Rethinking Classical Precondition Formulas of Changes

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SUMMARY

Some authors have expressed the most important preconditions of change success in different formulas. All formulas but one comprise a threshold value below which change cannot happen. The one without a threshold presumes proportionality between some factors and change success. These two approaches seemingly contradict each other. This paper resolves the contradiction by proposing a new model that comprises both a threshold value and a modified proportional relation that becomes valid beyond the threshold value. The conventional dimension of the 'result' is modified from 'change' to 'attitude towards change' because attitude in itself cannot guarantee that the planned change actually happens.

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INTRODUCTION

The purpose of the complex and multidisciplinary field of managing organisational changes cannot be anything else than wanting to make changes (more) successful. "Yet, according to optimistic estimates, only 30% to 40% of the change efforts organisations initiate attain their intended objectives." (Kim et al. 2011) Most such estimates put the probable success rate of change efforts around 30–35% (Beer & Nohria 2000; Ewenstein et al. 2015; Rogiest et al. 2015; Sirkin et al. 2005; Worley & Mohrman, 2014), while others (Al-Haddad & Kotnour 2015) claim it is even less than 30%.

Success or failure of change efforts can be examined from two different points of view: "(1) *criteria* of success and failure of change projects (evaluation criteria); and (2) *factors* of success and failure of change projects (reasons, causes)." et al. 2006) This paper focuses on the second type: on the preconditions of successful changes.

These preconditions, which have to come into existence before and during the change projects for their eventual success, are obviously essential parts of the change management body of knowledge. They have been formulated in several different forms by different authors (e.g., Beckhard, 1969, 1975; Beckhard & Harris, 1977, 1987; Buchanan & Boddy, 1992; Carnall, 2007; Dannemiller & Jacobs, 1992; Koller, 2014a, 2014b; Latham, 2015) following diverging ways of thinking. The first version was invented by a management consultant, David Gleicher of Arthur D. Little, the first-ever management consulting firm (Arthur D. Little, 2020), as an effective tool for focusing the attention of the client company's management on the most important change success factors. His formula made it easier for his counselling clients to structure and understand what had been a "fuzzy mess" before. Inspired by Gleicher, some other change management experts invented different versions of this change equation. These formulas proved to be useful in practice and became popular: some of them can be found in several change management course materials, and are used in consultancy, as well. But there are contradictions between the different versions, and even inconsistencies within the particular formulas themselves. The vital importance of knowing change success preconditions, the popularity of these formulas, their embarrassing inconsistencies, and the divergence between the different versions make the topic important and motivated us to examine these formulas more closely.

The aim of this conceptual paper is to suggest some new, critical thoughts for consideration, challenging the current dialogue regarding the necessary (pre)conditions of change success through a critical review of already existing precondition formulas and the synthesis of a new model that can resolve currently existing contradictions and thus help better management of

organisational change efforts. This paper presents comparisons, evaluations, and proposed improvements of the existing precondition formulas with the aim of contributing to the ever-present, multidisciplinary dialogue. In order to solve the contradiction between the two basic types of the different formulas (those with or without a threshold value), we propose a synthesised model with two different modified formulas, which are valid in two different domains of the impact of change efforts (one above and one below the threshold value).

The article is structured as follows: First, the already existing precondition formulas are reviewed and then discussed with special attention to the discoverable inconsistencies and potential contradictions. Then the suggested precondition formula is introduced through a physical analogy. The conclusions of this conceptual article highlight the real-life benefits of the suggested new approach.

LITERATURE REVIEW

There are several formulated preconditions that must be provided for selling change proposals and implementing those changes successfully. Neither of the formulas is dimensionally consistent (e.g. one of them compares energy to cost), but it is not their purpose to be so. *These are not real mathematical formulas, they do not show any relationships between measurable (e.g., economic) quantities, they express only qualitative concepts.* These formulas are not invented for measurements and calculations; they just help focus attention on the most important factors of change success in practice. They are qualitative, not quantitative formulas, simple but effective practical change management tools.

Different authors have proposed different formulas, and sometimes the same author's formula is cited slightly differently by others. The history of most of these formulas is clarified and documented by Koller (2014a, 2014b) and Latham (2015), but there are some other formulas that are not mentioned in the sources cited above. Continuing their formula history is out of the scope of this paper; the aim is to review, comment on, and compare the different versions found in the literature, and after that to propose a new advanced formula with an explanation of its advantages.

The first change formula originated from management consultancy as a useful practical tool for making the most important success factors of major changes clear for clients. Preconditions of successful changes were expressed for the very first time in the form of a symbolic inequality by David Gleicher in the 1960s. He did not publish it himself, but others did, either citing him (Beckhard, 1975; Beckhard & Harris, 1977; Buchanan & Boddy, 1992) or without citation (Beckhard & Harris, 1987). Gleicher's formula is the following:

$$C = A \times B \times D > X \qquad (1)$$

where C: change,
A: level of dissatisfaction with the status quo,
B: clear or understood desired state,
D: practical first steps toward a desired state,
X: 'cost' of changing.

The 'cost' can mean much more than money: it can comprise any kind of sacrifice the implementers must make for the success of the change effort. (For the validation of this formula in practice see Čudanov et al., 2019.)

Beer (1980) proposed the same formula with a practical modification: he used the first letters of the words in the formula, reminding us of the whole words behind the letters.

$$Ch = D \times M \times P > C \qquad (2)$$

where *Ch:* Change,
D: Dissatisfaction with the status quo,
M: a new Model for managing or organising,
P: a planned Process for managing change,
C: Cost of change to individuals and groups.

Beer attributed this formula to Alan Burnes of Corning Glass Works, but remarked that he had found a similar one in Beckhard and Harris' (1977) work, who attributed it to David Gleicher.

Buchanan and Boddy (1992) cited Gleicher's formula with some modifications. They also changed the characters to the first letters of the words in the formula but in a different way than Beer (1980) did: not only the names but also the order of the 'multiplicands' is different from Gleicher's version and Beer's version. The most important difference is that they omitted the equation on the left side and used only the inequality on the right side:

$$K \times D \times V > C \qquad (3)$$

where *K:* Knowledge of first practical steps,
D: Dissatisfaction with the status quo,
V: the desirable Vision of the future,
C: the Cost (material and psychological) of movement.

Dannemiller and Jacobs (1992) also used the first letters of the words in the formula, though in a slightly different way than Buchanan and Boddy. They modified the content of the formula as well: there is resistance on the right side of the inequality instead of cost:

$$D \times V \times F > R \qquad (4)$$

where *D:* Dissatisfaction with how things are now,
V: Vision of what is possible,
F: First, concrete steps that can be taken towards the vision,
R: Resistance.

Purser and Griffin (2008) combined Dannemiller's and Jacobs's version (4) with Gleicher's original formula (1): there is resistance on the right side of the

inequality as in formula (4) and an equation with change on the left side as in formula (1):

$$Change = (Dissatisfaction)(Vision)(First\ Steps) > Resistance \quad (5)$$

where the multiplicands are:

Dissatisfaction: dissatisfaction with the present situation,

Vision: a compelling vision of how the change will create a better future,

First Steps: the first steps for reaching the vision.

Carnall (2007) wrote a similar formula to Gleicher's original one (without referring to any source). The novelty of this version is that instead of change, it has 'energy for change' on its left side:

$$EC = A \times B \times D \quad (6)$$

$$EC > Z \quad (7)$$

where *EC:* energy for change,
A: felt dissatisfaction with the present situation,
B: level of knowledge of the practical steps forward,
D: shared vision,
Z: perceived cost of making change.

Pettigrew also created a formula of this kind (cited by Buchanan & Boddy, 1992, referring to Pettigrew's name but no particular publication):

$$C \times V \times L > I \quad (8)$$

where *C:* significant pressures and arguments for, change in the inner and outer Context of the organisation
V: the presence of Visionary leadership,
L: perceived Legitimacy of change proposals,
I: the organisational Inertia sustained by the current dominant ideology.

The letter *C* used by Pettigrew essentially expresses the same as 'dissatisfaction with the present state' does in the other formulas above. The first practical steps are missing from this version, but it has a new component instead: legitimacy. On the right side of the inequality, there is inertia instead of cost or resistance.

In a new version of the precondition formulas, Latham (2015) proposed four components instead of the traditional three:

$$D \times V \times FS \times B > R \quad (9)$$

where *D:* Dissatisfaction with status quo,
V: compelling Vision,
FS: First Steps,
B: Believability,
R: Resistance to change.

Here the new component is *B*, believability, which has three key elements: alignment and integration, sustainability, and logic. Alignment and integration is the degree to which the other three components are consistent and working together. Sustainability is the degree to which the change can be institutionalised and remain effective in the long run. Logic is the degree to which the first action steps make sense, given the gap between the status quo and the vision.

Bancroft (1992) cited a formula attributed to Beckhard (1969), which differs from all of the others from an important point of view:

$$C = (A \times B \times D)/X \quad (10)$$

where *C:* change,
A: dissatisfaction with the status quo,
B: vision of the future,
D: clear action steps,
X: cost.

While all the previously cited formulas have a threshold value, i.e., they are all inequalities, this one does not comprise any such threshold. This is a substantial conceptual difference: the threshold models suggest that there is no hope of accomplishing any change below a certain threshold value, while according to Beckhard's version, partial changes can still be possible if the whole change concept is not accepted in its entirety.

There are other preconditions of change success as well, not only the formulated ones. Formulas of this type comprise factors eminently influencing the attitudes of the stakeholders of the change, which are necessary but not sufficient preconditions of change success. There are three groups of enablers of successful changes: knowledge and skills, resources, and commitment (Al-Haddad & Kotnour, 2015). The attitudinal preconditions expressed by the formulas presented above refer to this commitment enabler, but the other two types of enablers are also needed for a successful change effort.

DISCUSSION OF THE FORMULAS KNOWN FROM THE LITERATURE

These change success formulas are not real mathematical ones. Their components are not quantifiable, and the dimensions of the two sides of the inequalities are either different (e.g., energy vs cost in Carnall's formula (7)) or cannot be determined at all. Actually, they express qualitative relationships, not quantitative ones. Even so, their important attribute is that they all comprise a kind of multiplication: if any multiplicand is zero, then the result of the multiplication will be zero, irrespective of the magnitude of the other multiplicands, that is, the change effort has a poor chance of success.

There is an important difference between Formula (10) attributed to Beckhard by Bancroft (1992) and all the other versions: each of the other ones comprises some kind of threshold value below which the change cannot begin. In Beckhard's formula (10) there is not any kind of threshold value: according to that version, a change, bigger or smaller, always takes place in proportion to the magnitude of the ratio on the right side of the equation. These two kinds of thought seemingly contradict each other, but we propose a solution to resolve this contradiction in an improved model.

In Gleicher's original formula (1) and in Purser and Griffin's (2008) version (5), the idea of combining an equation and an inequality into one formula, namely

putting ‘change’ onto the left side of an equation when there is an inequality on the right side of it with a threshold value, is questionable. If the magnitude of the product is higher than zero but lower than the cost as a threshold value, then the two sides of the formula contradict each other: the equation promises the possibility of change, while the inequality shows the impossibility of it. Two out of the six authors of the different versions with threshold values (Bancroft (1992) and Beer (1980)) left this equation unaltered with change on the left side of formulas (2) and (10). Carnall (2007) replaced ‘change’ with ‘energy of the change’ in formulas (6) and (7), while the other four authors simply omitted the equation. Carnall’s ‘energy of the change’ resolves the contradiction because it does not promise that change will happen below the threshold value. Therefore, we prefer either Carnall’s modified left side or the omission of the left side to Gleicher’s original version.

Latham’s (2015) additions in Formula (9), the three components of believability (namely alignment and integration, sustainability, and logic), are all debatable. The first one, alignment and integration, means the consistency and co-working of the three classical multiplicands. But such classical multiplicands’ attributives such as ‘clear’, ‘understood’, ‘desirable’, or ‘shared’ mean that people think that the planned new state would be better than the present state, in other words, the plan is consistent with the assessment of the situation. And such attributes as ‘possible’, or ‘can be taken’ mean that the planned action steps are consistent with both the present and the planned new state. The authors of the other formulas obviously considered the multiplication as a whole, with consistent components. Any multiplicand that is inconsistent with the others could not be called ‘desirable’ or ‘possible’. The second addition, sustainability, is an evidently implicated attribute of the (desired, desirable, possible, shared, compelling) vision, not a separate factor. And the last one, logic, means whether the first steps make sense or not. But the classic multiplicand, called ‘first steps toward a desired state’, or ‘a planned process for managing change’ etc. obviously means the existence of proper plans and first steps, not improper ones. Therefore, these additions are unnecessary because they are obviously inherent in the other multiplicands.

Dannemiller and Jacobs (1992), Purser and Griffin (2008), and Latham (2015) put resistance to the right side of the inequality in Formulas (4), (5) and (9), respectively. We disagree with presuming that there is resistance to every change initiative; reactions to changes can be neutral or supportive as well. Change sponsors and agents have to sell the change proposal to those who are affected by the change; they have to win the stakeholders to their cause. Surpassing resistance can be a part of this process, but it is not the same thing. People affected by the change do not necessarily automatically resist any kind of change – their reactions can be neutral, or they may welcome and enthusiastically support the change initiative. On the full spectrum of reactions to change, see, for example, Choi (2011); Conner (1993); Giangreco and Peccei (2005); Oreg et al. (2011); Rafferty et al. (2012); or Wittig (2012).

We agree with both of Pettigrew’s modifications in Formula (8): 1) inserting legitimacy into the factors of the production, and 2) writing inertia on the right-hand side of the inequality. Legitimacy refers to the opinions of the target persons or groups of the change about the appropriateness of the way the change is managed, i.e., do they accept the way sponsors and agents initiate and implement the change or not.

As for inertia, every organisation has a certain amount of inertia that has to be overcome when the organisation wants to change its direction. Inertia plays a similar role in organisations as the keel in boats: without a keel, the boat would be nimbler but would also become unstable; a massive wave could overturn it easily. The keel makes changes in the direction more difficult, but it stabilises the boat at the same time, which is vitally important. An organisation’s inertia does the same. Either too low or too high inertia can cause trouble. Too low inertia means something like this: “Every few months, our senior managers find a new religion. One time it was quality, another it was customer service, another it was flattening the organisation. We just hold our breath until they get over it and things get back to normal” (Hammer, 1990). Too high inertia can be characterised by the famous saying of Jack Welch: “If the rate of change on the outside exceeds the rate of change on the inside, the end is near.” A normal amount of inertia of a healthy organisation has to be and can be overcome if necessary.

On the right side of the inequality, we prefer inertia not only to resistance (see the reasoning above), but to cost as well. Cost always means something negative, a kind of loss or sacrifice, which has to be minimised, in an ideal case nullified. But inertia has a very important benefit for the organisation: stability, so it must not be reduced beyond measure.

In addition, inertia’s meaning is broader than just the cost of a particular change. Inertia manifests itself in particular changes but does not depend only on the actual change, but also on the organisation’s capability to change in general. This capability evolves during the organisation’s life also as a result of the impacts of past events, not only due to the actual change. The organisation’s history always has to be taken into account when a change strategy is planned (e.g., Endsley, 1994; Nadler, 1988; Nadler & Tushman, 1979, 1980, 1997; Tushman & Nadler, 1986). There are several theories of (different aspects of) the organisations’ capability to change, given different labels, for example, change capacity (Buono & Kerber, 2010), ever-changing organisation (Pieters & Young, 1999), nimbleness (Conner, 1998) or resilience (Conner, 1993; Välikangas, 2010). Taking account only the cost of the actual change but not the organisation’s capability to change in general would be a narrow-minded

approach; therefore, using inertia as the threshold value is a more effective concept than using cost.

THE PROPOSED PRECONDITION FORMULA

The contradiction between the approaches with and without threshold values can be resolved. Since we found a physical analogy by Lind and Sulek (1994) useful in understanding the nature of organisational changes, we decided to use a similar one: the analogy of the current-voltage characteristic, or I–V graph of semiconductor diodes (for an accessible introduction see, e.g., Kuphaldt, 2016)—confined to its forward bias behaviour for the sake of simplicity. Incidentally, this analogy could be referred to as the backward bias behaviour as well, which has a different physical explanation, but this difference would be unimportant from our viewpoint. The forward bias region was chosen in order to avoid using the technical term 'breakdown' (when the diode begins to conduct current in the backward bias region) because it could cause negative associations like 'resistance is harmful and have to be repressed'. We do not want to support such falsely preconceived ideas with an infelicitous term unintentionally. The technical terms of 'threshold voltage', 'cut-in voltage', or 'knee voltage' used for describing the diode's behaviour in the forward bias region cannot cause such negative associations.

In the forward direction only a very little (practically no amount of) current flows until a threshold (or cut-in, or knee) voltage is reached. If the voltage placed across the diode becomes greater than the threshold voltage, then the diode 'turns on', i.e. current will flow through it, limited only by the (very small) resistance of the diode's material.

We perceive an analogy between reactions to change and the behaviour of semiconductor diodes. Change formulas comprising threshold values describe a phenomenon similar to the threshold voltage of the diode. In the initial stage of change efforts, called 'unfreezing' by Lewin (1947), below the threshold value, just as 'current will not flow', change cannot be set into motion. Above the threshold value 'current will flow', Lewin's 'moving' stage of the change can begin, and Beckhard's formula without any threshold value becomes valid. Thus, the two approaches, the one with a threshold value and the other without it, do not necessarily contradict but can complement each other. The proposed formula integrates the two approaches.

Three questions have to be answered in order to assemble a new formula using the diode analogy:

- What multiplicands should comprise the multiplication?
- What should be the 'result' of this multiplication?
- What should be the threshold value?

The first question is: what components should comprise the improved formula's multiplication? Gleicher's three classical factors in Formula (1), dissatisfaction with the status quo, compelling vision, and (first) steps, are included in almost all known formulas, except for Pettigrew's version in Formula (8). Only the wordings differ slightly, but they all mean the same. We consider these three factors vitally important, so we applied all of them in our suggested formula. As was shown above, Pettigrew (cited by Buchanan & Boddy, 1992) added 'legitimacy' to the three classical factors, which we also consider very important. Therefore, it is also used in the suggested new formula, but not as a separate multiplicand because it is an attribute of the steps forward only, it does not refer to the whole multiplication. Legitimacy was inserted into the wording of the practical steps instead. This way, the phrasings of the three multiplicands can comprise every important attribute taken from the different versions cited above.

The second question is: what kind of 'result' should be chosen for the product of this multiplication? Some of the known formulas equate it with change or with the 'energy for change', while some versions do not give a name to this product. We chose the 'energy for change' because – as said earlier – the magnitude of change depends not only on the effect of the change agent's efforts on the attitudes of the change targets but also on several other factors, while these formulas apply only to the attitudinal aspect. Therefore, the proposed multiplication and its product are the following:

$$E = D \times V \times S \qquad (11)$$

where
- E: Energy for change,
- D: clear and shared Dissatisfaction with the status quo,
- V: clear and shared Vision of the desired state,
- S: clear, shared, and legitimate practical Steps forward.

As was mentioned above, the phrasings of the multiplicands in the new version express factors that were additional multiplicands in some other versions.

The third question is: what should be considered the threshold value, i.e., what is the analogy of the diode's knee voltage? We have already reasoned why we prefer Pettigrew's 'inertia' to the terms 'resistance' or 'cost' for being the threshold value. We find inertia a very expressive and useful concept, so we accept and use it as the threshold value. True, if energy is compared with inertia, then the formula becomes dimensionally inconsistent—as are each of tthose taken from the literature. However, we do not consider it a significant shortcoming because, as we have already clarified, these formulas are not real mathematical ones; they express qualitative relationships regardless of the dimensions. (Incidentally, this dimensional inconsistency could be easily remediated by using 'energy needed to overcome inertia' instead of just 'inertia', but it is needless to try being dimensionally consistent when the multiplicands have no measurable physical dimensions at all. As

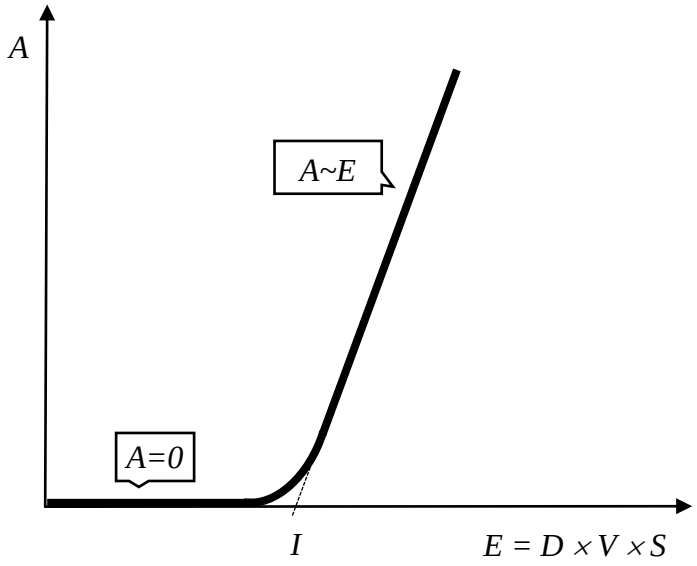

Figure 1. Graphic representation of the proposed formula

Aristotle said: 'It is the mark of an instructed mind to rest content with that degree of precision which the nature of the subject permits and not to seek exactness where only approximation of the truth is possible.') Therefore, the following inequalities can be used:

$$\text{if } E < I \text{ then } A = 0 \qquad (12)$$

$$\text{if } E \geq I \text{ then } A \sim E \qquad (13)$$

where E: Energy for change,
I: organisational Inertia,
A: favourable Attitude towards change,
~: proportionality.

Figure 1 shows a graphic representation of the formula that was explained above using the analogy of the I–V graph of semiconductor diodes in the forward bias region.

It is important that the vertical axis of Figure 1 represents *attitude towards the change*, not change. The concept of attitude is based on the theory described in social psychology by Katz and Scotland (1959). Attitude has three components: affective (or emotional), cognitive, and conative (or behavioural) ones. The affective dimension contains the emotions, feelings of the individuals. The cognitive dimension refers to what individuals think about something, how they assess it. The conative dimension tells about what kind of intentions drive their actions. "Behavioural responses are outcomes of the cognitive and emotional reactions" (Smollan, 2006: 143). But actual actions are influenced not only by intention: some external non-volitional factors can also modify the actors' intended behaviour, that is, some circumstances can force them to act in a different way than they would have intended to act without those constraints. There can be several practical obstacles in the way of carrying out a change initiative. Each multiplicand in every formula influences the intentions (via the affective and cognitive components); none of them refers to other circumstances that determine the feasibility of the intended actions. It would be just a naive illusion to think that a positive attitude and a strong intention to change guarantees that the desired change is really going to happen. That is why we use 'attitude' instead of 'change' in our model.

Proportionality between energy and attitude does not mean linear or any other kind of proportionality that could be expressed with exact mathematical functions. As already stated, these change success formulas are not real mathematical ones, and this applies to this exactly undefinable proportionality type as well.

Unlike the formulas cited earlier, the suggested new version does not state anything about the partial or complete implementation of the change, about its speed, its degree of success, or the duration of the emergent new state. As mentioned before, these attributes of the change depend on several other factors than the attitudes of the change targets; therefore, we do not regard any postulation about the change itself justifiable. We just propose to state that:

- if the energy for change is lower than a certain threshold value, then it cannot overcome the organisation's inertia, but
- if it exceeds the threshold value, then it favourably influences the attitude towards the change—the bigger, the better.

More than that cannot be stated reliably and responsibly without comprehensive knowledge about the conditions and circumstances of the actual change effort.

CONCLUSION

In this study, we analysed the different change success precondition formulas, finding that there are both common and differing elements of the different change success precondition formulas, and there are contradictions within some of the formulas themselves, not only between different formulas. Any formula (or model) without such contradictions could help organisational change theorists and also practitioners get a step closer to what is needed for successful change implementation.

This article, therefore, proposed a suggestion for the improvement of the classical precondition formulas of changes that is free of contradictions, utilising the elements of some previous models with modifications. The new version synthesises the two approaches that were already found in the literature (the ones with a threshold value and the one without threshold value) into one unified model.

The additional added value of the new version lies in the proposed formula's capability to describe what happens below the threshold value, as well as what happens above it, without being self-contradicting like many of the previously existing formulas. We believe that the analogy of diodes and the visual presentation of the newly synthesised model is graphic enough to make people understand that even after exceeding the threshold value, there is still more to be done to ensure the fulfilment of success criteria.

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