

# **System-Dynamical Analysis of Mutability, Rational and Emotional Commitment for Explaining Failure to Change in Organizations**

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***Abstract:** There exists a large body of literature on organizational change and on the puzzling effect of change failure. This paper adds the often missing element of combining several reasons for change inefficacy. These reasons for failure to change are a low systemic mutability (inertia), as well as insufficient political, rational, and emotional commitment (resistance). The provision with resources, incentives, participation and discourse are then presented as solutions to the problem, each addressing a different aspect in relieving resistance and enhancing mutability and commitment.*

***Key words:** organizational change, failure to change, inertia, mutability, political rational and emotional resistance, commitment, participation, emotion*

## **Introduction**

Organizations encounter continuous transformations and developments in their environment, be it initiated by competitors, the judicial system, or else. OECD's Program for International Students Assessment (PISA) can serve as an example for triggering such transformations. The program tries to make comparable students' education across countries. The aim is to show international gaps which will then in many countries make necessary adjustments of the educational system. These changes will have to be implemented and managed by the respective organizations and their people. In completely different sectors changes in organizations' environments equally occur. In 1995, for example, the German postal services were privatized. This made changes necessary, and environmental transformation goes on till today. The company faces the extinction of the monopoly on letter services in the end of 2007 and has to react to the changes in its surrounding system.

Many organizational transformations are considered to be failures, and researchers estimate their number to approximately 40% (P. Scott-Morgan 1994). Numbers of up to 70% exist (M. Beer und N. Nohria 2000). In other cases organizations successfully implement change and consider this as one of their core capabilities. If they strive for a fit with their surroundings and want to keep pace with other organizations acting in the same environ-

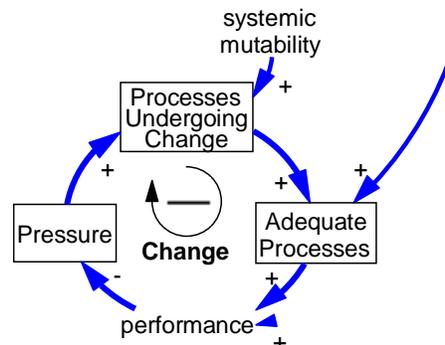
ment, they are forced to adapt in an active way. Leveling off at a status once achieved does not create the stable situation because due to the loss of adjustment to the environment, an organization's fit deteriorates. Organizations wanting to keep or even improve their positioning are therefore forced to turn away from the hitherto existing and to undergo change. Sufficient knowledge about change and about its constituents is then necessary for change management.

In organization theory, organizational change and particularly planned change became a topic of discussion in the 1940s. Researchers studied the diffusion of technical innovations and they noticed and addressed a central problem: adoption (C. A. Parker 1980). Kurt Lewin (1951) introduced his famous ideas of unfreezing—movement—refreezing because he remarked the ephemerality of change, i.e. the failure to sustain the higher level of performance that was intended. At the same time as Lewin published his ideas, Zander (1950) as well as Coch and French (1948) attended to a crucial implementation problem, namely employee resistance to change. The latter carried out a study and described resistance as an employee behavior and emotion being apparent through performance reductions and frustration (L. Coch und J. R. P. French, Jr. 1948). Participation in the change process was the authors' primary solution to this problem. Today the study is questioned for statistical accuracy and validity (C. S. Bartlem und E. A. Locke 1981), but during that time it was one of the most influential writings on organizational change. Zander then distinguished between resistance itself and its underlying protective causes. He defined resistance as a "behavior which is intended to protect an individual from the effects of real or imagined change" (A. Zander 1950, p. 9). He also expresses the difficulty of giving up an established behavior.

Although adoption, resistance, and emotions have been addressed early, the implementation problem still exists today. Repenning (2002) remarks that the problem does not stem from any inefficiencies of the innovation itself but rather from the fact that changes are often not adequately implemented. One reason for the improvement problem is organizational inertia which requires a sound and long-term implementation program. Stanley et al. (2005) as well as Oreg (2006) add that employees of organizations resisting change still pose a major problem. Their resistance bases on rational factors when employees do not understand the change message or if their incentive system countervails the abandonment of habitual behavior. Additionally, affective elements like uncertainties and fear resulting from new demands cause resistance to change.

There already exists a body of literature on organizational change, on inertia, resistance and on the psychological factors determining motivation. Little research has been done, though, on linking these determinants of change efficacy. In order to capture the complexity of failure to change, modeling will be used, and the different determinants will be linked in a single model which captures their interdependence. Within modeling, system dynamics is a highly helpful method because it helps understand the logic of the system and of the situation (J. W. Forrester 1994, p. 252). It accounts for non-linear developments, feedback, and dynamic processes, and by providing understanding of the change situation it also provides better possibilities of action and reaction. The dynamic interplay of organizational inertia, political, rational, and emotional resistance and commitment will be consid-

ered in this paper. Starting from a base model of performance, pressure, and change that can be seen in Figure 1, the base will then step by step be extended by representations of systemic inertia as well as the different forms of commitment and resistance.



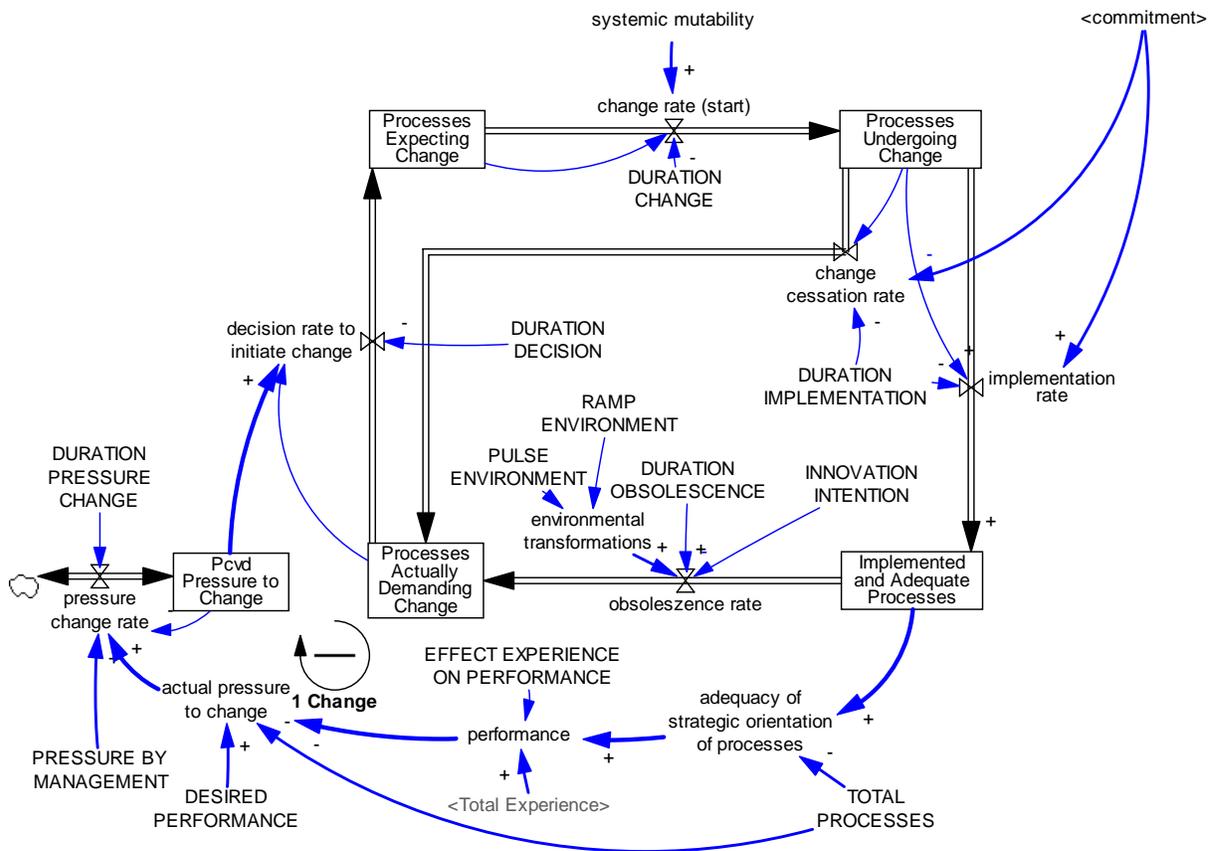
**Figure 1: Change (CLD)**

### **Base model**

The base model which is presented in Figure 2 very roughly follows earlier system dynamics models of organizational change. Sastry (1997) and Pala and Vennix (2003; 2001) already formalized similar relationships of the adequacy of processes, performance, and change. The adequacy of processes is a measure for the processes' degree of implementation and up-to-datedness. Weick and Quinn (1999, p. 381) note that "change starts with failures to adapt". Performance pressures derive from competitive pressures (M. L. Tushman und E. Romanelli 1985). This is why *adequacy of strategic orientation of processes* is a central variable which drives *performance*, which then determines *pressure to change*. It is more realistic that the pressure itself is determined not only by performance but also directly by appropriateness. This means that if the processes are appropriate, pressure to change does not come up. Influenced by the strength of a general "pressure by management" management's pressure to change is then transformed to a *perceived pressure to change* by employees. This is a measure for the perceived urgency and need to change the organization's processes. After a month-long delay, this pressure brings about a decision to actually change certain processes. This is represented by the pressure determining the *decision rate to initiate change* and the *processes expecting change*. With several delays, the processes expecting change are then transformed into *processes undergoing change* and into *implemented and adequate processes*.

It is an important facet of this model that change is not implemented directly. There is ample literature on change initiatives which take place but fail to reach an impact (see Gilbert 2005; M. Beer und N. Nohria 2000; C. Gilbert 2005; P. Scott-Morgan 1994). In order to account for this effect in the model, changes are started proportionally to the *system's mutability*. Processes undergoing change are then implemented proportionally to the degree that there exists a *commitment*. Sustainably *implemented and adequate processes* then improve the *adequacy of strategic orientation of processes* again.<sup>1</sup>

<sup>1</sup> Additionally, planning is introduced in order to account for the delays which occur between the recognition of pressure to change until the processes' implementation. Here, pressure to change, and processes expect-



**Figure 2: Base model of organizational change (SFD)**

In order to illustrate model behavior, two shocks of process obsolescence are simulated which may result from *environmental transformations* like the extinction of the monopoly on letter services for the German postal services or by the management's *innovation intention* in order to improve an organization's competitive situation. When driven by these shocks, the model each time shows the same balancing behavior where change allows adequacy and performance to reasonably fast move back to a value of 100%. But in reality change does not occur that easily; the change process is thwarted by systemic inertia.

**Systemic mutability**

Inertial forces are present when an organization does not keep pace with and reacts to changes which occur in its environment (M. L. Tushman and E. Romanelli 1985). This describes a lack of adaptation ability (A. Kieser, C. Hegele, und M. Klimmer 1998; M. T. Hannan und J. Freeman 1984). Tushman and Romanelli distinguish between structurally and socially anchored inertia. Both determine the systemic mutability of an organization which is a concept describing the inverse of inertia. Mutability describes the ability of an organization to change, i.e. its change possibilities. Social and structural influences on the

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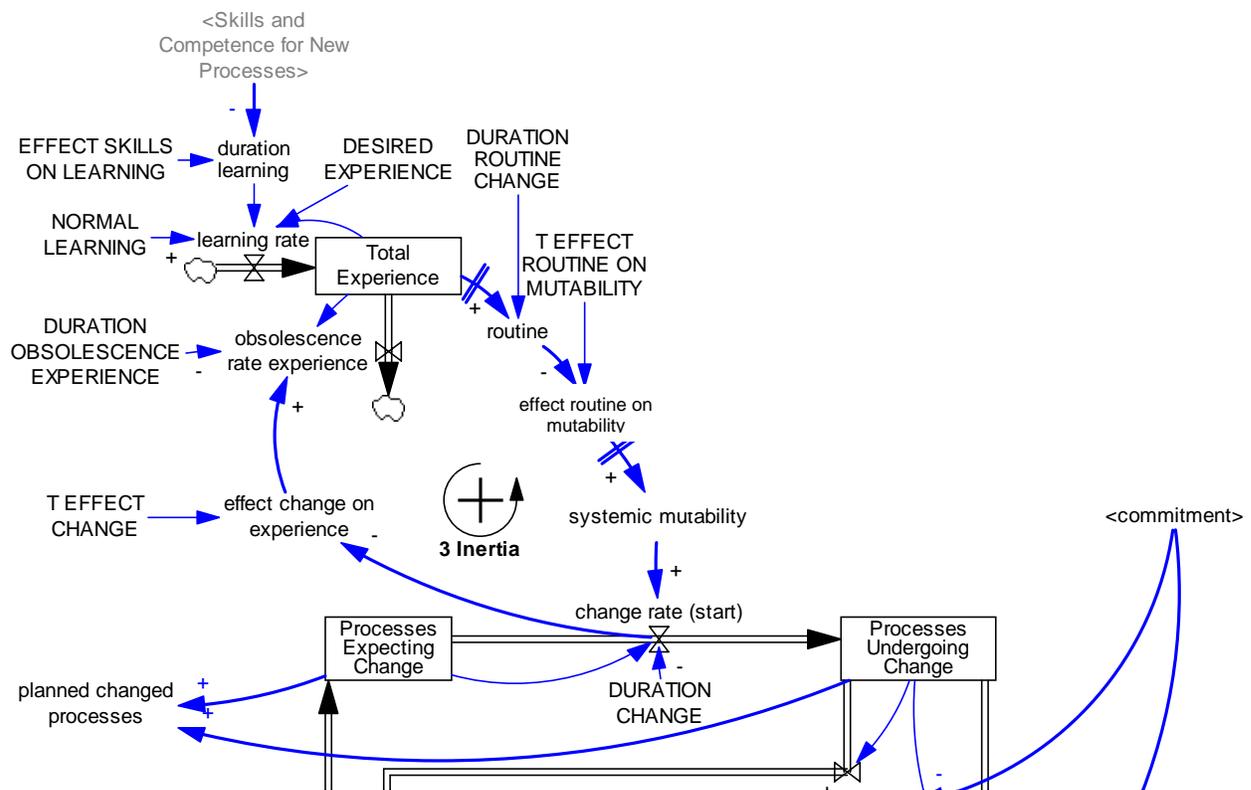
ing and undergoing change together determine the planned changed processes. By conditioning the planned adequacy, they determine the effect of adequacy on pressure and finally the perceived pressure to change. Figure 16 shows these coherences graphically.



The third component acting on mutability is experience (Ö. Pala und J. A. M. Vennix 2003; E. R. Larsen und A. Lomi 1999, 2002, 1999; D. Leonard-Barton 1992; and M. T. Hannan und J. Freeman 1984). As can be seen in Figure 4, long periods without change let experience and routine grow, whereas change renders the experience obsolete with which processes run.<sup>2</sup> Experience has an adverse effect on mutability so that past changes lead to higher systemic mutability.<sup>3</sup> Hence a reinforcing feedback loop is created determining systemic mutability from past experiences with change.

Formally, mutability can be expressed as follows:

Systemic mutability =  
 skills and expertise \* adaptation of incentive system \* capacities \* effect experience on mutability



**Figure 4: Systemic mutability: inertia (SFD)**

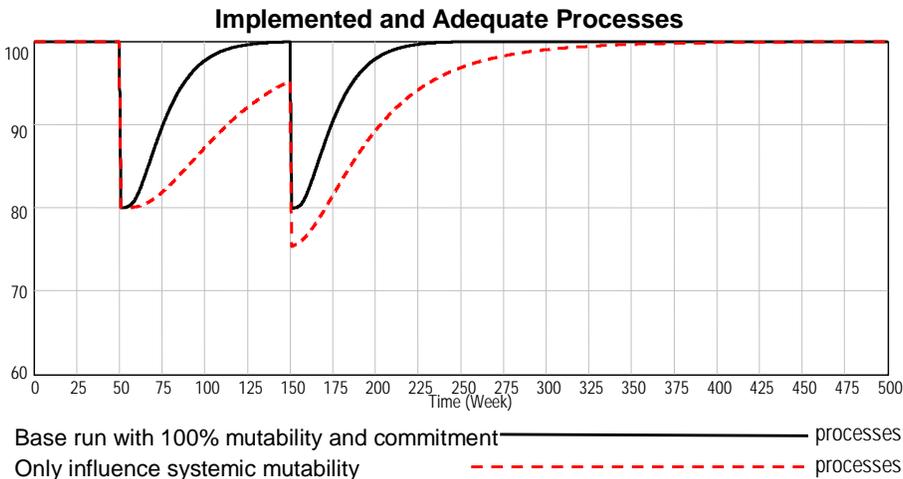
Tushman and Romanelli claim that by diminishing experience and competence, change adversely influences the organization's effectiveness (M. L. Tushman und E. Ro-

<sup>2</sup> It is important to note that this is experience with which processes of an organization run. Experience with handling changes is not the focus of this loop.

<sup>3</sup> Although this is not the point of concern here, some authors also regard this higher mutability as a form of inertia. In their opinion the organization is inert at changing from a period with much change and a high mutability to a more stable phase again. (Cf. Larsen, Erik R. und Alessandro Lomi: Resetting the clock: a feedback approach to the dynamics of organisational inertia, survival and change, in: Journal of the Operational Research Society, 50. Jg. (1999), Nr. 4 and Kelly, Dawn und Terry L. Amburgey: Organizational Inertia and Momentum: A Dynamic Model of Strategic Change, in: The Academy of Management Journal, 34. Jg. (1991), Nr. 3)

manelli 1985). This is captured by an explicit effect of *experience* on *performance*. Hence, high experience has opposed effects on an organization. It enhances performance, but it also diminishes systemic mutability and makes changes very difficult to achieve.

As one can see in Figure 5, two change initiatives are simulated. As a facilitating presumption at this stage of the paper, all changes which are initiated are also implemented and sustained. The simulation shows that low mutability of an organization impacts the change rate and slows down the return to adequacy of processes. When the first environmental transformation occurs after year 1, the organization returns to adequacy much slower than in the base run. Two years later, another sudden obsolescence of process adequacy is simulated. Due to the previous change, mutability has increased so that the return adequacy is achieved a little quicker, although still slower than in the base run.



**Figure 5: Systemic mutability (BOT implemented and adequate processes)**

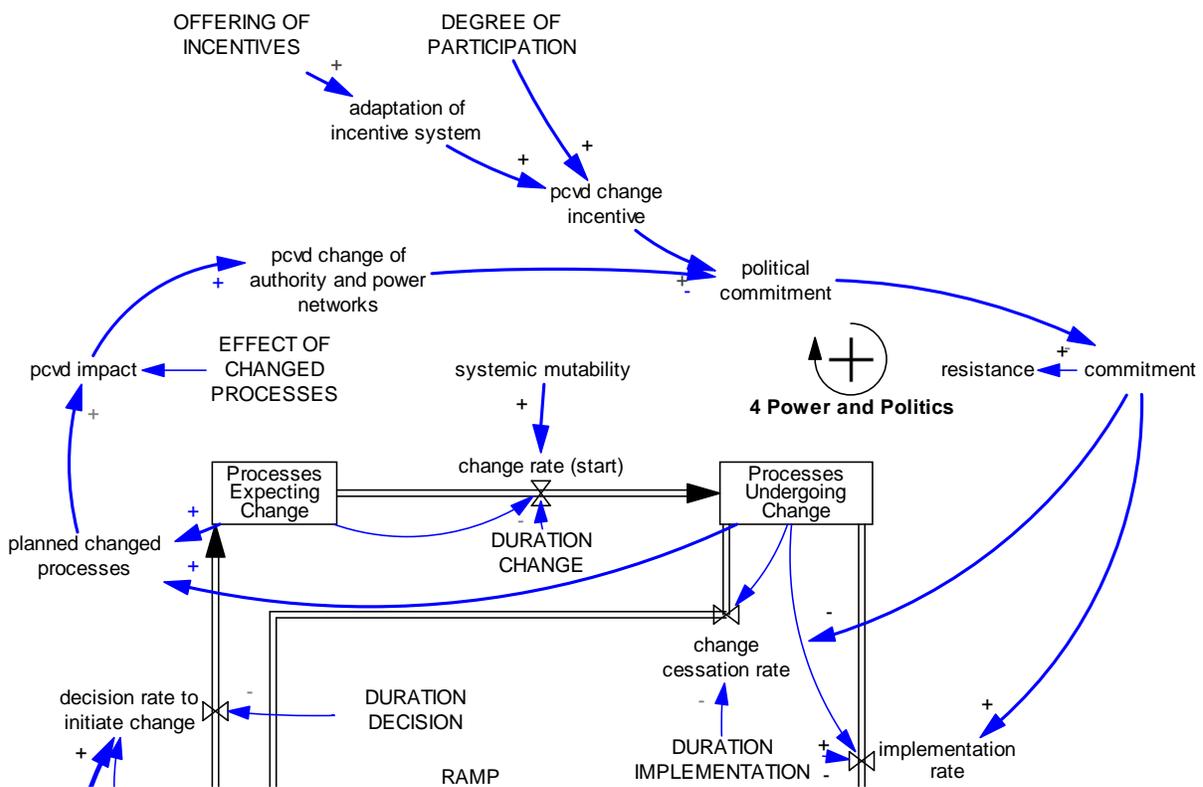
**Political commitment**

Often authors limit themselves to the analysis of systemic mutability as source for the failure to implement change. If the failure to implement sustainable change only resulted from a too low systemic mutability, it should be able to realize change implementation with very high efforts on creating sufficient capacities and an adequate offering of incentives. But as research revealed, resistance to change among employees exists besides the systemic impediment. Whereas the mutability rather describes the ability to change, resistance concerns employees’ willingness (A. Kieser, C. Hegele, und M. Klimmer 1998). Dent and Goldberg describe the facets of resistance as follows:

“We assert, however, that the best way to challenge the conventional wisdom is to suggest that people do *not* resist change, per se. People may resist loss of status, loss of pay, or loss of comfort, but these are not the same as resisting change. The belief that people do resist change causes all kinds of unproductive actions within organizations. It is time that we dispense with the phrase *resistance to change* and find more useful and appropriate models for describing

what the phrase has come to mean—employees are not wholeheartedly embracing a change that management wants to implement. Employees may resist the unknown, being dictated to, or management ideas that do not seem feasible from the employees’ standpoint.” (E. B. Dent und S. G. Goldberg 1999, p. 26, emphasis in original)

Hence, it seems to make sense to address the problem of resistance by its roots and to analyze the causes of resistance separately. If one knows what resistance means, one may effectively lessen it because one can address its causes instead of the symptoms (A. Zander 1950). Resistance to change is a lack of commitment to changing. This lack of commitment also causes inertia-like forces which become apparent through uttered and non-uttered objection, delays, and obstruction up to sabotage (H. I. Ansoff und E. J. McDonnell 1990).



**Figure 6: Political commitment (SFD)**

Political, rational and emotional resistance have different mechanisms of action, and they are altered dynamically in response to past and present change processes. Employees perceive the impact that changes has on them. When they perceive *change of authority and power networks* that goes against their interests, they will lower their political commitment. Vahs and Leiser (2004) are of the opinion that employees’ political change willingness or commitment particularly grows through participation in the change process as well as through the offering of incentives.<sup>4</sup> Accordingly, the *offering of incentives* does not only

<sup>4</sup> Concerning incentives, cf. Oreg, Shaul: Personality, context, and resistance to organizational change, in: European Journal of Work & Organizational Psychology, 15. Jg. (2006), Nr. 1, p. 79; Staudt, Erich, et al.: Anreizsysteme als Instrument des betrieblichen Innovationsmanagements, in: Zeitschrift für Betriebswirt-

determine the systemic mutability, but—together with the *degree of participation* as a measure of the employees' involvement in decisions—it also conditions the *perceived change incentives* by employees. This is presented in Figure 6. The perceived incentives which can be expressed in monetary and non-monetary ways then determine the compatibility of the change with self-interest. Innovative tasks can even serve as a high intrinsic reward for employees (A. Kieser und P. Walgenbach 2003).

### **Rational commitment**

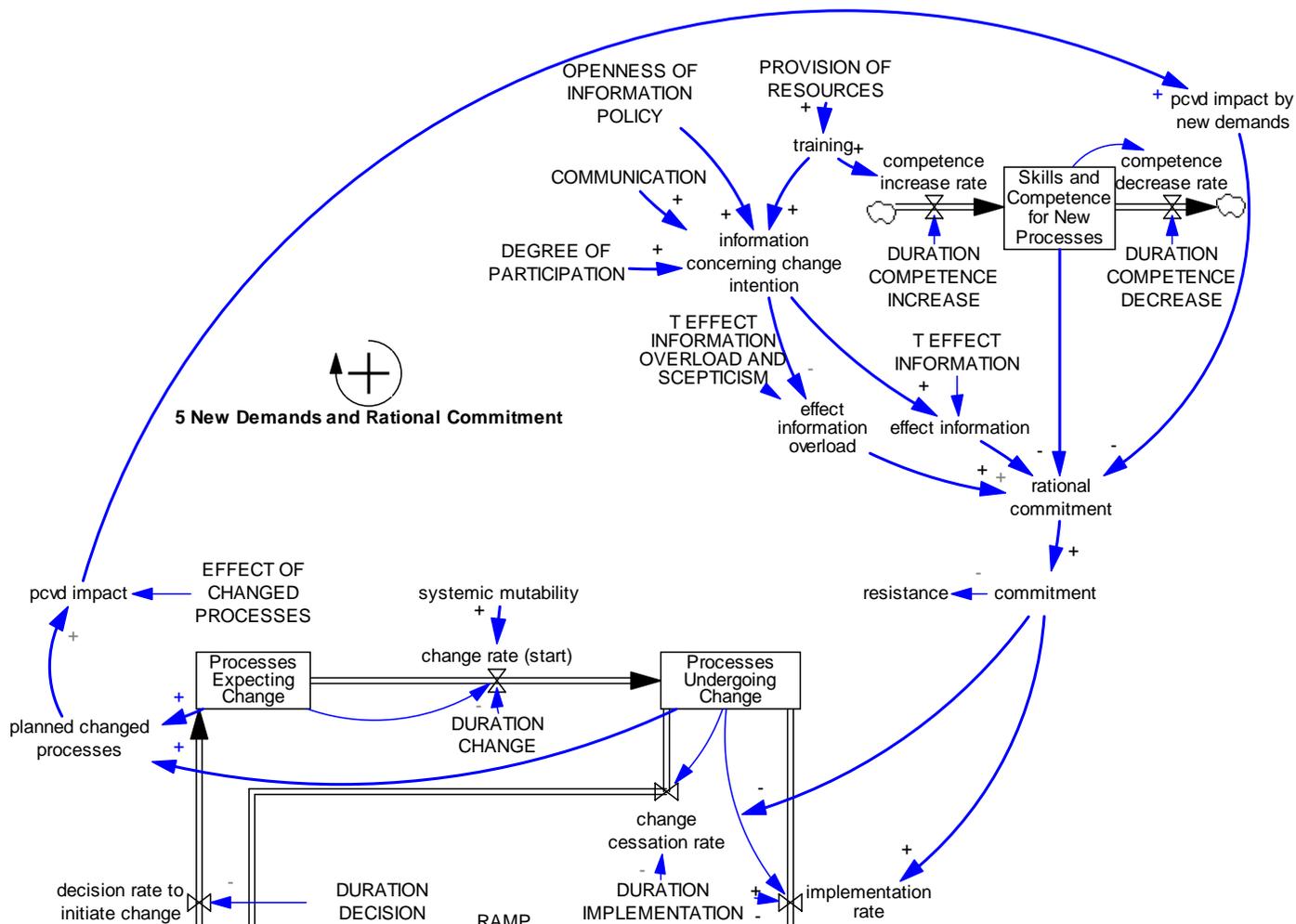
Rational opposition or a low rational commitment establishes, when in the opinion of the employees either costs for implementing a change outweigh the expected benefits (S. Oreg 2006 and M. Beer 1980) or when the employees are aware that necessary skills for implementing change are still missing (M. Beer 1980). In this sense, Cacaci regards resistance as feedback to change objectives (A. Cacaci 2006).

*Rational commitment* is low if employees do not understand the change message. As Figure 7 reveals, understanding ameliorates by the adequate *provision of resources*. Genzwürker (2006) assumes that information and communication also plays a major role here. Particularly in times of change employees do not wish to be left doomed, they want to understand the reasons behind, and they want to be able to communicate their own views in order to make the change initiative effective. This helps them deal with the arising complexity. In Figure 7, this is represented by the aggregate influence of *openness of information policy*, of *communication* and of *participation on information concerning the change intention*. The effect of information is then twofold: information has a positive effect on rational commitment, whereas information overload affects commitment negatively.<sup>5</sup> Rational opposition also develops when the required expertise for the change is still missing (M. Beer 1980). As can be seen in Figure 7, the feedback loops “New Demands and Rational Commitment” develops from the influence of *planned changed processes* on the *perceived impact by new demands*. The ratio of *skills and competence* to *perceived impact by new demands* then determines the effect on rational commitment because the competence indicates how strongly the employees themselves believe to be able to meet the new demands.

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schaft, 60. Jg. (1990), pp. 1184, 1187-1194 and 1197 and Vahs, Dietmar und Wolf Leiser: Change Management in schwierigen Zeiten: Erfolgsfaktoren und Handlungsempfehlungen für die Gestaltung von Veränderungsprozessen, Wiesbaden 2004, p. 69 and for the effects of participation cf. Vahs und Leiser: Change Management in schwierigen Zeiten, 2004, p. 69 and Zander, Alvin: Resistance to Change--Its Analysis and Prevention, in: Advanced Management, 4. Jg. (1950), Nr. 5, p. 10.

<sup>5</sup> According to Oreg too much information surprisingly negatively influences commitment by a factor of -0.15. Oreg and Beer assume the existence of an optimal level of information. Therefore, in line with Oreg, a nonlinear, u-shaped relationship between comprehensibility of the change message and rational commitment is assumed in the model. (Cf. Oreg: Personality, context, and resistance to organizational change, 2006 and Beer, Michael: Organization Change and Development: A Systems View, Santa Monica, California 1980)



**Figure 7: Rational commitment (SFD)**

In most cases, executives and researchers regard resistance as an unnecessary burden. It would nevertheless be smarter to study the causes and to learn from the situation. Insufficient rational commitment slows down the transformation of processes, but it nevertheless bases upon well considered reasons, and it indicates that employees are missing resources for the implementation of change. According to Kraus, Becker-Kolle and Fischer, organizations in such a situation should try to explore the underlying causes for their employees' attitudes because it may be reasonable to reconsider certain aspects of the change initiative and to look for solutions which benefit both sides.<sup>6</sup>

In order to account for the phenomenon that people may support a transformation for rational and political reasons but still resist it for emotional reasons, all three commitment variables together determine the aggregated commitment variable, and emotional commitment will be analyzed next.

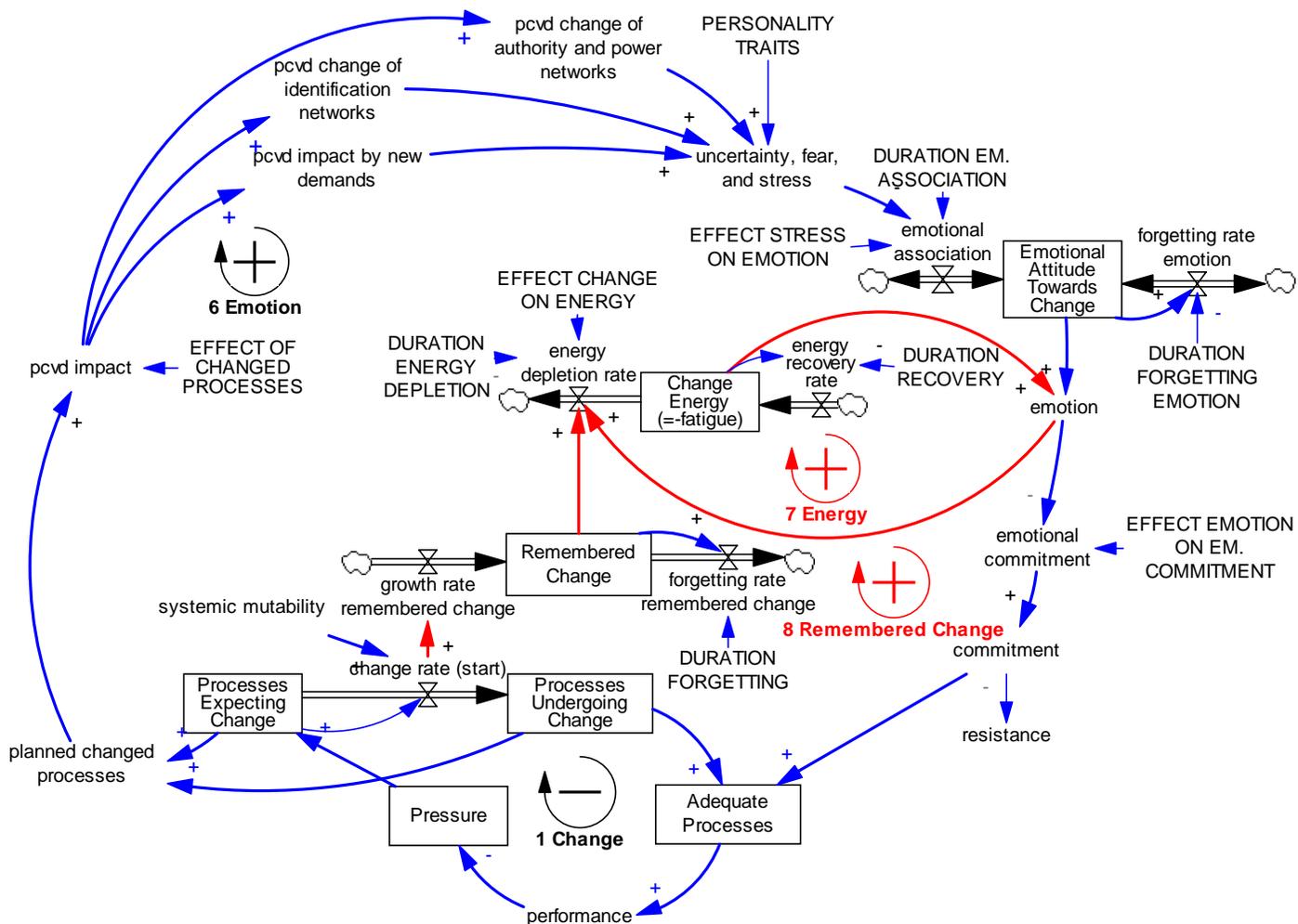
<sup>6</sup> Translated from Kraus, Georg, Christel Becker-Kolle und Thomas Fischer: Handbuch Change-Management: Steuerung von Veränderungsprozessen in Organisationen; Einflussfaktoren und Beteiligte; Konzepte, Instrumente und Methoden, Berlin 2006, p. 64.



not being able to cope with and adapt to *new demands* (M. Beer 1980; A. Cacaci 2006; D. R. Conner 1993). Second, emotional resistance rises and emotional commitment declines with the degree of loss of relationships when processes or departments are altered. In the view of Hannan and Freeman (1984) changes to the identity are always the most difficult ones, and the difficulty to change increases with complexity. Doppler and Lauterburg (2001) emphasize how the alteration of complex personal *identification networks* creates fear and defense resulting in a safety mechanism of resistance. Third, since the *network of authority and power* comprises how things work in an organization, changes to this network take away the predictability and create instabilities. Loss of power or the anticipation of a loss will set people against change (A. S. Judson 1991), and it will further impede any alteration.

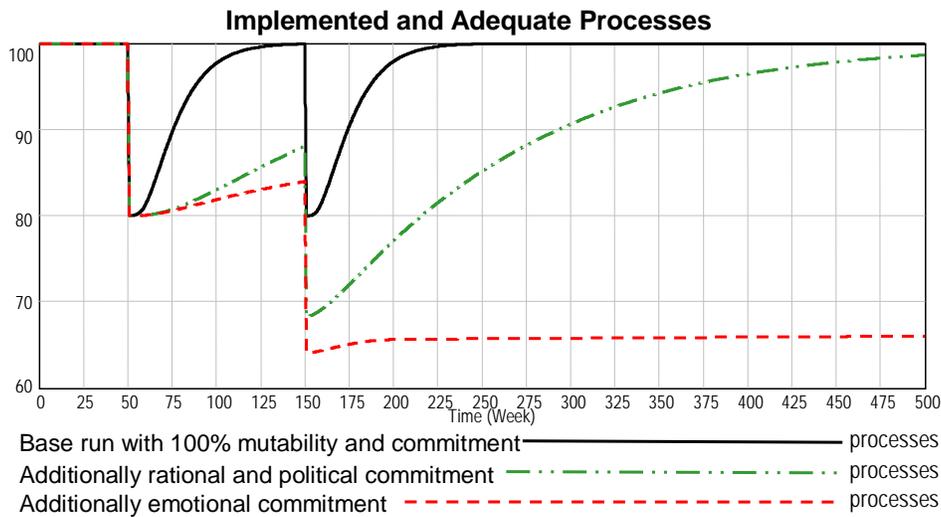
The higher the perceived impact through change in demands, identification and authority networks the higher is the changees' *perceived uncertainty* for dealing with the change and for coping with it. This accumulates as a negative *emotional attitude towards change* which then influences present *emotion*. Emotion has a direct impact on *emotional commitment* which further influences commitment, change, etc. so that the reinforcing feedback loop "Emotion" is closed.

But as can be seen in the "Energy"-loop in Figure 9, past changes also have an impact on employees' reactions to further alterations. They create a negative position towards change because people project past experiences with transformations onto the future (A. S. Judson 1991). If an employee is not emotionally committed to change and at the same time remembers past innovations, the *emotion* regarding change will cause *energy depletion* which results in a reduced *change energy* which is in fact a change fatigue. This feedback loop reinforces the descent of emotional commitment once changes in general have accumulated and a negative attitude against change has formed.

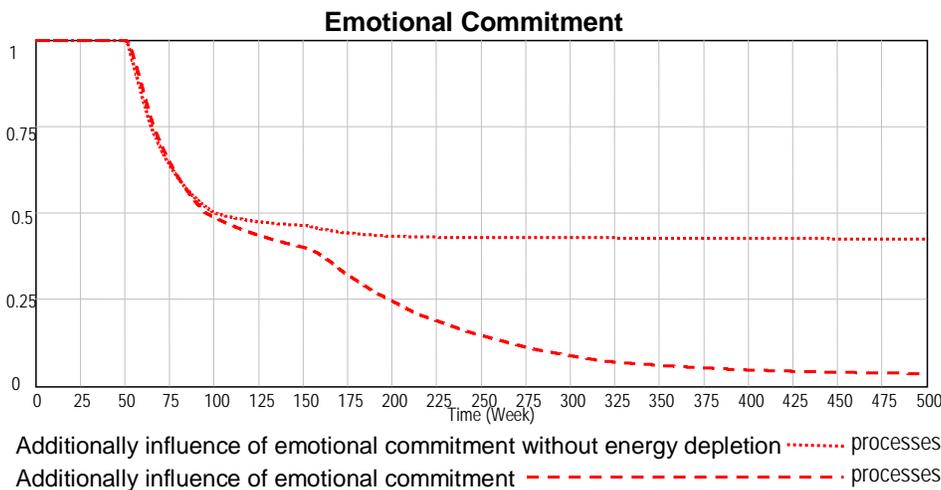


**Figure 9: Change energy (SFD)**

Figure 10 reveals the high impact of emotion by showing how the dynamic behavior of strategic mutability and commitment act together. Compared to the base run, if one just allows mutability, political and rational commitment to have an influence (emotional commitment is set to 100%), one can see the obvious worsening of the green dashed line compared to the base run. The situation aggravates though with the effect of emotional commitment. Since adequacy is not restored as quickly as in the previous examples, the second external influence severely reduces the adequacy of processes. Emotional commitment depletes and never succeeds to build up again. To a certain extent changes do take place, but due the impact of change fatigue (i.e. a low change energy level) they cannot be sustained in the long run. The reason for this slow implementation can also be seen in Figure 11. If one does not allow energy depletion and change fatigue to come up by leaving out its impact in the model, emotional commitment stays at a much higher level. This is not the case if the dynamic behavior of change energy is included into the model. Here, energy depletes and does not allow emotional commitment to rise again.



**Figure 10: Emotional commitment (BOT implemented and adequate processes)**



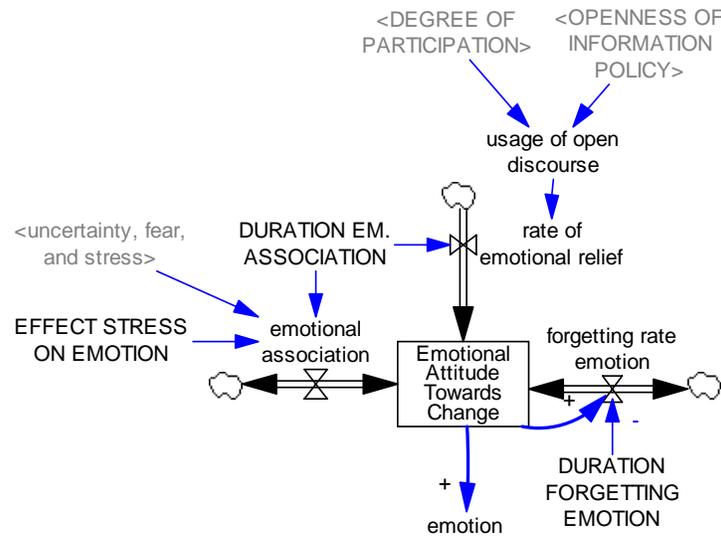
**Figure 11: Emotional commitment (BOT emotional commitment)**

A sufficiently large lack of emotional commitment thus amounts to the failure of the change initiative. As the high number of canceled change projects shows, in reality, management would abandon the initiative midway, or they would have to hold out for a long time with disastrous performance (see Figure 14 on page 16). Hence, inability to change may even threaten organizations' survival.

**Participation**

A solution to this problem therefore has to put great value on the emotional side of failure to change. As already proposed by Coch and French (1948), participation could have an effect on emotion and this way facilitate change. The impact of participation is actually twofold. First, could already be seen in Figure 6, the *degree of participation* represents a change incentive. Employees have a say and can impact the change in a way so that they are more advantaged by it. Second, as is shown in Figure 12, Bordia et al. (2004,

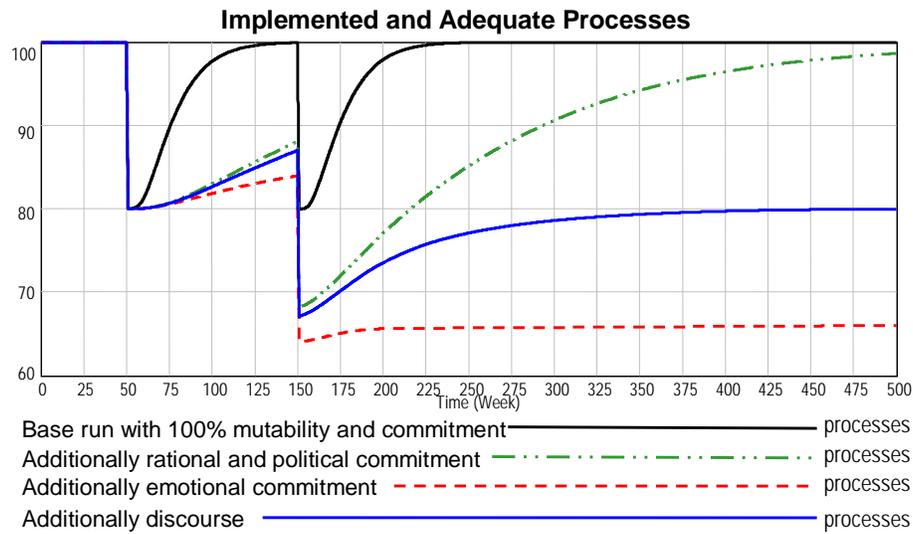
p. 516 and 520) support that participation furthermore reduces emotional strain. This is the case if participation together with an *open information policy* translate to the *usage of open discourse*. This is a special form of open discussion which is known for being constructive as well as for providing emotional relief (P. Bordia et al. 2004; P. E. Spector 1986 and A. Zander 1950). The *rate of emotional relief* ameliorates the *emotional attitude towards change* which then in several steps impacts commitment, change, adequacy, and performance. The thorough discussions in open discourse also improve the understanding of the change message (J. D. Ford, L. W. Ford, and R. T. McNamara 2002).



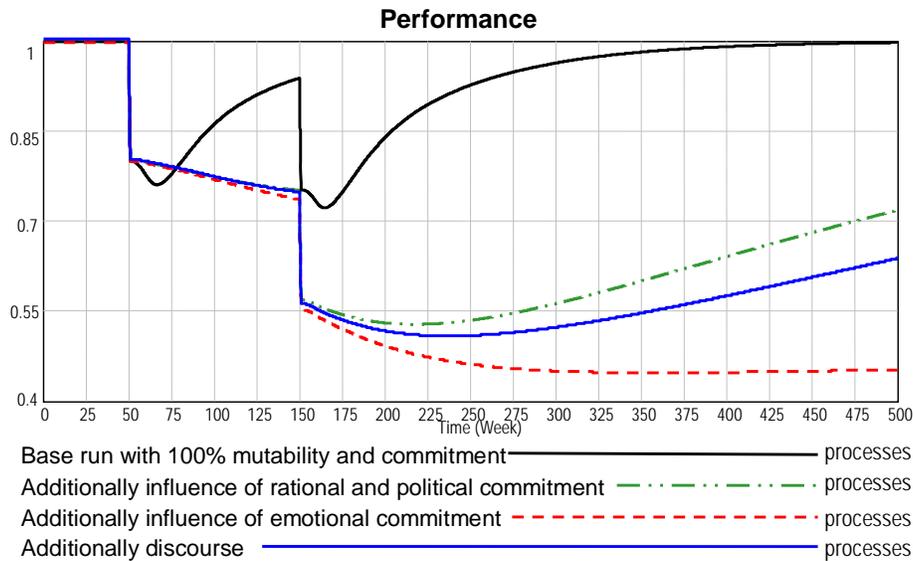
**Figure 12: Participation (SFD)**

The impact of participation on a quicker implementation change can explicitly be seen in Figure 13. There is a dynamic return to adequacy which is much closer to the ideal base run. The graph does not differ to a very high extent from the run in which change energy was not allowed to build up. This shows that through participation the great part of energy depletion can be stopped, and commitment is therefore higher. This also becomes obvious in the much higher performance that can be seen in Figure 14.<sup>8</sup> Without participation, the gap between actual and desired performance can hardly be extinguished. For participation, performance still shows a gap to the base run, but this gap is diminished to some extent. Performance and the triggered open discourse thus represent important aspects when planning to implement change.

<sup>8</sup> The low point of the base run at around weeks 65 and 165 arises from an increase in adequacy mixed with a decay in experience through initiated change.



**Figure 13: Participation (BOT implemented and adequate processes)**



**Figure 14: Participation (BOT performance)**

**Implications**

Stepping back from the detailed model, six major feedback mechanisms were created. Figure 15 reveals that the balancing mechanism of the change loop is thwarted by inertia, by change in power and in demands as well as by emotions. These reinforcing loops hinder the main loop to equilibrate.



about the past experience with change that just hearing about a new change initiative works like a warning bell stirring up opposition. This makes it very difficult if not impossible to successfully initiate subsequent change initiatives. No matter how well thought out the initiatives may be, they are foredoomed to failure due to emotional resistance.

Some research does address the peculiar aspect of emotion; so for example, Vince and Broussine (1996) revealed different often ambiguous expressions of emotions during organizational change. Further research starts to address the issue; for example Mossholder et al. (2000) argue for a similar system of a hedonic change pleasantness which resembles emotional attitude to change and of a change arousal which resemble change energy.

Nevertheless, coming back to the system dynamics model, one has to admit that it is still a very limited model. It was on purpose kept general to make it applicable to a variety of change situations. If one looked at a specific change in a particular organization, like the privatization of the postal services or an adaptation to international standards of an educational organization, the model would need adjustments on how experience develops as well as on what kinds of behavior determine resistance. This is a facet that is so far left out of the model.

Future research therefore needs to address improvements to the existing parts of the model as well as extensions with other measures to facilitate change. Participation and discourse are the first drivers for change, but including aspects like leadership, trust, organizational culture, or further types of communication would give additional insights. Additionally, the simulation of incremental change promises to give interesting results. This may provide a clearer picture of the different effects of radical and incremental changes on the development of the different kinds of resistances.

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