

Bad for Practice, Good for Practice.
Modes of Theory Building in Organization Research

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Abstract

There is a growing debate about management theories - namely economics - not only being bad for practice but even destroying good management practice. The focus of this debate has been on the negative influences of academic research in a Mode 1 manner on the practice of management. We analyze with the example of standard economics and psychological economics that Mode 1 research is bad for practice. We give reasons why also Mode 2 research is neither good for practice and for theory building. Drawing on the “Pasteur’s quadrant of research” in the field of natural science, we propose a different research mode for organization research: the mapping mode.

1. Introduction: Examples for negative influences of academic research on the practice of management and politics

Current discussion about corporate scandals, the explosion in management pay and disastrous consequences of the transition process in Eastern Europe has given new life to the issue of the relationship of theory to practice. The following examples briefly sketch this discussion.

Ghoshal (2005), in a posthumously published article, lamented the fact that the economic theories currently dominating the debate over corporate governance had wrecked previously good management practices. These scandals are interpreted as the consequence of the dominant principal-agent and transaction cost view in corporate governance (see also Adler 2002; Osterloh and Frey 2005). The standard economic view is based on the assumption of opportunism as a worst-case scenario. Opportunism is considered to be a prudent consideration for institutional structures (Milgrom and Roberts 1992; Williamson 1996). However, in the view of its critics, prevalence of standard economic approaches in the training of new managers at reputable MBA centres leads to a situation in which these theories' conception of human beings as opportunists tends increasingly to become reality. It seems to become true what Ghoshal and Moran (1996) in their oft-quoted article "Bad for Practice: A Critique of the Transaction Cost Theory", had criticised: Williamson's (1990) transaction cost approach is not only wrong but dangerous for guiding management and policy decisions.

Ferraro, Pfeffer and Sutton (2005a) state that in social sciences - other than in physical sciences - theory becomes normative guidance on how to act, which itself

sets a self-fulfilling prophecy in train. The greater the influence the theories have, the more this is the case. In their view, this is the case with economics. The authors draw on Robert Merton's definition of a self-fulfilling prophecy as a prediction that "is, in the beginning, a *false* definition of a situation evoking a behaviour which makes the originally false conception come *true*" (Merton 1948: 195). They analyze three mechanisms through which theories become self-fulfilling: Institutional designs (e.g. reward systems, measurement practices, selection processes that reflect the theories of their designers), social norms (e.g. obeying the norm of self-interest not to appear as foolish or naïve) and language (e.g. evoking different cognitive frames like the gain frame or a pro-social frame).¹

Kogut and Spicer (2005) analyze the negative impact of economics on the transition process in Russia. They argue that the disastrous development in Russia is to be explained by the strong institutional ties of economists of Harvard and MIT to the World Bank and the international policy arena. The development in Russia is characterized by a picture far worse than in other transition countries, e.g. with respect to the development of life expectancy, infant mortality and living standards prior to the reforms. The authors explain these negative consequences of the reform process in Russia by the dominance of economists and the nearly total "no-show" of non-economic disciplines like sociology. Useful ideas and insights of non-economic social sciences were excluded. Diversity of ideas and contextual knowledge about governing the transition process was absent. As a consequence, a "one best way"

¹ Ferraro, Pfeffer and Sutton (2005a) underpin their argument with large empirical evidence for all three mechanisms. Thus, Felin and Foss (2003) fail in criticizing these authors to take a constructivist stance. In particular Felin and Foss (2006) refuse to take into account the overwhelming empirical evidence from psychological economics that the Rational Evaluating Maximizing Man (REMM) is a myth, see section 2.2 of this paper.

solution was put through which consists in the idea of “depoliticization” and fast mass privatization without corresponding emphasis on the quality of governmental institutions. In the end, mass privatization, far from depoliticization, led to opportunities for few oligarchs to secure vast economic wealth and to exercise extensive political power.

Bazerman and Malhotra (2005) and Bazerman (2005) agree that economics have achieved unjustified dominance in social sciences. But they contradict Ferraro, Pfeffer and Sutton (2005a) insofar as they argue that economic theory has not been self-fulfilling. Rather it has been falsified: during the last twenty-five years economic theory has been proven systematically wrong in a number of its key predictions and has produced a lot of disasters. They analyze why nevertheless economics have gained such a high impact in the political and business world. In their view this is due to the fact that non-economic social science disciplines have abstained from prescriptions, while economics not only explicitly claim to influence behaviour (e.g. Masten 1993) but do not hesitate to enter the political and managerial realm with their prescriptions. To change this, the authors argue, non-economists need to learn from economists and should enter the policy and business realm so that society no longer has to pay the price of economic domination.

We do not contribute to the discussion whether the ideas of standard economics are “bad for practice” by political and economic power. To answer this question an empirical analysis of the interaction between theories and public policy is needed which has been done elsewhere (e.g. Blyth 2002; Fourcade-Gourinchas and Babb 2002; Kuttner 1999). We also do not scrutinize whether non-economic social sciences really abstain from prescriptions (for empirical evidence of such

prescriptions see Ferraro, Pfeffer and Sutton 2005b) and thus have lost impact on the practice of management and politics.

Instead, the aim of our paper is *firstly* to point out a different explanation for the fact that theories often are bad for management practice. We argue that being bad for practice is a *methodological problem* in the first place and not a *problem of false assumptions* alone, though false assumptions introduced exogenously into a theory can indeed produce a self-fulfilling prophecy. The methodological problem consists in an imperialistic use of a Mode 1 research strategy (in the sense of Gibbons et al. 1994), as it is the case with economic imperialism. This problem will not disappear if economics start theory building with empirically better validated assumptions about human nature. We demonstrate this with the example of the new and strongly growing branch of psychological economics which has made some crucial assumptions of standard economics endogenous to theory building and thus clearly is better for practice.² However, since psychological economics uses the same methodology like standard economics, in particular an imperialistic Mode 1 research strategy, it still is bad for practice. *Secondly* we will answer the question: Which research mode is good for practice as well as good for theory building?

We analyze that neither Mode 1 nor Mode 2 research is good for practice and theory building. Drawing on what Stokes (1997) has termed the “Pasteur’s quadrant” of research in the field of natural science we propose a different research mode for management research: the mapping mode.

² See section 2.2. The methodological problem will neither disappear, if organization research starts with positive instead of „worst case“ assumptions about human nature, hoping that a positive self-fulfilling prophecy will set in train, see the literature about „Positive Organizational Scholarship“, e.g. Cameron et al. (2003).

2. Are economics bad for practice?

In this section we will sketch the standard economic model and its critics as well as the model of psychological economics to show the methodological procedure of economics and its shortcomings.

2.1. *The standard economic model and its critics*

The standard economic model of homo oeconomicus is characterised by the following assumptions (e.g. Frey 1999):

- Action is centred in the individual (methodological individualism). Everything that happens in institutions and society can be traced back to the actions of individuals.
- A strict distinction is to be drawn between preferences (i.e., values which form the basis of motivation) and restrictions (i.e. external stimuli and constraints on the scope for action).
- An individual's preferences are given and inalterable (c.f. Becker and Stigler, 1977). The individual's actions are determined entirely by restrictions.
- Only self-interested, not prosocial, preferences are assumed to exist. The preferences of other people do not concur with one's own preferences.
- The cognitive perception of restrictions is identical in all individuals.
- Individuals behave entirely rationally. They are able to determine their own maximum utility according to their own preferences within given restrictions.

It is on the basis of these assumptions that the standard economic model is applied to all spheres of life, for instance, to the family, drug abuse, abortion, criminality, art, sport, religion, and suicide.³ This is tied to the withdrawal (or, better, the ejection) of psychology from economics, which, for instance, for Schmölders (1962) was still part of economics.⁴ Neoclassical standard economics has thus developed an imperialistic understanding of itself as the “queen of the social sciences” (c.f. Hirshleifer 1985; Becker 1976; Frey 1999), a view which has provoked significant aggression and criticism among neighbouring social sciences.

Criticism of standard economics refers chiefly to these assumptions. In particular, this is about the assumptions regarding the *cognitive* and *motivational characteristics* of homo oeconomicus and the assumptions regarding the *transferability of the economic model* across from anonymous market relationships to the relationships within organisations and between individuals.

The criticism of the assumptions about the *cognitive characteristics* of homo oeconomicus is the least controversial. They go back to Simon (1955, 1956) and have led to the idea of bounded rationality as a consequence of people’s limited capacity to process information. Individuals do not maximise their utility, but can at best achieve satisfactory results. It is on this basis that the institutional economic approaches have been developed (Williamson, 1990). However, the idea of bounded rationality

³ For an overview of the application of the economic model to fields outside the economy, see Becker (1976); Frey (1999); Lazear (2000); Bowmaker (2005).

⁴ For a discussion of this development see Bruni and Sudgen (2007).

remains vague in institutional economics.⁵ The research of psychological economics into decision anomalies (Kahneman and Tversky 1986), developed over twenty years, has not been considered. Instead “the same assumptions are still in place as the cornerstones of economic analysis” (Kahneman 2003: 162), though the research on decision anomalies provides precise and situation-specific differentiations of bounded rationality.

The criticism of the assumptions regarding the *motivational characteristics* of homo oeconomicus is, in contrast to the discussion of his cognitive characteristics, controversial. One bone of contention is the assumption of self-interest, which has been significantly intensified in the transaction cost approach by the assumption of opportunism as “seeking of self-interest with guile” Williamson (1985: 56). This is related to the accusation levelled at economics that all managers are guilty “by axiom” (Donaldson 1990: 373), which is both false as a description and dangerous as a prescription. This argument is the backbone of the criticism of self-fulfilling prophecy: If institutional designs (e.g. measurement and incentive systems or selection processes) as well as expectations and frames are directed towards selfishness, people will react as if everybody is an opportunist. A framing and crowding-out effect of intrinsic motivation will take place (see section 2.2). The proponents of economics counter that the assumption of opportunism is necessary, even though they concede it to be an “extreme caricature” of humans (Milgrom and Roberts 1992: 42). As long as there is no way of distinguishing opportunists from non-opportunists ex ante, it is, they say, a practical measure to adopt this as a “worst-

⁵ Foss (2003) criticises the absence of a precise definition of “bounded rationality” in institutional economics, though it is an essential assumption in this approach.

case scenario” (Brennan and Buchanan 1993; Williamson 1996). They claim, furthermore, that it is necessary to be able to formulate clearly testable hypotheses.

The proponents of standard economics have a harder time with the criticism that the causal relations between motivation and the conditions of institutional contexts have been wrongly construed (Foss 2003). According to this criticism, it is not the potential opportunistic tendencies of individuals which are the cause of monetary structures created to prevent opportunistic behaviour. It is, rather, the autonomy-reducing monetary structures which are the cause of opportunistic tendencies. This charge is theoretically and empirically supported by the findings on the crowding-out of intrinsic motivation by extrinsic motivation (c.f. Deci and Ryan 2000; Frey 1997; Osterloh and Frey 2000).⁶ This objection places the assumption of given preferences in doubt. Proponents of standard economics usually either ignore or question it so that the propagation of the orthodox economic model can continue uninterrupted.

The criticism of the *transfer of the economic model* from anonymous market relationships to the relations between individual is the least discussed. It is doubtful whether the assumptions of opportunism and self-interest about anonymous markets hold in the same way for individual relationships. Indeed, empirical results show that the more impersonal the relationships, the more self-interested behaviour increases (e.g. Bohnet 1997). However, they also show an astonishingly high readiness for anonymous giving (c.f. Meier 2006). A simple transferral of the assumption about

⁶ See also section 2.2.

self-interest from anonymous markets to organisations leads results which are not only undifferentiated but wrong.

2.2. *Psychological economics and its critics*

Psychological economics is a combination of economics and psychology.⁷ It is concerned with the systematic divergence of human actions from the standard economic model of homo oeconomicus while retaining economic methods (c.f. Frey and Benz 2004; Mullainathan and Thaler 2000; Camerer and Loewenstein 2004; Kahneman 2003; Rabin 1998). It questions the ‘homunculus oeconomicus’ in three ways: through the issues of (1) bounded rationality, (2) bounded self-interest, and (3) the bounded utility concept.⁸

(1) *Bounded rationality*: The findings of psychological economics go far beyond the vague concept of bounded rationality as applied in institutional economics. These show that divergences from the expected maximisation of utility follow systematic conditions, which are dealt with under the term “decision anomalies”. It is largely with this term that Kahneman and Tversky (1979; 1986) have founded the psychological economics branch of research.⁹ Important decision anomalies include:

⁷ Psychological economics is often referred to in the Anglo-Saxon world as behavioural economics. However, this description is misleading. In psychology, the term ‘behaviourist’ denotes a scientific approach which exclusively investigates observable stimulus-response relationships (Watson, 1913; Skinner, 1973), and disregards internal psychological cognitive and motivational processes.

⁸ C.f. Frey and Benz (2004). For similar distinctions see Mullainathan and Thaler (2000); Camerer and Loewenstein (2004); Kahneman (2003). Fehr and Schwarz (2002) give a short introduction to the findings of psychological economics.

⁹ C.f. Rabin (1998) gives an exceptional overview of this branch of research. For a classification of this research in management decision theory, see Osterloh (1991).

- Framing: the perception of a decision situation depends on the presentation of the situation.
- Loss aversion: The perception of an uncertain decision situation depends on whether the problem gauged against a reference point, is perceived as a gain or a loss. Losses relative to the reference point are seen as more significant than gains.
- Anchoring: the appraisal of outcomes is influenced such that the first anchor is held against the final judgement, and new information as a result is given less consideration.
- Availability bias: individuals rely chiefly on easily gained information.
- Sunk cost effect: individuals draw costs sunk in the past into their calculations rather than just evaluating future expectations.

In particular framing, anchoring and the availability contribute to a self-fulfilling prophecy effect: If the prevailing information you get lead you to an opportunist frame you will design institutions as if all or most people were opportunists. A crowding-out effect (see the next section) will set in.

Empirical evidence shows that even experts are subject to these decision anomalies. In situations of great uncertainty, experts are even more strongly affected by these decision anomalies than lay people, because they trust too much in their models and past data (c.f. Griffin and Tversky 1992: 430). In an experiment, the *Economist* (1984; 1995) found that dustmen were able to make long-term predictions about economic development just as well as the leaders of multinational corporations.

(2) *Bounded self-interest*: In contrast to the assumptions of standard economics, numerous empirical results indicate that in many situations, people behave against their own interest in a prosocial manner.¹⁰ Prosocial motivation can take two forms: altruism and reciprocity. Altruists have the welfare of their fellow human beings in focus, regardless of their own welfare. Numerous empirical findings show that altruists exist in significant numbers (c.f. Fehr and Fischbacher 2005). In the case of reciprocity, one's own readiness to help depends on that of others. Readiness to help or cooperate is conditional: one acts in a friendly manner when one is treated in a friendly manner (individual reciprocity), and cooperative when others also contribute to the general welfare (generalised reciprocity). However, reciprocity is not to be confused with exchange. It is not concerned with one's own utility, but with a voluntary giving which falls somewhere between pure altruism and conforming (Göbel, Ortmann and Weber 2006).

Both altruism and reciprocity are affected by what is termed a crowding-out effect between intrinsic and extrinsic motivation. Intrinsic motivation is directed towards activities which are performed for their own sake rather than for any reward (c.f. Deci and Ryan 1985; Frey 1997; Osterloh and Frey 1997; 2000). Extrinsic motivation, in contrast, is aimed instrumentally at activities which are not valued for their own sakes. They are, rather, undertaken for a desired reward or to avoid a penalty. Standard economic approaches deal exclusively with extrinsic motivation.¹¹

¹⁰ For an overview, see Meier (2006).

¹¹ The relationship of intrinsic and extrinsic motivation is dealt with in the social psychological theory of self-determination: for a summary, see Deci and Ryan (2000). According to this, the extent to which intrinsic motivation is crowded out or strengthened is dependent on three factors: autonomy, the experience of competence, and social belonging: see Osterloh and Weibel (2006) for an extended discussion.

A dynamic relationship exists between intrinsic and extrinsic motivation. Under certain conditions, extrinsic motivation can crowd out intrinsic motivation. This leads to what have been termed the hidden costs of reward, whose existence is well supported empirically by both laboratory experiments and field studies (c.f. Frey and Jegen 2001). These show that, under certain conditions, external interferences (like pay for performance or monitoring) can crowd out prosocial intrinsic motivation (c.f. Frey and Oberholzer 1997; Irlenbusch and Sliwka 2003; Stukas, Snyder and Clary 1999; Falk and Kosfeld in print.¹² The crowding-out effect provides a theoretical and empirical well-founded explanation for the self-fulfilling prophecy of the assumption of opportunism. If this assumption is introduced exogenously into theory building as an *a priori*, as it is the case in orthodox economics, then organizations will be designed to monitor and induce their members with carrots and sticks. Their preferences will change from intrinsic to extrinsic or even opportunistic.

(3) *Bounded utility concept*: In standard economics, it was until recently the case that only observable acts (“revealed preferences”) could be the object of economic study, but not what was subjectively perceived. In this view, individuals’ expressions of their subjectively felt utility, their happiness or their life satisfaction were not to be trusted (c.f. Samuelson 1938). However, in recent years a dramatic change has occurred. A variety of methods have captured how happy individuals feel, which determinants are decisive for this, and what the measurable consequences arise from

¹² Variable and performance-related rewards are not negative in principle (c.f. Frey 1997; Frey and Osterloh 2002). Where extrinsic motivation predominates in an activity, variable pay produces a positive total effect on performance. However, variable pay always costs more than it appears to at first glance, because the hidden costs of reward must be added to the monetary costs of variable pay. This effect was demonstrated in detail by a vignette experiment involving professionals by Weibel, Rost and Osterloh (forthcoming), which looked into the “black box” of cognitive and motivational processes.

this (for an overview, see Frey and Stutzer, 2002a; 2002b; Layard, 2005). Happiness research has brought about a near-revolutionary change in economics. It captures which determinants of subjective life satisfaction or individual welfare are the most important. Some of these clearly contradict the assumptions of standard economics, such as:

- Wealth makes people happy, but to a lesser extent than such factors as health or an occupation. Not the absolute but the relative level of wealth matters.
- The most important factor of unhappiness is unemployment, even when income remains the same.
- Individuals evaluate their utility across the long term falsely.¹³
- People in democratic countries are, other circumstances remaining the same, happier than in authoritarian societies. They are happiest when they are able to be directly active in democracy through the use of initiatives and referendums.

Psychological economics can contribute more and richer insights for the awareness and shaping of companies and societies than standard economics and its empirically false “homunculus oeconomicus”. But like standard economics, it proceeds from a restricted number of assumptions, which formulated within mathematical models. Some of these variables are introduced endogenous into theory building. But still

¹³ For instance, if deciding between a higher income and more time with friends, they will choose the higher income. It is only later that they realise that this has only brought about a short-term rise in their life satisfaction.

most variables are still introduced exogenously, e.g. rational behaviour in most experiments which investigate pro-social preferences. The standard economic model continues to serve as a frame of reference for the analytical and the empirical analysis. This process explains the partiality of psychological economics for laboratory experiments, since in these single variables are artificially isolated and changed under controlled conditions.¹⁴

3. Why economics are bad for practice

Psychological economics is less bad for practice than orthodox economics because it has made some critical assumptions about human nature endogenous to theory building. However, psychological economics uses the same methodology as orthodox economics and thus runs the danger of also being not good for practice because of four methodological reasons.

First, as orthodox economics, it takes formal models, in which just a few variables are systematically analysed, as a starting point. Nevertheless it claims to derive prescriptions for practitioners (e.g. Mullainathan and Thaler 2000). The economist Thomas Mayer (1993: 53) criticises this procedure as the “principle of the strongest link”. It is the background to the oft-made accusation that these models are rigorous but not relevant. Significant variables which do not fit the model are ignored. At best, contextual conditions are included ex-post as weak links in the form of unsystematic, arbitrarily occurring ad-hoc reflections. These ad-hoc reflections for

¹⁴ Nonetheless, more recently numerous field experiments have been conducted (e.g. Frey and Meier 2004).

the most part stand in stark incongruity to the strict output of the model's results and the claim to give valid prescriptions to practitioners.

Second, the key to explaining observed actions is only sought where the disciplinary lamp is shone. The insights of other disciplines are not systematically incorporated. Also, the perspectives and viewpoints of practitioners are seen as insignificant. Their potential for reflection is underestimated. This is astonishing given the results of research on the value of laypeople's insights. As in standard economics, in psychological economics the results of research into practice are made available without there being any feedback into the research process. This has been extensively discussed in the field of knowledge production using the term Mode 1 as opposed to Mode 2 (see below). Mode 1 research neglects that much of practice in most fields remain only partially understood scientifically and that technological and social practice and scientific understanding coevolves (Nelson 2006; Starbuck 2006: 108).

Third, it is characteristic of this type of research that it neglects aspects of synthesis in favour of analysis. The requirements of discipline-based knowledge with the requirements of business and policy practice are left to the practitioner. It follows the Ikea model: take it home yourself and put it together yourself (c.f. Mintzberg 2004: 47). This is particularly disadvantageous to management science, which, like other problem-oriented fields of research such as engineering sciences, jurisprudence, environmental sciences, proceeds explicitly from the concrete questions of practice rather than from problems defined within the discipline. Management practice pays no attention to disciplines (Steinmann and Schreyögg 2005). Its nature is "adisciplinary" (Ulrich 1985).

Fourth, psychological economics as well as orthodox economics claim to be the “queen of social science”. But any form of disciplinary imperialism restricts scientific progress. It is known from empirical research into decision-making that cognitive distance and a variety of cognitive frames of reference are necessary for creative problem-solving (Hansen 1999; Wuyts et al. 2005). For this reason, organization research cannot grant precedence to one single discipline. Instead, it must seek to elucidate problems with several “disciplinary spotlights”, so as to learn from the differences.

4. Mode 2: good for practice and theory building?

Do we solve the methodological bad for practice-problems of Mode 1 if practitioners are involved in the process of theory building? If scientific problems are defined in their context of application together with its users, is this the way to figure out what is good for practice?

Gibbons et al. (1994) state an alternative research Mode 2 in which the context of application is defined as problem solving and knowledge production and is organized around a particular application. Although their analysis of Mode 1 and Mode 2 refers mostly to natural science, their findings become more and more discussed in organization and management research (e.g. Tranfield and Starkey 1998; Huff 2000; Grey 2001; Harvey, Pettigrew et al. 2001; Huff 2000 and Huff 2001; Osterloh and Frost, 2003; Starkey and Madan 2001). In this section we analyze, whether a Mode 2 research strategy is good for practice as well for theory building in organization studies.

A Mode 2 research strategy integrates knowledge production and transfer in a process, which brings organization theory and management practice together. It includes the milieu of interests, institutions and practices which impinge upon the problem to be solved. Hence, three implications can be drawn.

First, Mode 2 is a joint knowledge production. Practitioners are involved as co-producers in this process. Applicants of the knowledge become active agents in the definition and solution of problems. *Second*, the production of knowledge in a Mode 2 manner will no longer take place in disciplinary, but rather in transdisciplinary surroundings. Transdisciplinarity consists of more than assembling a diverse range of specialists to work on problems in teams. *Third*, Mode 2 is a form of knowledge production in which inquiry is guided by consensus. The consensus is conditioned by the context of application and evolves along with it (Gibbons et al. 1994: 4). Knowledge is validated in use; the diffusion of the results is initially accomplished in the process of their production. As a consequence, scientific work will increasingly be carried out by temporary teams consisting of academic institutions, private laboratories and small hi-tech or consulting companies.

Representative subjects for Mode 2 in social science are organizational development and ethnomethodological studies (e.g. Garfinkel 1967; Plane 1998). In these approaches practitioners are involved as co-producers of new knowledge because their experiences are viewed as important as scientific knowledge for the process of theory building. Consequently the methods of action research, appreciative inquiry, and clinical research are preferred (e.g. Torbert 1976; Argyris, Putnam et al. 1985; Miller and Crabtree 1994; Eden and Huxham 1996). This implies that all

knowledge arises from what actors think and say about the world. This is what Lallé (2003) calls research with people instead of research on people.

The *main characteristic* of the Mode 2 compared to Mode 1 research is that “relevance” and not only “rigor” becomes important. Exploitation of practical experience takes place that includes a rich variety of variables which scholars in their “ivory towers” often are not aware of. However, academics can no longer benefit from the rigorous strength of Mode 1, namely established procedures and clear quality standards. It follows a lack of reliability and sometimes a lack of validity. The role of scholars often is reduced to the use of language games and, as quasi journalism, reporting and communicating best practices that disseminate throughout the managerial community (Astley and Zammuto 1992). The rich variety of variable sets of practitioners often overwhelms scholars so that they are unable to frame them systematically as “strong links” in their research domain. As a consequence, the critical scholarly perspective is in danger and scholars become victims of fads (Kieser 1997). The academics’ perspective intermingles with the practitioners’ perspective and theory loses its heuristic claim to provide precise, consistent terminology and to reveal unintended side-effects or possible trade-offs (Donaldson 1995). Anne Huff (2000) characterizes the methods of Mode 2 as appearing to be “too pragmatic ... [tending] to make big bets based on limited evidence”. She is afraid of a research strategy on the basis of “throw it on the wall and see if it sticks” (ibid.).

Is the trade-off between rigor and relevance or Mode 1 and Mode 2 inevitable? In the view of Pettigrew (2001), bipolar modes of thinking are always powerful simplifier which conceal as much as they reveal. They close down debates

as readily as they open them up. To overcome this bipolarity, we draw on research in the fields of natural science.

5. Neither Mode 1 nor Mode 2: learning from natural science

In striving to maximize the benefits of balancing rigor and relevance simultaneously, we draw on research in the fields of natural science. According to his analysis of natural science, Stokes (1997) argues that the deep understanding of a research question and the consideration of practical problems mostly walk hand in hand. He calls this mode of research the “Pasteur’s Quadrant”. The defining property of *basic research* is the contribution it seeks to make to the general, explanatory body of knowledge within an area of science. In contrast, *applied research* aims to convert the possible into the actual. The differing goals of basic and applied research make these types of research conceptually distinct. While basic research widens the *understanding* of the phenomena of a scientific field, applied research is directed toward some practical need or *use*. Stokes does not view the terms basic and applied as opposite. Work directed toward applied goals can be highly fundamental in character in that it has an important impact on the conceptual structure or outlook of the field. In many cases, advance in practice comes first and leads to efforts to understand practice scientifically, e.g. in biomedicine and engineering (Nelson 2006).

As a consequence, a way of cutting through the inherently considerable continuum between basic research and applied research is needed. Stokes resolves this problem by expanding the one dimensional basic-applied spectrum. This leads to the *quadrant model of scientific research* (see figure 1). In this model, research is

inspired by two dimensions. Dimension *one* on the vertical axis represents the degree to which a given body of research seeks to extend the frontiers of fundamental understanding. Dimension *two* on the horizontal axis represents the degree to which the research is guided by consideration of use.

		consideration of use?	
		no	Yes
quest for fundamental understanding	yes	<p>-1-</p> <p>„pure basic research“ (Bohr’s quadrant)</p>	<p>-4-</p> <p>„use-inspired basic research“ (Pasteur’s quadrant)</p>
	no	<p>-3-</p> <p>„systematically particularly phenomena research“ (Peterson’s quadrant)</p>	<p>-2-</p> <p>„pure applied research“ (Edison’s quadrant)</p>

Figure 1: Quadrant model of scientific research (source: Stokes 1997: 73)

Quadrant 1 includes basic research that is guided solely by the quest for understanding without thought of practical use. It is called the *Bohr’s quadrant* in view of how the physicist Niels Bohr groped for a model of the structure of the atoms early in this century. His work was a pure voyage of discovery. Research in the Bohr’s quadrant is similar to *Mode 1* research: a monological knowledge production which defines rigor research problems and draws conclusions within clear boundaries of the scientific analysis context.

Quadrant 2 includes research that is guided solely by applied goals without seeking a more general understanding of the phenomena of a scientific field. This quadrant is called the *Edison's quadrant* in view of how Thomas Edison developed commercially marketable electric lighting. Edison was not interested in the deeper scientific implications of his discoveries, exemplified by the fact that he gave no time to the basic physical phenomena underlying his emerging technology (Rosenberg 1991). Research in the Edison's quadrant is similar to *Mode 2* research: knowledge production focuses on relevance. It is conditioned by the context of application and the results are validated in use.

Quadrant 3 includes research that systematically explores particular phenomena without having in view either general explanatory objectives or any applied use to which the results will be put. This quadrant could be labeled *Peterson's quadrant*, according to the bird watchers and their highly systematic research on marking and incidence of species that went into Peterson's guide to the birds of North America.

Quadrant 4 includes use-inspired basic research, seeking to extend the frontiers of understanding but is also inspired by consideration of use". This quadrant is called the *Pasteur's quadrant* in view of how the "mature" Louis Pasteur deserves to be placed at the dimension of high fundamental understanding as well as at the dimension of high use at the same time: high understanding in terms of the strength of his commitment to understand the microbiological processes he discovered; use in terms of the strength of his commitment to control the effects of these processes on various products and on animals and humans.

To answer the question what is good and what is bad for practice in the process of theory building, we learn from research in natural science: research expressed by the Pasteur's quadrant abandons the dichotomy points of Mode 1 and Mode 2 and expand it by switching the "understand-use-relationship" to the orthogonal level and introducing a two dimensional research spectrum. The two dimensions can be thought of in terms of two parallel streams of cumulative knowledge, which have many interdependencies and cross relations, but whose internal connections are much stronger than their cross connections. As a consequence, success in rigor basic research does not contradict success in applied relevant research as the dichotomy between Mode 1 and Mode 2 suggests. Less clear is, how to proceed to Pasteur's quadrant in organization research.

6. Theory building in organization research: the mapping mode

Applying the Pasteur's quadrant to organization research presupposes a research mode that has a dual purpose: a deep understanding of the research question for creating scientifically meaningful research that advances management practice at the same time. We suggest the mapping mode and give reasons why it is most appropriate to support at the same time problem solving in management practice, and scholarly understanding of research questions.

Mapping is able to exploit practitioners' knowledge in the process of theory building while at the same time balancing the critical distance between the researcher's and practitioner's perspective so that the qualitatively differences between theory and practice could be maintained. As Weick (2003: 454) puts it,

theory is equated with abstractness, explanation, knowing-that, and dissection into parts. It deals in a systematic way with a limited amount of variables and links between these variables. *Practice* is equated with doing, concreteness, understanding and know-how. It deals with the problem of handling a rich set of interlinked variables which often are only partially understood. According to a saying ascribed to Immanuel Kant for practitioners hold: “Our Necessity to decide extends our ability to cognize”.¹⁵

Mapping is the provision of different disciplinary maps which give an orientation on a complex territory. The aim of mapping is to gain insights from the differences between these different maps and to exploit these differences in two ways. First, maps enable better communication between different disciplinary approaches Dogan/Pahre (1991) show empirically, that the most important innovations in social science took place at the borders between single disciplines. Second, maps enable better communication between scholars and practitioners without giving up their specific domains. Mapping views the theory-practice relationship as a reciprocal process. In this process, social science has to offer guidance that surpasses practitioners’ everyday knowledge. Thus, we suggest maps to leverage the different knowledge contributions that practitioners and scholars bring to bear on the question what is good for practice and theory building.

Maps are theoretically based reference anchors, offering precise terminology with regards to specific contents. Maps provide frames for action to start from (Weick 1990), without determining action. They provide ways to structure and simplify

¹⁵ The original quotation is “Unsere Notwendigkeit zu entscheiden, reicht weiter, als unsere Fähigkeit, zu erkennen”.

thoughts and beliefs, and to communicate information about them (Fiol and Huff 1992). They describe navigation devices that may solve a given problem, but offer no guarantees of doing so.

Maps can be used to elaborate academic theoretical thinking on the one hand and to exploit practitioners' knowledge on the other hand. On the one hand, they are a vehicle for transferring theoretical insights to practitioners and scholars from other disciplines without using a theory-specific language. On the other hand, maps help practitioners to analyze their problems more systematically. Although they use a precise terminology, they neither establish causal laws or regularities nor reduce offer "blueprints" or best practices. Instead maps can be used as different "walking sticks" to reveal possible unintended consequences of intended actions (Roethlisberger 1977). They can also used as different "talking sticks" in argumentation processes to consider propositions and to come to an agreement (Scherer and Dowling 1995). They provide for practitioners and lays new patterns of perception, help to reveal unintended consequences of action and challenge the underlying everyday theories. What is crucial is, that maps do not claim to translate theoretical insights gained by one discipline (e.g. orthodox or psychological economics) into instructions or blueprints for practitioners in the form of a "tautological transformation" (Popper 1959). Rather, they provide multiple frames of reference to give a multifaceted picture of the territory. Any theory is an incomplete abstraction that cannot engenders all aspects of a phenomenon. Each theory is a fallible model that engender only a restricted amount of variables which are determined by the methodology used (Azevedo 1997: 191). What matters is to provide practitioners and lays with insights of different theoretical approaches in a language they understand so that they can

triangulate methods and models with respect to their problems (Van de Ven and Johnson 2006; Starbuck 2006).

At the same time, practitioners play an important role in criticizing as well as in providing and enriching the ideas that scholars develop. They do *not* develop joint knowledge with scholars. Rather, scholars and practitioners stay in their different domains. The contribution of practitioners to theory building is to communicate their insights whether the different theoretical approaches translated cover the variables they find important in their work. They espouse their “weak links” in the sense of Mayer (1993) and point out to scholars whether their weak links should become strong links in theory building. For example, if practitioners have had a voice in the transition process in Russia, they could have taught the leading economists from Harvard and MIT that mass privatization without functioning corporate governance and a functioning law system will not lead to wealth creation for the ordinary citizen.

Doing research in the mapping mode requests for different exigencies how scholars organize the process of theory building.

The first exigency concerns the acquaintance with different theories. The starting point in the process of theory building derives from the problems of management practice and their espoused weak links. Although the aim of organization research is to discover, describe order, explain, and predict carefully defined social phenomena that characterize behaviours in organizations, little attention has been focused on the potential benefits of practical knowledge for the process of theory building and for the advancement in science. Scholars have to identify different disciplinary “spotlights” in form of maps in order to frame and

understand practitioners' problems and to communicate with scholars from other disciplines as well as to give reasons which theories could contribute to good management practice. Especially organization science shows an increasing variety of theories. However, none "grand theory" (Abraham 1982: 10) should be selected in an imperialistic manner as the only theoretical "spotlight". This is also true for economics and psychological economics. They do not have the primacy in the first place. For example research on corporate governance draws on different theories like economics, psychological economics, law and social psychology.

Second, maps have to be transferred into courses of action applicable to managerial problems. In the process of theory building, maps support scholars in using several levels of abstractions about the same subject for different situations. They are used as a vehicle for transferring theoretical insights without using theoretical language. Accordingly, maps earn their merit if they are used and enriched by practitioners. They help practitioners to analyze their problems more systematically, without having to cope with the entire range of theories. A famous example of a successful framework is the "five forces" framework for diagnosing industry structure by Porter (1980, 1981). Porter takes up some central characteristics of industrial organization, especially the structure-conduct-performance-paradigm, and applied them in a modified manner to strategic management. His "five forces" framework offers theoretically based structural analyses of problems without having to use theoretical terminology. A very convincing example of a heuristic map is the well-known SECI process of knowledge conversion introduced by Nonaka and Takeuchi (1995). It offers a theoretically based guideline for the analysis of organizing knowledge generation and transfer. On the one hand, it derived from

theoretically established insights: it translated different grand theories (in this case philosophy of science and cognitive science) into a consistent map on a middle abstraction level. On the other hand, it has taken into account the strong links of interests applied to practitioners' problems (in this case the Sharp and the Kao company): it was enriched by their practical experiences with the knowledge-based "hypertextorganization".

The third exigency concerns the development of an integrating architectural knowledge which fosters the communication and transparency between different theories. Its aim is to clarify which part of the set of variables is introduced exogenously as strong links in the process of building a specific theory. No one single theory can engender all variables that are relevant for an overview about the problem territory and make them endogenous to the theory. Thus, it is important to develop architectural knowledge to communicate between different approaches and to make clear which variables should be treated as endogenous in the next step of the theory building process.

7. Conclusion

A theory that is good for practice must sensitize scholars as well as practitioners to a broad range of views and issues involved. We examine that a mode of research in organization studies situated in the "Pasteur's quadrant" reduces the overconfidence of scholars in their models, and supports practitioners to express their problems and experiences in a more precise terminology. The mapping mode addresses the dual purpose of organization studies: a deep understanding of the research question for

creating scientifically meaningful research while advancing problem solving in management practice at the same time. This objective of being “good for theory building and practice” is not an either-or, but it is both.

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