspect of human behaviour, and that it is not possible to collect enough data to furnish absolute proof of what people do or do not. Instead the policy was to collect enough data to probe the assumptions from different angles, and to concentrate on the performance of project managers, with its particular problems.

3. The Rationale for using Triangular Analysis

When conclusions are based on observations from only one point of view, they are often difficult to validate properly. A problem may gain therefore by being investigated from several angles, using different methods. Conclusive findings supported by all such methods of investigation should give stronger support to the validity of the findings than any reached through the use of

one approach only. Campbell and Fiske (1959) have argued that when more than one method is used in the validation process, the variance is more likely to reflect the trait, rather than the method. Bouchard (1976:268) stated that the convergence or agreement between two (or more) methods "enhances our belief that the results are valid and not a methodological artifact". The form of research strategy referred to by these and other authors is usually described as one of convergent methodology, multimethod/multitrait, convergent validation, or what has been called "triangulation" (Webb et al.;1966). Triangulation purports to exploit assets and neutralize, rather than compound, liabilities (Rohner;1977:134). These various notions also share the view that qualitative and quantitative methods should be viewed as complementary rather than as rival camps (Jick;1979).

For the research a triangular approach was selected therefore, using the following two methods in combination in the program:

1) A combined quantitative and qualitative approach, using Questionnaires and computer Simulation Modelling
2) A typical qualitative approach, using open or creative Interviewing

The advantage of applying the two selected angles is that they are considerably different but also compatible at the same time, whilst covering the framework of the proposed hypotheses as illustrated in figure 1:

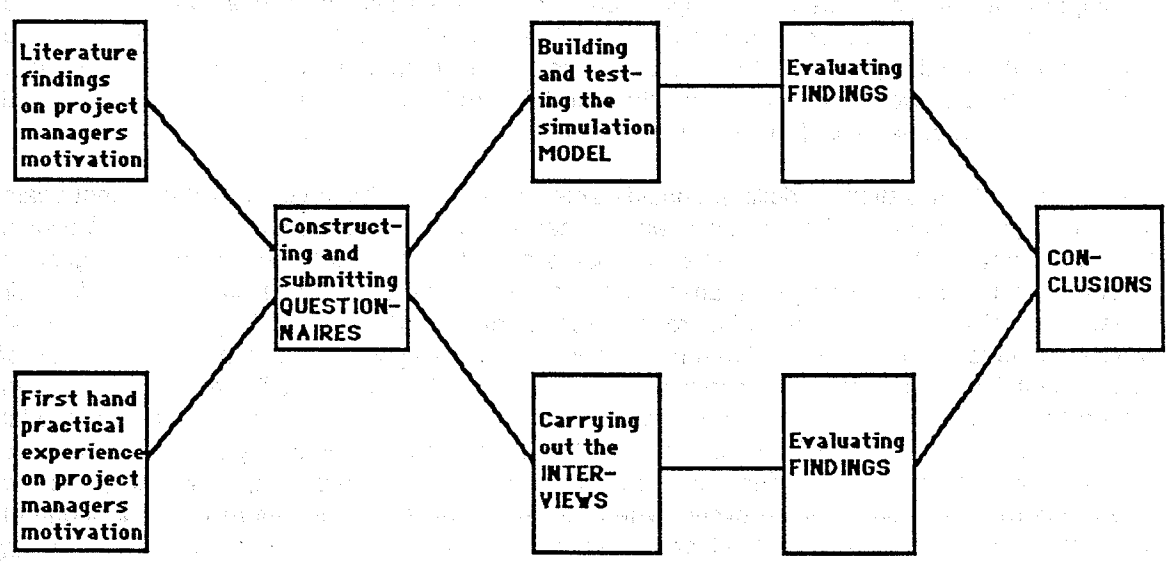


Figure 1. The Triangular Interlink Between the Applied Research Methods and The Central Objective.

4. The Rationale for using Model Simulation

Whilst questionnaires and interviews are commonplace in modern behavioural research endeavours, mathematical model simulation of behavioural problems are less "scientifically" accepted. One reason is that the coverage of a model approach is naturally more restricted than that of a questionnaire and an interview approach, in that quantitative models normally can only explain what is going on and what people are doing.

If the model is of a dynamic nature, however, it should be far better equipped to replicate and suggest the interaction between a wide variety of forces and factors, and thus demonstrate very complex and dynamic interrelationships which could be very difficult, if not impossible, to

demonstrate by simpler calculations or by intuition. The main outcome of a computerized model simulationwas therefore anticipated to be that:

a) it would give an opportunity to study further a theory already proposed, and
b) it could help in the identification of areas where more explanation of specific relationships between modelled factors may be needed.

Since the real world is not static, models should preferably allow for dynamic behaviour. This can be obtained in different ways, of which "simulation" by mathematical modelling is one. One characteristic of management science is that it is possible and feasible to use systems theory and analysis. The project concept has evolved from the need for applicable, practical tools for management in solving important, complicated, one-time problems (Baumgartel;1963, Stinchcombe;1979, Gray;1981, Sayles and Chandler;1982, Cleland and King;1983, Meredith and Mantel;1989). Additionally, the project concept has many parallels in the systems concept (Forrester;1968, Menkus;1980, Churchman;1981). One should therefore be able to model the system of development and of behaviour patterns within projects.

An important question is whether such models would be generally applicable to projects, since projects do vary so much in size, composition and goal description. This is a topic discussed by many authors and researchers, and the answers are not unambiguous. Both Roberts (1981) and Richardson & Pugh (1981), argue that project simulation models could enhance general insight, while Ward, Payne, and Chapman (1978) in their modelling of projects flowing through a large architect's office found a "consistent failure to match the output of the model to the output of the actual office". They suggested that "there are significant phenomena in the real situation which have not been allowed for in the model", and that "the recorded data so misrepresents reality that its (the model's) value for management purposes is put into question". They, however, do not reject that models produce "general recommendations" and enhance the "understanding (of) the implications of different strategies".

Looking beyond simulation modelling, considerable research has been conducted in recent years to define organizational variables and evaluate their effect on ongoing, functional organizations. But, as already contended, an analysis by Adams and Barndt (1983) showed that this general material had reached the project management literature only to a very limited extent. In their research on R&D projects they also recognized significant differences in project managers' conflict resolution modes in the different phases of the life cycle of major projects. Studies of more recent literature led to the conclusion that since 1978 little specific research has been conducted to identify particular organizational factors crucial to the project as a managerial process. One reason could be the complexity of the effort, since the generally accepted variables, such as resource expenditure, purpose, structure, climate and satisfaction, may change as the project progresses through its life cycle. Where possible one should therefore use knowledge of which variables most certainly affect organizational "behaviour" when constructing a dynamic project system. The idea was then that this may be done by encompassing known relationships between factors affecting managerial dispositions and combining them into a "time-developing" organizational structure.

5. A Project Simulation Model

The procedure for developing a Project Dynamics model seems after this to be consistent with what is generally described in the literature as the "method of scientific enquiry" (Popper;1959), which seeks to ensure that all edifices of knowledge are empirically based. Provided the various steps above are not contrived, it should be possible to treat a project as a system and create a model which is not only internally consistent, but which also exists in reality, and is sufficiently confirmed (Jessen;1988).

The constructed Project Dynamics model for this study is represented by its basic feedback loop in figure 2 below, which shows the notion of a particular goal-directed, cause-effect structure

as the basic interrelationship in projects:

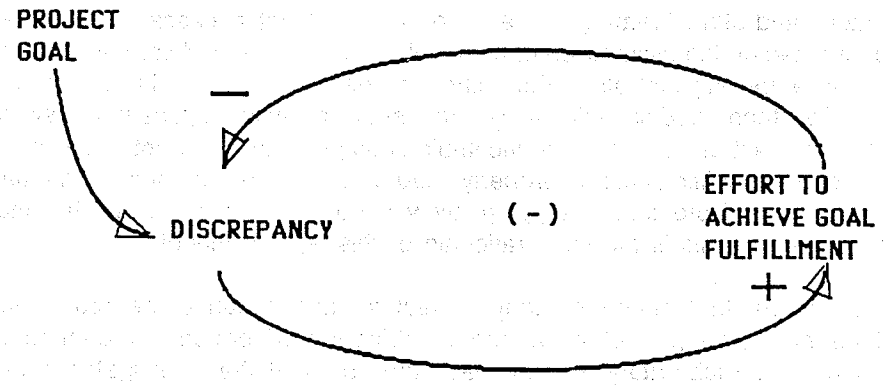


Figure. 2. The Basic Project Feedback Loop

The elements are so connected that they replicate the three main components of projects; namely "purpose", "strategy", and operation or "process". The "project goal" then equals the "purpose", the "discrepancy" complies well with a "strategy" notion, and the "achieving effort" is the "process" component. It is important that this feedback loop highly questions the notion of simple, linear, left-right causalities in nature. More often the right question to ask is in the form of: "Does the population cause births, or do births cause population?" (Richardson and Pugh;1981), with the answer that birth and population may well be regarded as one phenomenon, and which can be treated as only one factor to study.

The conclusion drawn here, however, was to treat projects as goal-seeking, feedback-oriented efforts. The project loop then starts out with a "project goal" affecting a "discrepancy" function, which reports back that there is a difference between the final desired outcome of the process and the existing status. This information causes the "discrepancy" function to send signals to the "effort to achieve goal fulfillment" function that more effort is needed. The plus sign indicates that the greater the discrepancy, the more effort is demanded. The "effort" function again affects the "discrepancy" function, which calculates a new difference between the desired goal achievement, the "project goal", and the present achievement. The minus sign indicates that the greater the effort, the smaller the discrepancy. The "discrepancy" function in turn affects the "effort" function again, and this process goes on until the "discrepancy" equals zero, or the "project goal" is fulfilled. The total loop is "negative", or "goal seeking", implying that the process automatically terminates to zero activity when the desired goal is reached.

In general, while a single factor may change the strength of a feedback loop and affect its dominance over the rest of a model or a system, it may well be more useful to see the loop, not the factor, as the causal agent in the system. Coleman (1986) argues that the greatest progress in modelling of behaviour lies in understanding the "apparatus for moving from the level of the individual actor to the behaviour of the system", which is the generation of macrobehaviour from microstructure. As already outlined as an important part of the present research problem, this was one of the goals of the research: to increase the understanding and importance of managerial motivation and demotivation in project work to the benefit of project endeavours in terms of overall increased efficiency and effectiveness.

The basic relations and assumptions within the model were drawn from two sources:

1. Information derived from the analyses of the questionnaires
2. Earlier project simulation models in this field of research

This information was augmented by personal experience in practical project work over 30 years.

Important to note is that the focus was on the role of the project manager, as it is thought that his or her skill and devotion dictates the performance of the team. This could be an over-simplification, particularly if there are big differences in opinions and capability between project manager and staff. Treating this as important, but not necessarily the general case, the model is constructed on the assumption of reasonable cooperation and agreement among the enactors. It will here be argued also, that since models are, by definition, artificial representations of reality, then models will always fall short of fully duplicating their real world counterparts. It is suggested here that this incompleteness of models is not necessarily a negative feature. Deliberate simplifications, if properly made, clear away extraneous elements and concentrate on the heart of problems, stripping away minor considerations so that major factors are more clearly visible. This is the main rationale of this type of model.

It is asserted here, therefore, that although many project situations cannot be programmed because of the unique nature of project work, the combination of project experience and observations in a project model laboratory may increase the ability of the investigator to focus on the majority of the many tangible and intangible problem-areas existing in project developments.

The complete project causal-loop model is shown in figure 3 below. In addition to the traditional elements of task performance, the "rework" observed, and the information delays, two particular factors are included:

1) The "capability" of the project manager to do the planned tasks, or have the team do them.
2) The "motivation" of the project manager as the project develops.

Both of these factors are "process" factors of a qualitative nature, and consequently the most difficult to measure in a traditional way. Literature research centred on the measurement of behavioural factors has, however, caught a wide audience. It seems now commonplace to observe that cognitive and motivational constructs play major roles in the social sciences in the form of intentions, preferences, meanings, understandings, and desires.(Cook;1983, et al). It is also commonplace to observe that most of the natural sciences do not deal with such matters. For a more comprehensive understanding of real life development of "technical" systems where the human part plays important roles, as in projects, different kinds of quasi-experimentation have been advocated. Quasi-experimentation (Cook and Campbell;1979) does not aspire to describe or model a complete causal system in order to achieve perfect prediction and understanding of the behaviours that occur within the system. Rather, the goal is to identify operations and processes that can make a difference to specific outcomes, even if these involve only a small part of a larger system (Cook;1983:79). For this model, it was assumed that by introducing dependable but probabilistic causal relationships between operations and outcomes, one may enhance understanding and prediction through learning why particular consequences have come about and which human perceptions and interpretations will figure among the required explanatory constructs. By introducing "capability" and "motivation" as process factors in the model one is therefore not aiming at proving but at probing the causal relationships. The experiments which here are used to test and improve the theory, will similarly not rely heavily on statistics but far more on determination of the properties of the project as a system as measured in its behaviour.

It may be mentioned here that a crucial issue in the social sciences is whether a theory permits the numerically precise predictions or unique outcomes required by those who require verification. An important epistomological issue is, however, whether verification is not itself replete with latent falsification, for one might argue that precise and unique predictions only lead to further causal inferences because they reduce the number of alternative interpretations.

To a very large degree the proposed model is based on the assumptions and rationale as those of quasi-experimentation. Since the two added process factors interact with many of the other relationships included in the model, it becomes quite complicated.

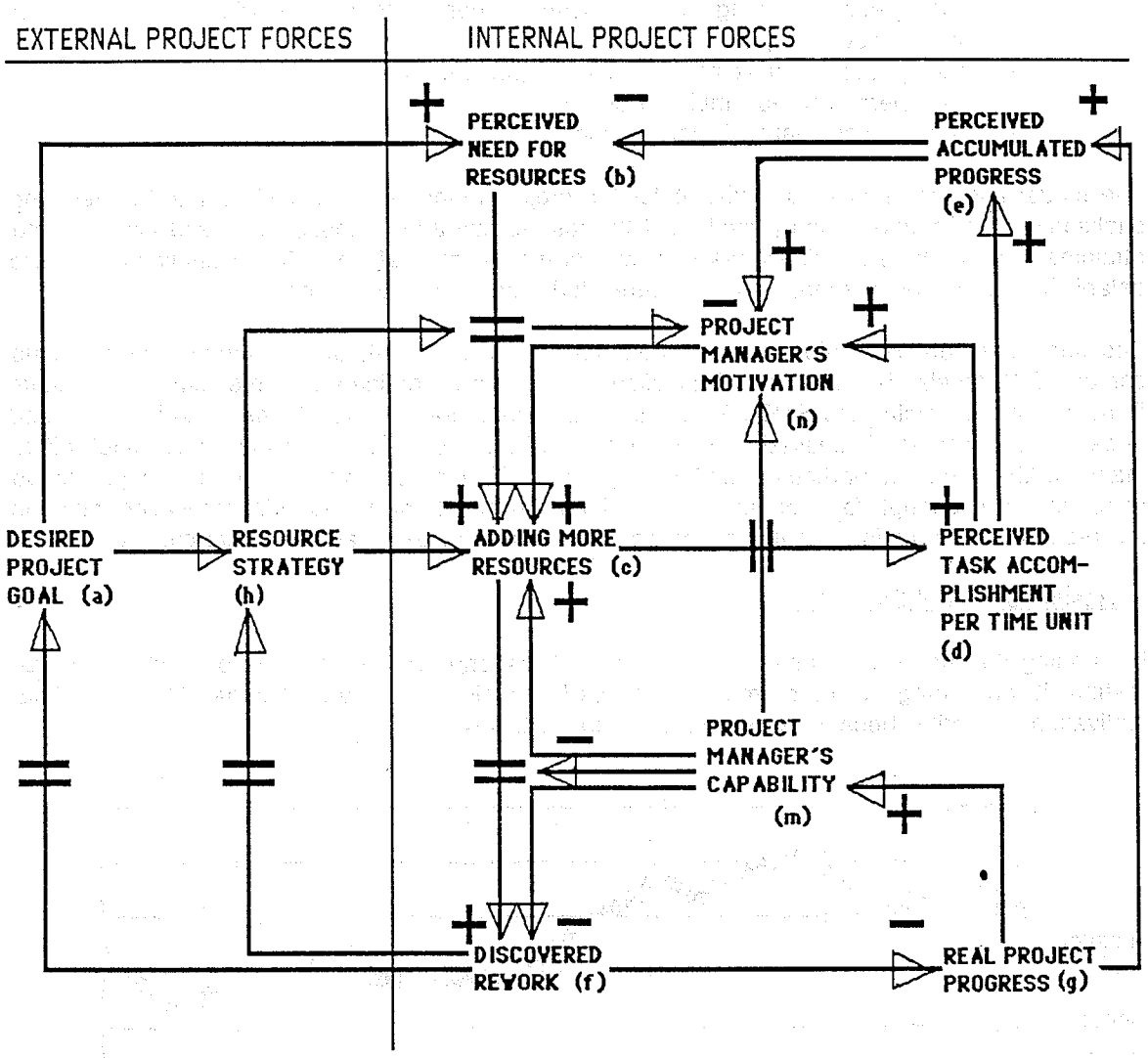


Figure 3. The "Complete" Causal-loop Project System

In the model the meaning and implication of the "project manager's capability", or the project manager's ability to do the required work properly by him- or herself or through his or her staff, is modelled as a function of the "real project progress". The rationale is that the more the project advances, the more the project manager and his or her staff will increase their professional knowledge and knowhow through on-the-job learning, and thus theoretically be able to perform better. This expectation is in line with the "organizational learning" theory, in which a cooperative system may undergo various changes which will affect the way knowledge is obtained. According to Schøn (1983) some of these changes can appropriately be described as "learning". Such learning is "hard to divorce both from the phenomena of a behavioural world in which individuals live with one another, and from the political, win-lose games of control, evasion, and dominance in which most organizations abound." (Schøn;1983:128). Since projects may be considered as prototypal of cooperative systems, a general positive learning effect for the enactors, and particularly for the project manager, may be correctly assumed to exist and be included.

The meaning and implication of the item the "project manager's motivation", is here defined as the interest in doing the work properly, and is included in this model as an algebraic function of several factors:

- the speed in adding the necessary resources to comply with the project plan and achieve the goal
- the "perceived task accomplishment per unit time"
- the "perceived accumulated progress"
- the professional task performance

The model assumes motivation existing for the project manager if the task at hand is new and challenging, and demotivation prevailing if the task is dull and unchallenging, and also that the attainment of goals and milestones has special motivational effects. These relationships were established from observation, from literature study, and from experience.

The final, detailed causal-loop system constructed as the result of the above considerations contained 12 levels, 14 rates and 87 auxiliaries, and can be defined as a medium sized System Dynamics model. Using the STELLA compiler, all these more than 100 items could be expressed in separate diagrams, if desired. For the purpose of the research entailed in the research effort, many of them had a particular explanatory value. The model was therefore thought to be comprehensive enough for probing some fundamental effects on managerial motivation, such as the result of direct or indirect influences on projects and of external or internal changes.

6. Results of Model Simulation

By running the model with time intervals which correspond approximately to one week, and by testing it according to recommended procedures (Forrester and Senge;1980) the final motivational "profile" became as shown in figure 4. below:

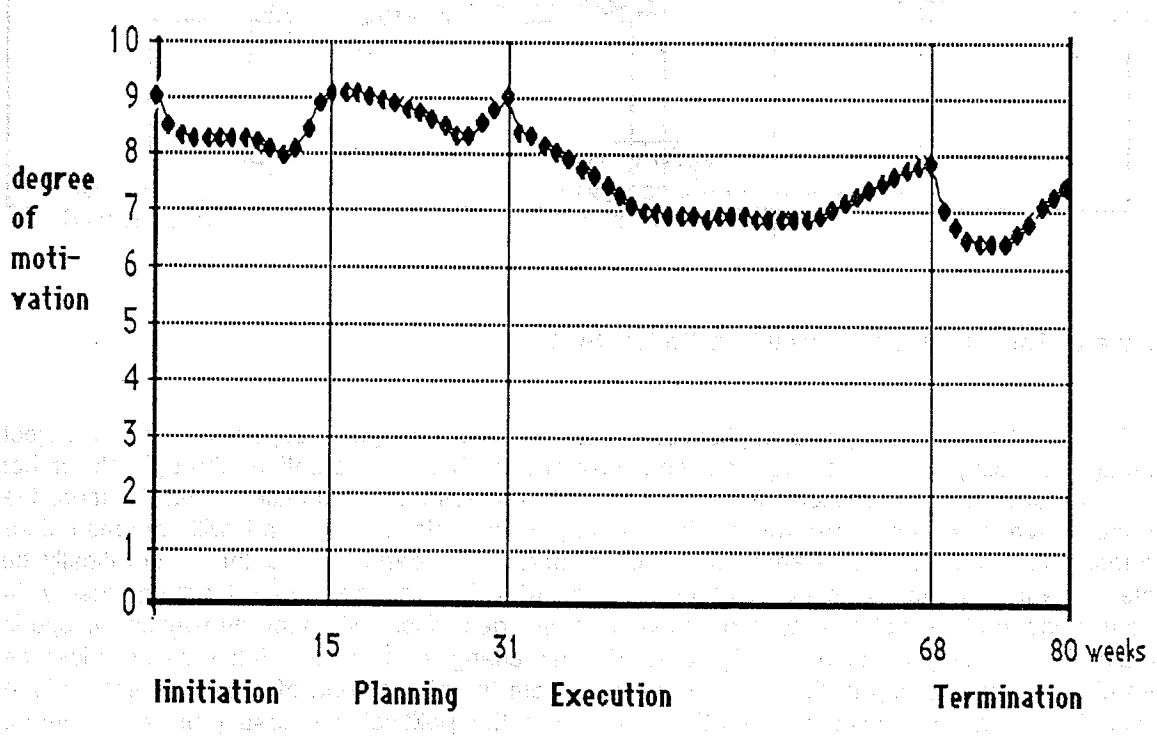
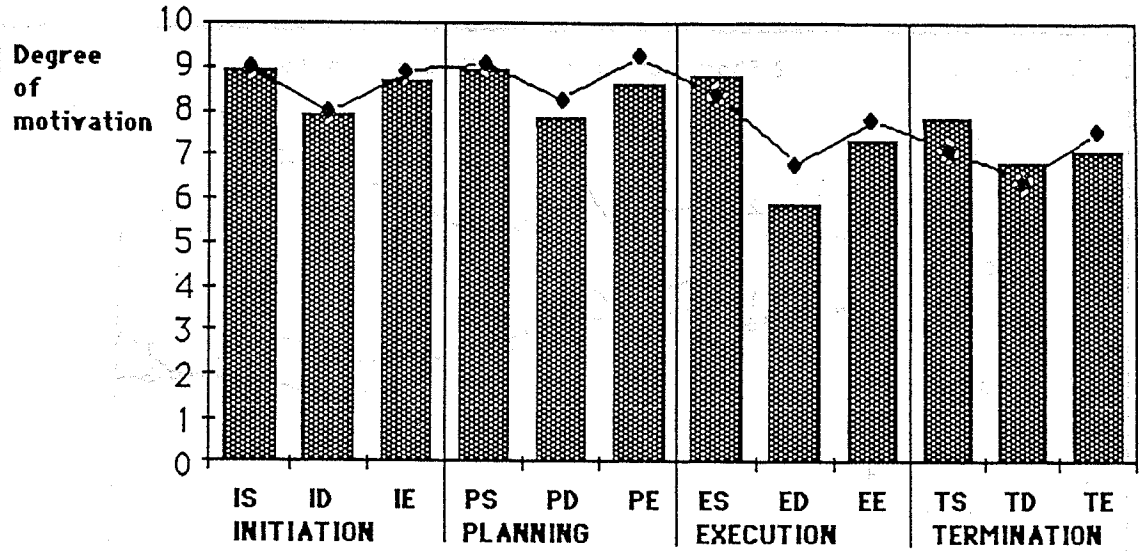


Figure 4. "Weekly" Representation of the Project Manager's Motivational Level as Obtained by Model Simulation.

The first important observation was that the result of the simulation confirmed particularly well the reference mode of motivational development from the questionnaire. This is clearly demonstrated in figure 5 below:



BARS = DATA FROM THE DATABASE
LINE = DATA FRAM THE MODEL SIMULATION

Figure 5. Motivation Variances from Database Responses and from Model Simulation.

In fact, the variation in motivational level by the two presentations follow each other very closely. Although there are minor differences in the magnitude of the motivational levels at certain points of observation, the basic pattern is retained, namely: a relatively high managerial motivation early on in the project, slowly entering a more demotivating development situation and passing through a minimum during the execution phase, followed by a certain increase in motivation when the project nears its end. The "hammock-shaped" development in each phase is also clearly demonstrated. Although one can see differences between the two sets of results, it was found that for every point of comparison, the calculated statistical standard deviation using the database figures and those from the result of the model simulation, i.e. the computed values, came well within the normal confidence intervals.

The conclusion drawn was therefore that the simulation model seemed to reflect real life project development to a satisfactory degree, and that the reproduced motivational variations in the project managers' motivation are in accordance with what they experience when they manage their projects. This also implies that those part of the model which describe causal relationships and indirectly portray motivational stimuli to a high degree may reflect the most important components of the motivation and demotivation of project managers.

On of the main diagrams from running the model is presented below, figure 6, and shows separate curves for the level of motivation for two groups :

"predominantly long term motivational sub-components", and
"predominantly short-term motivational sub-components".

The following components were identified in this first group; - the "progress" of the project, the "capability" of the project manager, the produced "rework", and the "trust" felt by the project manager. In broad terms these factors may also be labelled "leader"-oriented factors (Yukl;1989). In the second group the factors were; - the "newness" in the project development, the "milestones" reached", the "mending" necessary to do in order to keep the project on schedule, and the "confidence" felt. These are factors which were thought to have a more "individual" orientation, appealing to the manager not necessarily as a leader.

Together with the total, or combined motivational level (since the "motivation" in the model is a multiplicative function), this gave the following simulated development :

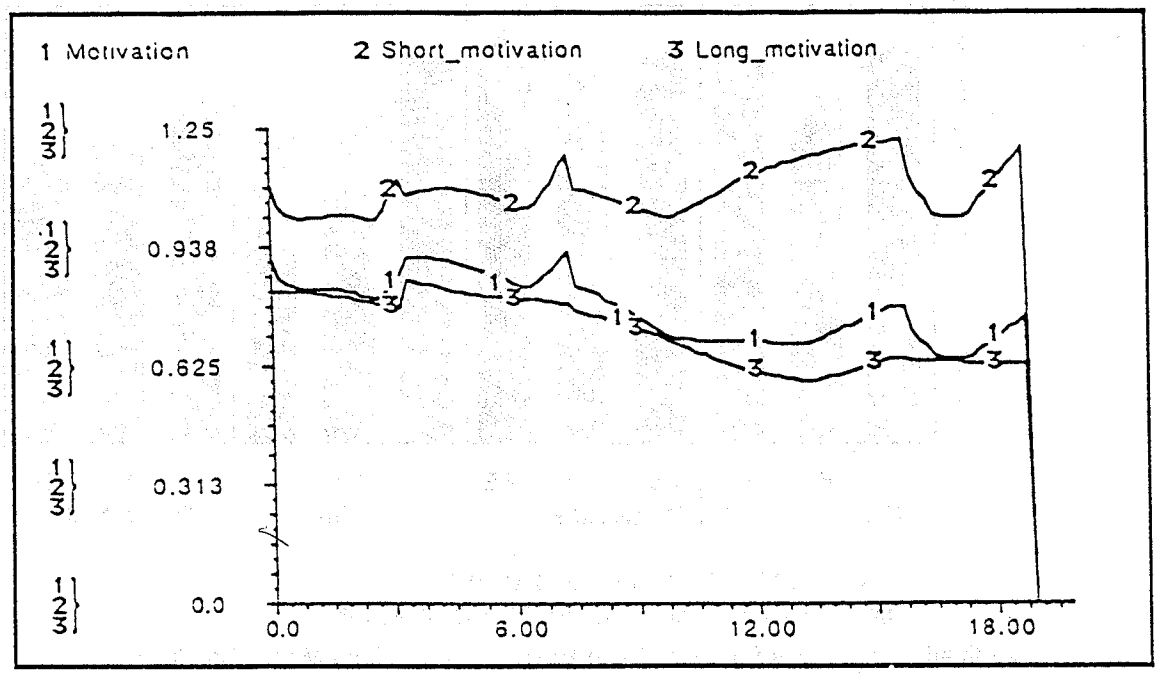


Figure 6. Long-term and Short-term Motivation as Produced by the Model Simulation.

The diagram clearly reveals that the two groups of motivation have quite different development patterns. The "long-term" motivation shows a steady decline from the start of the project Planning phase (at around Time = 3 months) and until the last part of the project Execution phase (at around Time = 14 months). From there on the motivation "oscillates" to some degree, maintaining the relative low value it has reached at this point in time in the project effort. If the long-term motivational parameters are assumed to have similarities with managerial or "leader"-oriented motivational causes, one may suggest that from a "leader" viewpoint the project effort does not necessarily end up as a motivational instrument. The short-term motivation is more varied, keeping a good and high level throughout the project lifetime, with occasionally high peaks at the start and end of each project phase.

One could conclude from this that it is the personal, individual motivation that really encourages the project manager and which gives him or her the real stamina to keep on with the project effort despite the setbacks experienced by the increasing rework discovery and the accordingly declining trust. Very generally stated, the project work may be said to demotivate the project manager as a "leader", but to motivate him or her as an "individual".

The full analysis using the "triangulation" concept, which is not included here due to space limitations, gave the following detailed conclusions for different motivational causes and stimuli within each project phase:

> During project Initiation, "personal" preferences which stimulate curiosity and eagerness to understand, to "stand out", and to be creative seem to be particularly pronounced amongst the majority of the project managers. The "leadership"-profile is less expressed, but energy is seemingly concentrated on the "strategic" issue of "showing off" and the "tactical" issue to "compete", presumably in order to get both the managers themselves and their projects well "known" in the environment.
>
> During project Planning, "personal" preferences such as keeping order and ensuring the execution of orders "my way" seem to dominate. As "leaders" most project managers use their power and responsibility for the more mundane and "operational" planning duties. Their complete approach as "individuals" and as "leaders" appears to

be aimed at creating a stable and calm environment, which can be controlled and mastered by systems and structures they feel familiar with in order to make the project a motivating effort.

During project Execution, "personal" preferences are more diverse. Predominantly most project manager seeks support in different ways for his or her opinion and work responsibility. As "leaders" they try at the same time to "fight" for their cause, or their projects, and are willing to work hard in order to understand and succeed. In many ways this combination could be described as a "manipulative" type of behaviour, with a strong, indirect will to lead the work in the direction felt to be the most appropriate.

During project Termination, "personal" preferences have many similarities with those of the Intitiation phase. As managers the majority of them feel they now have to finish the project in a way that is favourable to themselves, both in the short and the long term. They therefore want to show their excellence, and "achieve" as much as possible. As "leaders" their attitude is more mixed. The importance of taking leadership and fight for their project combined with a strong desire to "show off", resembles their desires in the project Initiation phase.

7. Suggested Main Pattern of Motivational Profile in Project Efforts

The change in perspective on organizational development in modern time is provided in a particular lucid way by Scott (1987). In his view the management approaches in modern time have developed through different stages of "open", "closed", "rational", and "natural" systems thinking. By applying two of these descriptions to the project approach, using key-words particularly relevant to "rational" and "natural" systems, the following structure was then suggested from the research findings as illustrated in figure 7 below:

	INITIATION	PLANNING	EXECUTION	TERMINATION
Key words for managerial profile	Self-profiling and Curious	Self-confident and Systematic	Affiliating and Decisive	Self-profiling and Decisive
Predominant system profile	NATURAL SYSTEM	RATIONAL SYSTEM	NATURAL SYSTEM	RATIONAL SYSTEM

Figure 7. A Summary of the Project Manager's Behavioural Preference in Each Project Phase.

The diagram suggests, in the first place, what is already contended, that different motivational attitudes seem to dominate each of the project phases. What may be particularly interesting is the possible shift between a "natural" and a "rational" type of system taking place during the project development. If this is so, an immediate conclusion from this is that project managers become both motivated and demotivated in their project efforts because of the many stimulating and de-stimulating factors created during project development, that such factors will vary and operate with varying frequency from one project phase to another, and that the general theories of "rational" and "natural" systems have a special applicational value for project development. By changing the manager's role accordingly, and giving managers the opportunity to manage so that such issues can be properly and adequately dealt with, more effective and efficient project management may develop.

8. Conclusions

Briefly, since motivation and demotivation are found to vary between the different project phases, the following particular conclusions from this research were accordingly the important messages. They are:

(1) Project managers must satisfy distinctively different motivational needs as their projects pass through successive development phases.

(2) Many of the needs necessary for managerial motivation in projects in general are not satisfied, reinforcing increased demotivational attitudes and behaviour among the project managers as their projects pass through successive development phases.

This means that if high motivation is taken to mean more efficient and effective performance, then the environment within which projects are performed should be adjusted to reduce the presence of known demotivational factors.

The project managers themselves need to be made aware that projects change the required mode of behaviour as projects develop through the different phases, and that each phase has different motivational needs which have to be matched by different managerial stimuli. One may therefore form a third conclusion for future project management:

(3) The particular change-oriented organizational structure embodied in the project approach, also demands a particular change-oriented, managerial strategy for maintaining motivation and avoiding demotivation in project managers.

These are conclusions which may inspire future research for more insight into the process of project performance, and which could be applied in practice. One way of accomplishing this may, for instance, be to develop a "discontinuous management" style, as a consequence of the particular stimuli generated during the project life cycle, which have particular cause-effect relationships in terms of project managers' motivation and demotivation. This is also a conclusion that questions both the method of selecting "who" should be project manager, and "how" project management should be conducted most efficiently and effectively during each project stage.

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