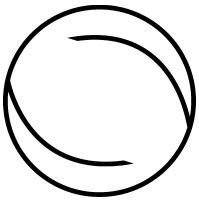

# Making Sense of Theory Construction: Metaphor and Disciplined Imagination

Joep P. Cornelissen


## Abstract

This article draws upon Karl Weick's insights into the nature of theorizing, and extends and refines his conception of theory construction as 'disciplined imagination'. An essential ingredient in Weick's 'disciplined imagination' involves his assertion that thought trials and theoretical representations *typically* involve a transfer from one epistemic sphere to another through the creative use of metaphor. The article follows up on this point and draws out how metaphor works, how processes of metaphorical imagination partake in theory construction, and how insightful metaphors and the theoretical representations that result from them can be selected. The paper also includes a discussion of metaphors-in-use (organizational improvisation as jazz and organizational behaviour as collective mind) which Weick proposed in his own writings. The whole purpose of this exercise is to theoretically augment and ground the concept of 'disciplined imagination', and in particular to refine the nature of thought trials and selection within it. In doing so, I also aim to provide pointers for the use of metaphorical imagination in the process of theory construction.


**Keywords:** metaphor, disciplined imagination, theorizing, creativity, analogy, jazz, organization theory

*Joep P. Cornelissen*
University of Leeds, UK

## Introduction

Through his many writings on theory construction and theorizing (e.g. Weick 1989, 1995a, 1999b), Karl Weick has sketched an account of organizational theorizing as an ongoing and evolutionary process where researchers themselves actively construct representations — representations that form approximations of the target subject under consideration and that subsequently provide the groundwork for extended theorizing (i.e. construct specification, development of hypotheses) and research. The most detailed account of this process is provided in his awarded 1989 article on 'theory construction as disciplined imagination' (Weick 1989), wherein theory construction is likened to artificial selection as 'theorists are both the source of variation and the source of selection' when they construct and select theoretical representations of a certain target subject (Weick 1989: 520). Furthermore, in constructing theory, Weick suggested, theorists and researchers design, conduct and interpret imaginary experiments where they rely upon *metaphors* to provide them with vocabularies and images

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to represent and express organizational phenomena that are often complex and abstract. The various metaphorical images simulated through such imaginary experiments, then, are further selected through the application of specific selection criteria and possibly retained for further theorizing and research. As such, theory construction resembles the three processes of evolution: variation, selection and retention (Weick 1989).

At the heart of 'disciplined imagination' lies the role played by metaphor as the vehicle through which imagination takes place and as the source — as a simulated image — for theoretical representations that as mentioned may come to be selected and retained for extended theorizing and research. Here, Weick (1989) joins ranks with a long line of commentators in organization studies (e.g. Cornelissen 2004; Morgan 1980, 1983; Tsoukas 1991) and beyond (e.g. Danziger 1990) that have emphasized the use of metaphor, as a cognitive and heuristic device, in schematizing theoretical perspectives, in inviting academic researchers to view and understand phenomena in a new light and to recognize conceptual distinctions that were inconceivable before, and in providing the groundwork and models for extended organizational theorizing (construct specification, formulation of hypotheses, etc.) and research.

Although Weick's (1989) discussion of 'disciplined imagination' effectively placed metaphor at the core of theory construction, he did not further elaborate on how metaphors actually *work*, nor did he mention what kind of heuristics organizational researchers may use to produce and select useful metaphorical images of organizational subjects. In fact, the organizational literature as a whole has paid little attention to questions concerning how metaphors work and how effective metaphors are developed and selected, while showing a general agreement with Weick (1989) on the fundamental and constitutive nature of metaphor in organizational theorizing (e.g. Cornelissen 2004; Grant and Oswick 1996; Putnam et al. 1996; Putnam and Boys 2006). Because of this neglect in the literature, I aim to augment Weick's conception of 'disciplined imagination' by clarifying how metaphors are used in organizational theorizing and how rich and meaningful metaphors can be imagined. This discussion is illustrated with different metaphors-in-use within organization studies, including the 'organizational improvisation as jazz' and 'collective mind' metaphors which Weick himself has worked with and promoted through his own writings. I then use the insights from this exercise to refine the process of 'disciplined imagination', particularly in terms of specifying the particulars of metaphorical imagination and of imagining effective metaphorical images, and in turn provide clear pointers for the use of metaphorical imagination in the process of theory construction.

In what follows, a synopsis of the concept of 'disciplined imagination' and its contribution to the subject of organizational theorizing is provided. Here, I will also consider the 'evolutionary epistemology' associated with 'disciplined imagination' and what this suggests for metaphorical imagination and the body of knowledge in organization theory. I then move on to a more specific and detailed discussion of the way in which metaphors work and contribute to theoretical representations, using insights from cognitive linguistic research on metaphor as well as selected case studies of metaphors-in-use ('organizational

improvisation as jazz' and 'organizational behaviour as collective mind') within organization studies. Following on from this discussion, I also explore the heuristics that play a part in the development and selection of effective metaphors in organizational theory. I then integrate the insights from this exploration within the existing framework of 'disciplined imagination' to provide a theoretically augmented and more robust account of the process of theory construction. I conclude with a discussion of the implications of my extension to 'disciplined imagination' for theory construction within organization studies.

## 'Disciplined Imagination': Processes and Contributions

Prior to Weick's article in 1989, many commentaries had considered the process of theory construction as a mechanistic and linear process of moving from problem statements to constructs and testable propositions. As Weick noted, because of this characterization, most descriptions considered theory construction as a linear process of problem solving, and showed a concomitant concern with 'outcomes and products rather than process' (Weick 1989: 517). Weick (1989) suggested instead to view theory construction as a process of 'disciplined imagination', and in doing so introduced a shift in focus from the rule-based generation of theory, which may have been the dominant view in the past (e.g. Daft and Lewin 1990; Pinder and Bourgeois 1982), to the topology of metaphors, to creative variation in imagination, and to the projection from one domain to another of conceptual organization (Weick 1989).

'Disciplined imagination' poses an evolutionary process of theory construction that is characterized by simultaneous rather than sequential thinking and revolves around three components: problem statements, thought trials and selection criteria. These components represent reference points in the process where researchers can act differently and produce theories of better quality. As Weick remarks,

> 'theory construction can be modified at the step where the problem is stated (make assumptions more explicit, make representation more accurate, make representation more detailed), at the step where thought trials are formulated (increase number of trials generated, increase heterogeneity of trials generated), and at the step where criteria select among thought trials (apply criteria more consistently, apply more criteria simultaneously, apply more diverse criteria).' (Weick 1989: 529)

Four characteristics of 'disciplined imagination' are important to fully understand and appreciate this particular perspective upon theory construction. A first characteristic is that 'disciplined imagination' assumes an active role for researchers who construe theoretical representations, rather than seeing such theoretical representations as deductively or naturally following from problem statements. In other words, 'disciplined imagination' is rooted in the view that the 'logic' of scientific discovery, including the process of theory construction, is psychological, that is, a matter of heuristics — and not just logical, that is, composed of deduction and predictions (see also Simon 1973). Weick (1989: 519) remarks to this effect that theorizing is typically more like artificial selection than natural

selection as 'the theorist rather than nature intentionally guides the evolutionary process [of selecting theoretical representations]'.

A second characteristic of 'disciplined imagination' is that it suggests that metaphorical imagination is the central epistemic logic that is used to develop and select theoretical representations in relation to a target subject or problem (see also Morgan 1980). Here, researchers are seen to engage in a number of mental experiments or thought trials where they iterate between reviewed literature, preliminary analyses, background assumptions and their own intuition to consider a rich cascade of metaphorical images as representations of the subject or problem in hand ('imagination') before selecting and deciding upon one metaphorical image that serves as a starting point for a further inquiry into it ('discipline'). Metaphorical imagination thus typically includes a combination of both deductive reasoning, based upon a reading of the available literature on the topic, and inductive reasoning through intuitive thinking, rather than a focus on either one (Weick 1989). In Weick's (1989: 529) own words, 'theorists depend on pictures, maps, and metaphors to grasp the object of study', and 'have no choice [in this], but can be more deliberate in the formation of these images and more respectful of representations and efforts to improve them'.

A third characteristic of 'disciplined imagination' is that it emphasizes that the representations that result from the heterogeneous variation of (metaphorical) images in relation to a target subject or problem can only be selected and assessed on the basis of judgements of plausibility (rather than validity) and their subsequent currency for extended theorizing and research. That is, (metaphorical) imagination leads to simulated images which cannot themselves be directly falsified but can however be elaborated on to form more full-scale representations of a subject or problem. Here, Weick (1989) anticipates the important difference between metaphorical images that exist in a pre-conceptual, non-propositional form and the theoretical models, constructs and propositions that are derived from them and that figure in extended theorizing and research. Metaphorical images are embodied imaginative structures of human understanding that give coherent, meaningful structure to our experience at a pre-conceptual level (see also Johnson 1987), although indeed, within our theorizing endeavours, we often proceed with discussing them in the abstract and reducing and explicating them in propositional terms (see also Folger and Turillo 1999; Morgan 1980, 1996).

The fourth characteristic concerns the 'evolutionary epistemology' that underlies much of Weick's work (e.g. Weick 2004) including the notion of 'disciplined imagination'. In 'disciplined imagination', this evolutionary perspective suggests first of all that theory construction involves a process of variation, selection and retention of theoretical representations. Moreover, it suggests that better theorizing results from multiple and heterogeneous variations of representations to arrive at the one(s) with survival value. In this sense, 'disciplined imagination' is reminiscent of Koestler's (1964) well-known comments on the development of new conceptual insights. Koestler (1964: 264) likened this to the process of biological evolution, claiming that 'new ideas are thrown up spontaneously like mutations; the vast majority of them are useless, the equivalent of biological freaks without survival value'. The creative process, accordingly,

is seen as something like a series of trial-and-error tests of the various metaphoric combinations of concepts possible.

### Focusing on the Evolutionary Epistemology of 'Disciplined Imagination'

It is worth mentioning in relation to this last point that in subsequent writings, Weick's evolutionary perspective of theory construction has shifted somewhat. In his 1989 article, Weick assumed that a variation of multiple and different metaphorical images normally provides for a sufficiently rich ground for arriving at a plausible representation of a certain target subject or problem. In his writings since, Weick has stretched the evolutionary logic further by suggesting that the *creation* of new insights and conceptual advances is important for the continuous development of organization theory, and that, as such, researchers should be striving to break new ground in the metaphorical correlation of concepts (Weick 1993, 1998, 1999a). According to Weick, conceptual advances come about when instead of scouting out old ground for neglected gems, we cover new ground by examining empirical contexts previously overlooked but potentially illuminating of large-scale human organizations (Weick 1993, 1999a) and by conceptually associating ideas that were not previously related, let alone associated with one another (Weick 1998, 1999a). The implication that follows from this last point is twofold: first, researchers need to creatively search for new, possibly foreign concepts to compare metaphorically with the target concept of organization in order to probe and possibly advance organization theory further. Second, 'disciplined imagination' is seen as part of an ongoing process of theoriz*ing.* Weick, in his own words, prefers theorizing to theory (Weick 1995a, 2004). He prefers an ongoing and creative process of metaphorical imagination and theoretical conjectures over a teleological view of theory as fixed reference points (or 'truths') to attain (Weick 1995a, 2004).

## Metaphor, Semantic Leaps and 'Disciplined Imagination'

Throughout his writings, Weick (1989) recognizes the creative component to associative thought and to the creation of metaphor. Ideas or concepts are capable of entering into relations with an unlimited variety of other ideas or concepts (Anderson 1976: 147), rather than a limited set of predefined categories. In Weick's words, scholars pull from different vocabularies (Weick 1995b: 107) in the creation of metaphors and through the use of such metaphors supply 'language with flexibility, expressibility and a way to expand the language' (Weick 1979: 47). As such, there is a certain dynamism and fluidity to metaphors, with words and concepts existing in a continuous, analogue fashion in our semantic memory (Johnson 1987; Lakoff 1993) that, when connected to another concept, can be brought to bear upon a different realm of our experience. The 'theatre' concept, for instance, has been metaphorically connected to concepts as diverse as 'identity' formation within social psychology (e.g. Goffman 1959), 'human consciousness' within the cognitive and brain sciences (e.g. Baars 1997), and 'rituals and behaviour' within organization theory (e.g. Mangham and Overington 1987).

What this suggests is not only that our semantic memory allows us to connect up a vast range of different experiences that manifest the same recurring structure, but also that concepts themselves are semantically not rigid or fixed (and strictly ordered in hierarchical relationships or categories), but can in a more fluid sense be applied and connected to other concepts in and through the use of metaphors (see also MacCormac 1986).

Weick emphasized this point in his early writings; both in the 1979 edition of *The Social Psychology of Organizing* (Weick 1979) and in his 1983 and 1984 articles written in collaboration with Richard Daft (Daft and Weick 1984; Weick and Daft 1983) he emphasizes that metaphorical imagination is creative (beyond existing realms of knowledge within organization theory) but assumes certain presuppositions about what an organization is perceived to be. As Weick and Daft (1983: 72), for example, suggest, organizations are 'vast, fragmented, elusive, and multidimensional', which requires the investigator to make a presupposition as to the basic nature of organization. To adopt a perspective (however limited or faulty it may eventually turn out to be) means seeing through a lens, and primarily a metaphorical one. Are organizations, they ask rhetorically, 'input-output systems, resource allocation systems, collections of humans with needs to be met, growth and survival systems, tools in the hands of goal-setters, coalitions of interest groups, transformation systems' (Weick and Daft 1983: 172), or what? Given that an organization is patently not an object in the usual sense of something to be physically apprehended by the senses, such metaphorical images and related presuppositions about an organization are necessary (Weick 1979: 47). At the same time, as Weick's (1979) criticism of the military metaphor of organization highlights, he is in favour of certain metaphors over others, given their potential for theorizing and their impact upon managerial practice.

Summarizing Weick's views on metaphor across these writings, it appears very strongly that he considers metaphor not only as quintessential to theory construction but also as demonstrating the productive character of meaning construction. In this sense, Weick anticipates that rather than just retrieving and instantiating frames or lexicalized relationships between concepts or terms, metaphorical language sets up a creative and often novel correlation of two concepts or ideas which forces us to make *semantic leaps* to create an understanding of the information that comes off it (Coulson 2001). Taking this point even one step further, it appears that Weick (1989) favours a view of the creative, unexpected and online development of metaphorical language over a view that assumes conventionalized and fixed patterns of metaphorical thinking about organizations. The latter view is characteristic of conceptual metaphor theory (CMT) (Lakoff 1993; Lakoff and Johnson 1980) which suggests that patterns in everyday linguistic expressions point to the existence of a system of conventional conceptual metaphors, such as 'love is a journey', 'argument is war', and so on. Such patterns may indeed exist within organization theory; for example in our use of the now conventional metaphorical images of organizations as machines, open systems or organisms (Baum and Rowley 2002).

However, CMT cannot account for all metaphors of organization that may potentially emerge and effectively denies the possibility favoured by Weick that new metaphors are imagined, selected and possibly retained. A further difficulty

involves the directionality that CMT assumes with the source concept acting as a lens for the target — evidence from empirical research rather suggests that metaphor comprehension involves more than a set of directional mappings from a source to a target domain (e.g. Coulson 2001). Instead of assuming that a discrete metaphorical structure exists (Gibbs 1996), metaphorical meaning arises out of the active combination and blending of information from *both* the target and source concepts. Tourangeau and Rips (1991), for example, have found that many of the features listed for metaphoric meanings were emergent; they were not established parts of either of the concepts conjoined in the metaphor. They suggested that this pattern of data argues against CMT.

An alternative branch of theory, conceptual blending (CB) (Fauconnier and Turner 1998, 2002), accommodates these difficulties and assumes with Tourangeau and Rips (1991) that metaphor comprehension requires the *transformation* rather than transfer of properties from one concept to another. CB suggests that the metaphorical correlation of concepts sets up a number of blending processes in which the imaginative capacities of meaning construction are evoked to produce emergent meaning. The strengths of CB theory are that it provides an account of how metaphorical meanings are actively constructed within Weick's 'disciplined imagination'. In addition, CB theory suggests that the 'products' of metaphorical mappings are more influential when they adhere to a set of specific principles known as the 'optimality principles': a set of constraints under which metaphors are most effective. Fauconnier and Turner (1998) argue for six such optimality principles. In addition, I suggest and illustrate two further 'optimality principles' which on the basis of evidence from research on metaphors within organization studies are also relevant (see Cornelissen 2004, 2005). The following section outlines the role of metaphorical imagination within the process of 'disciplined imagination' and discusses the impact of these optimality principles on the development, selection and retention of metaphors and the theoretical representations that stem from them.

## Imagining Apt and Meaningful Metaphors

Weick (1989) noted that organizational researchers, like scientists in other social scientific fields, not only *direct* themselves the metaphorical imagination process but also subsequently *select* the theoretical representation(s) for the target subject under consideration. In one sense, this *artificial* selection process, to paraphrase Weick (1989), is reflected in the huge variety of ways in which the subject of organization itself has been thought of and represented. There follows a discussion of two metaphors, 'organizational improvisation as jazz' and 'organizational behaviour as collective mind' which Weick himself has imagined, selected and advanced in his writings.

### Example 1: Organizational Improvisation as Jazz

Conceptual blending theory suggests that the metaphorical correlation of concepts sets up a number of blending processes in which the imaginative capacities of

meaning construction are evoked to produce emergent meaning. Such emergent meaning arises out of the operation of three blending processes: composition, completion and elaboration (see also Cornelissen 2004, 2005). *Composition* involves attributing a relation from one concept to an element or elements from the other input concept. Within metaphors, this means that a frame for a source concept such as 'jazz' has been mapped onto an abstract target concept as 'improvisation within organizations'. Such compositional mappings are normally guided by perceived relationships of identity, similarity or analogy between the target and source concepts, where these perceived commonalities provide the semantic rationale for the metaphorical correlation of the concepts involved (Oakley 1998). In this first example, the composition of 'jazz' and 'organizational improvisation' was based on the 'minimal structure' and related degrees of improvisation (i.e. a continuum that ranges from interpretation via embellishment and variation to improvisation) that was seen to be integral to both 'jazz' and 'improvisational work processes' within organizations (Weick 1998). *Completion* is pattern completion that occurs when structure in the composition matches information in long-term memory. Because we complete the jazz frame for organization with the inference that organizing or managing is itself an exercise in improvisation (e.g. Kamoche et al. 2003; Weick 1998), the composition is completed with information about jazz, including the use of musical structures (a song that is known, a melody or tune adhered to, music theory which functions as grammar or cognitive rules for generating, selecting and building upon new music ideas) and of minimal social practice structures (behavioural norms regulating soloist role transitions in the collective, verbal and nonverbal communicative codes) (Bastien and Hostager 1988; Kamoche et al. 2003) that guide improvisational processes and actions. In the integration of 'jazz' and 'organizational improvisation', the metaphorical composition is thus completed with information about jazz and organizational improvisation, and the inference that organizational improvisation is performative in nature, guided by technical structures and minimal social structures and involving simultaneous reflection and action, simultaneous rule creation and following, continuous mixing of the expected with the novel, and the feature of a heavy reliance on intuitive grasp and imagination (e.g. Bastien and Hostager 1988; Kamoche et al. 2003). Completion is closely related to *elaboration*, a process that involves imaginative mental simulation or 'running' of the event in the composition made according to its emergent properties and logic. The 'jazz improvisation' blend, for example, is elaborated with a mental image of members of the organization composing and performing their (inter)actions deliberately, collaboratively, simultaneously, temporarily and in real time, while guided by minimal social structures and their collective memories. Elaboration of the blend leads to an emergent meaning that as mentioned is non-compositional — information from the target ('organizational improvisation') and source ('jazz') concepts is not only collapsed into one composition, and transformed and completed, but also elaborated on in a mental or imaginary sense so that a new, emergent meaning is established. Writers such as Weick (1998: 549) and Kamoche and Cunha (2001) illustrate this when they talk of organizational improvisation as involving a 'conversation' between an emerging pattern in 'performing' and such things

as formal features of the underlying 'composition', previous interpretations, the actor's own logic, responsiveness of the organizational culture, procedures and systems, and the expectations and roles of the other actors and stakeholders involved.

### Example 2: Organizational Behaviour as Collective Mind

In this second example, the behaviour of individuals within an organization is likened to neural processes and operations in the brain. The metaphor employs the language of neural tissues, and their associated physiological processes, to describe and explain collective behaviour within an organization. The *composition* between 'organizational behaviour' and 'mind', then, follows from a constructed resemblance between the view of mind as a 'vibrating network of synchronous associations rather than a linear tract of stimulus-storage-reproduction' (Draaisma 2000: 161) and of organizational behaviour as equally involving patterns of interrelated actions in an organizational setting (Weick and Roberts 1993). The composition of 'organizational behaviour as collective mind' is subsequently *completed* with the inference that thinking or intelligence, as in the case of a mind, is an *emergent* effect produced by the spontaneous, self-organized functioning of a complex network of neural activities (Dupuy 2000). The term used by cognitive psychologists to capture this process is 'intentionality' — cognition as understood through this metaphor is said to be 'intentional'. At the organizational level of analysis, theorists seeking to develop accounts of the 'organizational mind' or 'collective mind' (e.g. Sandelands and Stablein 1987; Weick and Roberts 1993) have similarly argued that the thinking capacity of organizations, or intelligence, is an emergent effect, manifested through the actions of distributed networks of individuals (akin to neural agents) which are systematically interrelated in the form of detectible, 'emergent' patterns. These patterns, then, have through metaphorical completion come to be seen as 'intelligent', 'heedful' or 'intentional' (Weick and Roberts 1993). The subsequent *elaboration* of the metaphor results in a view of 'organizational mind' or 'collective mind' not just as an emergent effect, but imagines an organization as a connectionist system that is able to 'produce' thinking or intelligence, this being an emergent property of the system as a whole. The implication of this emergent metaphorical meaning is that organizational behaviour and thinking cannot be localized at some lower level of analysis such as the level of individual actors or elemental subgroups (Weick and Roberts 1993).

Both these metaphors have created new images and theoretical representations of organizations, and have been referred to, discussed and examined in writings in the field (see, for example, Kamoche and Cunha 2001; Kamoche et al. 2003; Orlikowski 2002; Tsoukas 1996). Both metaphors are good examples of how metaphors lead to emergent meaning (and cannot therefore be reduced to the meanings of its component parts), and as such have enriched the conceptualization (and subsequent understanding) of 'organizational improvisation' and 'organizational behaviour' and have generated novel inferences and conjectures, in line with Weick's view of 'disciplined imagination'. Both these

Table 1. The Optimality Principles of Metaphorical Imagination

| Principle | Definition | Organizational improvisation as jazz | Organizational behaviour as collective mind |
|---|---|---|---|
| Integration principle | That representations in the metaphorical blend can be manipulated as a single unit | Satisfied | Satisfied |
| Topology principle | That relations in the metaphorical blend should match the relations of their counterparts in other semantic domains | Satisfied | Satisfied |
| Web principle | That the representation in the metaphorical blend should maintain a relationship to the input target and source concepts | Satisfied | Satisfied |
| Unpacking principle | That, given a metaphorical blend, the interpreter should be able to infer the structure in relation to other subjects and applications | Satisfied | Satisfied |
| Good reason principle | That creates pressure to attribute significance to elements in the metaphorical blend | Satisfied | Satisfied |
| Metonymic tightening principle | That when metonymically related elements are projected into the metaphorical blend, there is pressure to compress the 'distance' between them | Satisfied | Satisfied |
| Distance principle | That the target and source concepts need to come from semantically distant semantic domains | Not (fully) satisfied | Satisfied |
| Concreteness principle | That the source concept compared to the target is sufficiently concrete (rather than abstract) to be understood and manipulated | Satisfied | Not (fully) satisfied |

metaphors were also found to be 'apt' and fitting to the target subjects that they are meant to illuminate, not just in the eyes of Weick (Weick 1998; Weick and Roberts 1993) who was central to their selection and introduction into the field, but also in the view of other writers who have since referred to these metaphors. This is primarily the result of these two metaphors adhering to a set of specific principles known as the 'optimality principles' — a set of constraints under which metaphorical blends are most effective. As a whole, the eight 'optimality principles' are the following, with the first six the original ones proposed by Fauconnier and Turner (1998, 2002; see also Coulson 2001; Coulson and Oakley 2000): the integration, topology, web, unpacking, good reason, metonymic tightening, distance and concreteness principles.

Despite their poetic names, most of these principles are derived from standard pressures that obtain in all mapping situations including metaphorical mappings (see Hofstadter 1995, for a review). The 'organizational improvisation as jazz' metaphor satisfies most of these principles including the integration, topology, web, unpacking, good reason, metonymic tightening and concreteness principles. The 'organizational behaviour as collective mind' equally satisfies a multitude of principles including the integration, topology, web, unpacking, good reason, metonymic tightening and distance principles (Table 1).

The *integration principle*, first of all, refers to the pressure to bring partial structure from different concepts and domains together in such a way that it produces a fully integrated metaphorical image with an easily manipulable representation (Fauconnier and Turner 1998, 2002). In research on metaphorical mappings,

the integration principle is embodied in the observation that metaphors are more apt and fitting when they relate target and source concepts that are more exact or representative of one another (e.g. Katz 1992). The 'organizational improvisation as jazz' metaphor discussed above provides a good example of the application of the 'integration principle'; terminology and structure from the domain of 'jazz' (e.g. the use of technical structures and minimal social structures) is seen as representative of improvisational work processes within organizations and has, once integrated, led to a compact, easily understood and manipulable scene of the nature and process of organizational improvisation.

The *topology principle* exerts normative pressure to construct and maintain metaphorical mappings in such a way as to preserve relational structure (Coulson and Oakley 2000; Fauconnier and Turner 1998, 2002). In research on metaphorical mappings, Gentner and Clement (1988) have found that relational metaphors (i.e. those whose interpretation is based on relational properties) are judged more apt than attributive metaphors (i.e. those metaphors whose interpretation is based on non-relational properties, namely common object attributes, and are therefore mere-appearance matches) (see also Tsoukas 1993 for this point). The 'organizational behaviour as collective mind' is a good example of this principle; the metaphor relates the domains of '(interrelated) behaviours of individuals in organizations' and 'neural processes in the mind' that share a common relational structure of ('human' and 'neural') agents with an activity ('behaviour in relation to others' and 'a neuron firing away if the existence or absence of an impulse in the afferent synapses excites it') and an emergent outcome or effect ('a network of behavioural activities' and 'a neural activity pattern'). Clearly, a relational connection is expressed within this metaphor, which, according to Gentner and Clement's (1988) notation, involves a relation between entities in the relevant domain: agents, their activity, and the environments that they act upon.

The *web principle* suggests that the representation in the metaphorical blend should maintain its mappings to the input concepts. Satisfaction of the web principle is what allows one to access elements in the blend with names and descriptions from the input concepts, as well as what allows the projection of structure from the blend to other applications and subjects, including the input target and source concepts. Within both the 'organizational improvisation as jazz' and 'collective mind' metaphors, the source domains of these metaphors are clearly understood and have provided access to a vocabulary (musical structures, soloing, intentionality, etc.) for conceptualizing the target subjects of improvisation and behaviour within organizations.

The *unpacking principle*, the dictate that, given a metaphorical blend, the comprehender should be able to construct structure in relation to other subjects and applications, can be thought of as pressure to use conventional mapping schemas that facilitate comprehension. Thus construed, the unpacking principle applies pressure to use common and well-known conceptual metaphors, such as the link between seeing and knowing (e.g. 'managerial scanning'), organizational development and evolution (e.g. 'population ecology'), or between organizational performances and theatre (e.g. 'organizational theatre'). The two examples of 'jazz' and 'mind' are equally sufficiently known and understood as

general concepts or domains. As such, they are easily correlated to subjects within organization theory and can also be unpacked in relation to other target subjects besides 'organizational improvisation' and 'organizational behaviour' (as evidenced by, for example, Garud and Kotha's (1994) application of the mind metaphor to model flexible production systems).

The *good reason* principle refers to the pressure to consider the elements composed and elaborated upon in the metaphoric blend as significant, even if an element is seemingly incidental or complicit. For example, in the case of the 'collective mind' metaphor, the significant element of 'emergence' in neural activity in the brain was seen as connected and was thus elaborated on in the context of (interrelated) behaviours between members of an organization.

The *metonymic tightening principle* builds from the observation that many representations in metaphoric blends are interpretable because of metonymic relationships between elements in the blend and elements in the inputs. This was also observed by Morgan (1996: 231), who commented that 'a metaphorical image relies on some kind of metonymical reduction, otherwise it remains thin air'. For example, the metaphorical blend of 'organizational improvisation as jazz' is interpretable because of conventional metonymic mappings between managers and their organization, as well as conventional metaphoric mappings between organizations and jazz. In the metaphorical blend, then, the relationship between managers and organizations has been 'compressed' such that they are understood as being one and the same. In other words, the use of 'organizational' involves 'tightening' or 'compression' in which a small group of senior managers stands in for absent workers in such a way that they become one intentional organizational group (see also Taylor and Cooren 1997 for this point).

The *distance principle* is rooted in findings from empirical research which clearly suggest that, for a metaphor to be apt and effective, the conjoined target and source concepts need to come from distant domains in our semantic memory. Cornelissen (2004, 2005) conceptualized this pressure as the search for 'between-domains distance', which must be fairly large for the metaphor to be effective because close distances provide little interaction or surprise. The 'organizational improvisation as jazz' metaphor, then, although embodying a degree of distance between what we normally understand with improvisation in organizations on the one hand and jazz improvisation within musical performances on the other, is as a collective human activity, however, not as distant from 'organization' as such concepts and domains as, for example, 'chaos' or 'ecology'. As such, this metaphor has not fully satisfied the distance principle.

The *concreteness principle*, finally, refers to pressure to select concrete rather than abstract source concepts for metaphorical blending with a target concept. Katz (1989, 1992) produced empirical evidence suggesting that the aptness and effectiveness of a metaphor is higher when a concrete, rather than abstract, source concept is metaphorically compared to the target. The rather widespread metaphorical image of 'organization' as a kind of 'machine' illustrates this principle well. The machine metaphor suggests an integrated picture of organization as comprised of a series of mechanically structured interconnected parts; and is based upon a rather specific and concrete conception of 'machines' (e.g. Morgan 1996; Tsoukas 1993). The 'organizational behaviour as collective

mind' metaphor to an extent violates the concreteness principle as it is rather abstract and not clearly evident what kind of concrete neuron-like relationships from the notion of 'mind' are projected onto organizational behaviours. This is primarily due to the ongoing disagreement and debate on the workings of the mind in the neuropsychological source domain; in particular between those championing a computational connectionist or associative model of the mind (see, e.g., Rumelhart and McClelland 1986) as opposed to a neuropsychological view that considers the mind as a combinatorial architecture (see, e.g., Dupuy 2000).

## Discussion and Implications

Metaphorical blending processes are not unconstrained, and the eight 'optimality principles' embody the constraints under which blends work most effectively. It is suggested that these principles are important determinants of the aptness of a metaphor, and, as a corollary, of whether a metaphorical image resonates with organizational researchers and is subsequently selected for theorizing and research. In general, it is put forward that metaphorical blends may be selective in the 'optimality principles' that they satisfy, and that the most apt metaphors are the ones that satisfy multiple principles rather than a single one. Metaphors for organizations that satisfy few if any of these principles (e.g. the metaphorical image of organization as 'soap bubbles') (Tsoukas 1993) fail to be apt. Such metaphors in turn are theoretically deficient and have a limited capacity to generate intelligible theoretical insights and research pathways.

The 'optimality principles', then, are important within 'disciplined imagination' in providing criteria at the level of thought trials for considering whether a metaphorical image is *apt*, that is, fitting and meaningful. Inasfar as these principles can be used in a fully conscious and explicit way (rather than as post hoc motivated explanations of the development and selection of metaphorical images), researchers would be wise to use them. This means that, in the process of metaphorical variation within the different thought trials, researchers consciously assess whether a metaphor connects a target concept with a source that is concrete, relational and distant and that includes a representation with different relations and elements which can be unpacked (i.e. interpreted and elaborated in different ways) and integrated with it. Although the optimality principles should not be used to strictly guide and limit the process of metaphorical variation, they can be used within the thought trials to assess the aptness of any one image that is generated.

The maxim of satisfying multiple principles as a tactic or heuristic arguably enhances a researcher's odds and increases the payoff from theorizing. Metaphors that satisfy multiple principles, rather than a single one, provide for rich images that can be elaborated and instantiated in many different ways and with rich detail. As such, organizational metaphors of the type of (open) systems, organism, machine and evolution fare better than ones that consider organizations as, for example, seesaws, octopoids, garbage cans or soap bubbles. Figure 1 illustrates the role of the 'optimality principles' within thought trials undertaken as part of

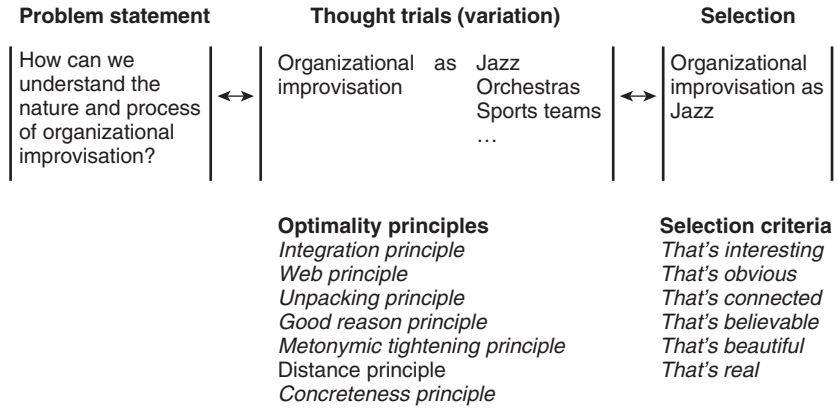


Figure 1.
Theory Construction as Disciplined Imagination: The 'Organizational Improvisation as Jazz' Metaphor

*Note:* principles and selection criteria satisfied by the 'organizational improvisation as jazz' metaphor are in italics.

'disciplined imagination' and with reference to the 'organizational improvisation as jazz' metaphor. Starting with the problem statement ('How can we understand the nature and process of organizational improvisation?'), the individual researcher going through this theorizing process was able to imagine different metaphorical images (jazz, orchestras, sports teams, etc.) for the subject (see Kamoche et al. 2003) which were all apt to varying degrees (although arguably the jazz metaphor, unlike the other two, is relatively more apt in its satisfaction of the integration principle which is closely connected to the composition of 'minimal structures' within both jazz and organizational improvisation), and then had to make a selection between them. The jazz metaphor was chosen because it is arguably more apt than the other imagined metaphors and also met Weick's (1989: 525–528) selection criteria — i.e. metaphorical representations are selected on the basis of their enlightening potential ('that's interesting'), their simplicity and obviousness ('that's obvious'), their relational extension and grounding ('that's connected'), their plausibility and coherence ('that's believable'), their aesthetics ('that's beautiful'), and their referential or real nature ('that's real') — making it a plausible image for theorizing and research.

It is suggested that, following Weick, the stages of variation and selection are closely related, and more interconnected, iterative and simultaneous than sequential. The 'aptness' of a metaphor, which is predetermined by the 'optimality principles', is closely related to its plausibility and subsequent selection. The selection and retention of a metaphor within 'disciplined imagination', then, is a result of the degree to which a metaphorical representation is established as 'apt' in the thought trials and subsequently selected as a plausible theoretical representation. Figure 1 illustrates this process for the example of 'organizational improvisation as jazz'; noting the principles and selection criteria that were satisfied by this particular metaphor (in italics) as a basis for its selection and retention in organizational theorizing and research.

The important contribution, then, to the framework of 'disciplined imagination' is that the 'optimality principles' add to the process of metaphorical variation within the thought trials and to the selection of metaphorical representations as embodied by Weick's original six criteria. Although it may be argued that the

'optimality principles' and Weick's selection criteria are closely related (for example, the topology principle and 'that's connected' or the integration principle and 'that's obvious'), these principles and selection criteria refer to different stages within 'disciplined imagination', i.e. variation versus selection, and involve very different assessments of aptness (the richness and meaningfulness of a metaphorical image in and of itself) versus plausibility (the plausibility and currency of a metaphor as theoretical representation for extended theorizing and research). Better theorizing, we may now suggest, involves the development, selection and retention of metaphors and metaphorical representations that satisfy a multitude of the eight 'optimality principles'. Conversely, metaphors that fail to do so (and satisfy only one or a few principles) are theoretically deficient in that they are insufficiently apt and may fail to generate novel, creative and intelligible theoretical insights and research pathways. The metaphorical image of an organization as 'soap bubbles' (Tsoukas 1993), for example, satisfies the distance principle but none of the other principles. On that basis, although the metaphor is creative it is not sufficiently meaningful or 'apt' and also insufficiently plausible in the sense of being potentially insightful of the structure, processes and functions of organizations (Weick 1989).

Having made the process of metaphorical imagination more explicit, it now becomes clearer that theory construction can be modified, and therefore improved, not only at the stage where the problem is stated and the target subject is circumscribed, but also at the step where thought trials are formulated and metaphorical images are constructed (using the 'optimality principles') as well as at the step where criteria select among the various thought trials and images produced (Weick 1989).

On the whole, the theoretical outline of metaphorical imagination as conceptual blending at the same time grounds and augments the framework of 'disciplined imagination' in specifying the non-compositional processes (composition, completion and elaboration) by which thought trials take place and metaphorical images become produced, and in explicating the constraints under which metaphorical blends are most effective. Previous work on 'disciplined imagination', including Weick's own writings (e.g. Weick 1989, 1995a, 1999a,b), has emphasized the importance of metaphorical imagination and has characterized the process of theory construction as involving 'mental simulation' (Folger and Turillo 1999) and 'imaginary experimentation' (Weick 1989). In our analysis, this simulation capacity exists in the online elaboration of a metaphorical blend ('running the blend'). The contribution of the CB framework of metaphor, then, is that it specifies and formalizes how such imaginary 'simulation' or 'experimentation' takes place and, indeed, can be better guided.

Metaphorical blending, as has been demonstrated, is not a compositional algorithmic process and cannot be modelled as such for even the most rudimentary metaphors. Blends are not predictable solely from the structure of the inputs. Rather, they are highly motivated by such structure, in harmony with independently available background information and contextual structure, and in compliance with the optimality constraints discussed above (e.g. Coulson 2001; Fauconnier and Turner 1998). In this regard, the most suitable analogue for the use of metaphors, and for the blending processes involved in their comprehension,

is not chemical composition but biological evolution — an insight shared by such writers as Campbell (1960), Koestler (1964), and, indeed, Weick (1989).

In a more practical sense, our overview of the processes and constraints of conceptual blending that underlie 'disciplined imagination' may provide reference points to organizational researchers for a more directed use of metaphorical imagination, with the 'optimality principles' featuring as useful criteria to assess the aptness of a metaphorical image. Thus, rather than settling for metaphorical comparisons that are simply available or, indeed, offer mere appearance matches (Tsoukas 1993), the 'optimality principles' may aid organizational researchers to probe further and create apt and meaningful metaphorical images. 'To build better theory', Weick (1989: 529) argued, 'theorists have to "think better"', by which he meant that organizational researchers need to use the process of 'disciplined imagination' in a more deliberate and informed way.

There may not be simple prescriptions about the one best way to theorize (Weick 1989, 1995a, 1999b, 2004), but clearly not all tactics equally enhance a researcher's odds. My recommendation is to use the 'optimality principles' and the related criterion of aptness within 'disciplined imagination' as a tactic or heuristic to increase the payoff from theorizing. Better theory involves the development and selection of metaphors that not only satisfy multiple 'optimality principles' and are 'apt', but that are also plausible conceptual vehicles for the development of frameworks, constructs and propositions for research. Armed with this augmented understanding of 'disciplined imagination', researchers, we hope, will be able to harness the productive potential of metaphorical imagination and advance and strengthen theory development within the field.

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**Joep Cornelissen** Joep Cornelissen is reader in corporate communications at Leeds University Business School. His research interests include corporate communications and the use of metaphor in management and organization theory and practice. He is author of *Corporate Communications: Theory and Practice* (Sage). His research articles on metaphor have appeared in *Academy of Management Review*, *Organization Studies*, *British Journal of Management, Psychology and Marketing* and *Journal of Management Studies.* He is currently an associate editor of the *Journal of Management Studies.*
*Address*: Leeds University Business School, Maurice Keyworth Building, University of Leeds LS2 9JT, UK.
*Email*: jpc@lubs.leeds.ac.uk