

■ Research Paper

Multiplying the Division of Labour: Functional Differentiation of the Next Key Variables in Management Research

Steffen Roth^{1*}, Augusto Sales² and Jari Kaivo-oja³

¹ Rennes School of Business, France

² KPMG Global Strategy Group Rio de Janeiro, Brazil

³ Turku School of Economics, Finland

In this article, we draw on theories of social differentiation to show that functional differentiation is not about the *division* of work and organization, but rather about a *multiplication* of horizons for decision-making. We argue that a systematic management of functional differentiation makes organizations smarter and more flexible. We corroborate this claim by demonstrations of how a *functional* approach to functional differentiation facilitates the design of new or the further development of well-established management tools and research agendas in fields such as entrepreneurship, strategy, and human resource management. Copyright © 2017 John Wiley & Sons, Ltd.

Keywords functional differentiation; management theory; strategy; entrepreneurship; human resource management

INTRODUCTION

Like it or not, organizations are exposed to society, and the exposition to an increasingly modern society implies an even increasing exposition to organization as organization is a key principle of modern societies. While organization is correspondingly popular in modern and postmodern management and business research, another key principle of modernity, *functional differentiation* (Bergthaller and Schinko, 2011; Leydesdorff, 2002; Luhmann, 1977, 1990,

1997; Roth, 2015; Roth and Schütz, 2015; Schoeneborn, 2011; Seidl, 2005; Vanderstraeten, 2005; Wetzel and Van Gorp, 2014), is less prominent and often reduced to a side-aspect of —mechanistic or bureaucratic—organization. Functional differentiation indeed is traditionally associated with divisions of labour and subdivisions of organizations. Such forms of *departmentation* (Young *et al.*, 1981) or *departmentalization* (Moon, 2013; Raju *et al.*, 2011), however, have often been found to have a negative impact on organizational and management performance (Mastenbroek, 1990), and some scholars have even gone as far as stating that functionalist perspectives, structures, and activities necessarily

*Correspondence to: Steffen Roth, Rennes School of Business, France.
E-mail: steffen.roth@esc-rennes.com

lead to decline (Fowler, 2003, p. 139). Cross-functional approaches to—former—management functions (Cooper *et al.*, 2008; Perez-Freije and Enkel, 2007; Ragatz *et al.*, 2002; Wind, 2005) therefore appear as promising alternatives, however, not always unambiguously so (Cuijpers *et al.*, 2011).

In this article, we start from the assumption that functionalist and cross-functional perspectives are not mutually exclusive, but rather the first facilitates and the second requires the other. Problems with functional silos¹ therefore do not simply disappear if functional borders are arbitrarily crossed, liquefied, or blurred. Consequently, we do not only perceive these borders to be risks or obstacles that call for management (Nowotny *et al.*, 2001), but also opportunities and resources for the further development of management and organization theory. Our ambition is hence not to un-observe, but rather to refocus functional differentiation so as to develop its full potential, which includes the option of a *functional* cross-functional management.

To this end, we show that functional differentiation is a special case of social differentiation. In drawing on theories of social differentiation, we further show that functional differentiation is actually not about the *division* of work or organization, but rather about a *multiplication* of horizons for decision-making (see also Roth, 2017). We conclude that a systematic management of functional differentiation makes organizations more versatile and agile, a claim that we corroborate by demonstrations of how a functional lens on functional differentiation facilitates the development of new management tools and research agendas in fields such as entrepreneurship, strategy, and human resource management.

RATIONALE

Many good ideas are simple, and many successful management tools are based on such ideas. For example, one of the most popular tools in

¹ Such as 'little human movement across functional borders' (Hernes and Weik, 2007, p. 254).

strategic management, the SWOT matrix, is essentially designed by the cross-tabling of two very basic distinctions: *positive/negative* and *internal/external* (Wehrich, 1982) or—apparently originally—*present/future* (Humphrey, 2005). While the motives for the selection of these two SWOT key distinctions remain largely opaque,² the reasons why theories of social differentiation are preoccupied with the distinctions *similar/dissimilar* and *equal/unequal* can be traced back to the early days of sociology: Virtually all classical theories of social differentiation (Durkheim, 1933; Marx, 1867; Spencer, 1895; Tönnies and Loomis, 1957; Weber, 1978) agree that early societies were formed by observations of dis-/similarities. Furthermore, all these classical theories were developed in a time when political and industrial revolutions unveiled and challenged traditional patterns of inequality, thus literally making them debatable. The implicit consent hence was that the issue of in-/equality is a social question par excellence, too, and the only dissent concerned the subordinate question whether inequalities are avoidable or inevitable side-effects of increasing specialization, and whether or not this specialization itself was an unavoidable aspect of social evolution (Cattacin, 2001; Giddens, 1973).

In his first pertinent English-language article, *Differentiation of Society*, Niklas Luhmann (1977) systematically combined both distinctions to develop a framework for what would later become a distinctive and comprehensive theory of social differentiation (Luhmann, 2013). In the subsequent section of this article, we draw on Luhmann's early framework as a both simple and theoretically well-grounded tool (thus keeping the full theory as a background). We will use this tool not so much to indicate that management and business research has largely neglected a critical set of key variables of modern

² The inventors of SWOT seem to have followed their inspiration (and to be more concerned with the *who* than the *how* of their invention): 'We started as the first step by asking, "What's good and bad about the operation?" Then we asked, "What is good and bad about the present and the future?" What is good in the present is Satisfactory, good in the future is an Opportunity; bad in the present is a Fault, and bad in the future is a Threat. Hence S-O-F-T. This was later changed to SWOT—don't ask. (I'm told that Harvard and MIT have claimed credit for SWOT...not so!)' (Humphrey, 2005, p. 7).

organization. Rather, it is our ambition to demonstrate that a systematic consideration of these new factors opens up new horizons for new venture discovery and business model innovation; for the further development of strategic management tools such as PEST and its derivatives; for organizational identity work and the facilitation of M&A processes; and for personnel selection and team building procedures.

In this article, we will use our tool to indicate and distinguish four different basic forms of social differentiation, one among which is functional differentiation. Because these basic forms of social differentiation allow for sub-system formation not only within particular organizations, but also within the overall society, our concept of functional differentiation deviates considerably from the traditional *departmentation* or *departmentalization* (Moon, 2013; Raju *et al.*, 2011; Young *et al.*, 1981) views of functional differentiation. Rather, in our case, functional differentiation is about the distinction of function systems of society: *political system, economy, science, art, religion, legal system, sport, health, education, and mass media system* (Roth and Schütz, 2015). Against this background, we are interested in the relationship between organizational or team performance and functional diversity (Parboteeah *et al.*, 2015; Tekleab *et al.*, 2016), too. However, our concept of functional diversity case cannot be 'measured by asking participants to indicate the functional area in which they worked at their current job' (Tekleab *et al.*, 2016, p. 4). In a similar way, we are also keenly interested in the facilitation of cross-functional interaction and decision-making (Crittenden and Woodside, 2006) as long as our perspective is not again confined to the observation of traditional organizational departments. Our concept of functional differentiation simply is a different beast.

In the subsequent section of this article, we will therefore give a both compact and theoretically grounded idea of what we understand by functional differentiation and how our observation of functional differentiation comes about, before we move on to demonstrations and a discussion of the considerable impact that our concept of functional differentiation has on management research and practice.

THEORY

In combining the two fundamental or even foundational sociological distinctions, similar/dissimilar and equal/unequal, Niklas Luhmann identified initially three (Luhmann, 1977, p. 32ff) and later four basic forms of social differentiation (Luhmann, 2013, p. 12f). A compact presentation of his theory of social differentiation is available in the form of Table 1.

Table 1 shows that the crossing of the above two basic distinctions creates a scenario of four alternative worlds of social differentiation. In the top left quadrat, we find that societies may be differentiated by or into similar and equal segments. This *segmentation* of society is commonly considered the earliest form of social differentiation. Segmentation may be used to distinguish segments and to group smaller segments into larger segments: Several families may form a clan, or several tribes a nation. Segmentation can also be applied to zoom in on a given segment. For example, women and men may be considered two different segments of a given tribe. The archaic logics of segmentation are still valid today: We naturally distinguish nation states, and most market researchers literally engage in market segmentation (Roth, 2016b). Yet, today, we also know that in the course of

Table 1 Social differentiation (Roth, 2015b; Roth and Schütz, 2015)

		Equal	
		+	-
Similar	+	Segmentation (families, tribes, nations, etc.)	Centralization (civilizations, empires, etc.)
	-	Functional differentiation (economy, science, art, etc.)	Stratification (castes, estates, classes, etc.)

the Neolithic revolution, another pattern of social differentiation emerged, which is indicated by the top right quadrant of our table. The distinction of logically similar, yet unequal social systems is the core principle of *centralization*. Consider for example a set of families among which one is considered more important than the other. On a larger scale, the same principle is used to distinguish cities from villages, civilizations from barbarisms, or any further kinds of centres from peripheries. In a next step, the observation of centre–periphery differences seemed to have also supported the assumption that unequal systems are also essentially dissimilar. This qualitative leap is at the heart of the bottom right form of differentiation: *stratification*. Stratified societies are formed by the distinction of dissimilar and unequal subsystems such as castes or classes. In this context, it is worthwhile to stress that new forms of differentiation overrule rather than overwrite older forms. For example, the segmentary family logic, according to which the elder discipline the younger (and not vice versa), might well remain valid within the families of a stratified society. However, the situation has now changed insofar as an old farmer cannot punish a young nobleman anymore. Similarly, nowadays, we would not consider a noble person of humble intelligence to be the better scientist than an intelligent person of humble beginnings.³ This is true because, in spite of the prevailing importance of stratification, the down left form of differentiation, *functional*

differentiation—which refers to the distinction of function systems, i.e., the political system, economy, science, art, religion, legal system, sport, health, education, and mass media system (Roth and Schütz, 2015)—is the dominant form of social differentiation today. As an epiphenomenon of modernization, functional differentiation emerged by the use of symbolically generalized communication media such as money, power, truth, or belief, with the corresponding codes working as communicative duplication rules: ‘They bisect communication without halving it. Communication is not overwritten but translated into the binary form of the code and thus remains intact.’ (Roth, 2016a, p. 8). Functional differentiation has thus created a situation in which ‘society remains the same but appears as different depending upon the functional subsystem (politics, economy, science, mass media, education, religion, art, and so on) that describes it’ (Luhmann, 1995, p. 48). While in earlier societies elements of constitutive subsystems were confined to their subsystems—a noble lady has normally not simultaneously been a male commoner—in functionally differentiated societies one and the same social event can now simultaneously be politicized, scientificized, or mediatized. In this sense, it is true that the present approach to functional differentiation does not divide, departmentalize, or decompose societies,⁴ but rather turns stratified universes into functional multiverses of both different, yet incommensurable perspectives.

Although functional differentiation may safely be assumed to be the primary form of social differentiation today (Baecker, 2007; Beck and Lau, 2005; Beck *et al.*, 2003; Brier, 2007; Laermans, 2007; Roth, 2015; Roth and Schütz, 2015), research and practice in management and business shares with the broader context of social sciences a surprising disinterest for the key concept of modern societies (Roth, 2013; Roth and Kaivo-oja, 2016; Wetzels and Van Gorp, 2014), and thus for the corresponding key variables. In this sense, our fields

³ This attitude has not always been as self-evident as it seems to be today: Membership in early learned societies was largely reserved to those who belonged to the First and Second Estate. The UK Academy of Sciences, the Royal Society, initially was ‘like a gentlemen’s club’ (Shapin, 1988, p. 390). The logic is conclusive: Only gentlemen were sufficiently well educated and financially independent and, thus, trustworthy, while ‘technician’, i.e., ‘those that were paid to do something were open to the charge that this was why they did it. A gentleman’s word might be relied upon partly because what he said was without consideration of remuneration. Free verbal action, such as giving testimony, was credible by virtue of its freedom. Technicians, as such, lacked that circumstance of credibility. Thus, so far as their capacity to give authentic experimental testimony was concerned, they were truly not present in experimental scenes. Technicians were not therein roughly the same way, and for roughly the same reasons, that allowed Victorian families to speak in front of the servants. It did not matter that the servants might hear: if they told what they heard to other servants, it did not signify; and if they told it to gentlemen, it would not be credited.’ (395). Modern science has indeed not preserved much of this noble attitude; witness its strong orientation to external funding.

⁴ This has been the critical leitmotif of many prominent sociological classics, most notably Ferdinand Tönnies (Tönnies and Loomis, 1957), who observed functional differentiation as a process of fragmentation and erosion of formerly well-‘functioning’ communities. The question remains whether contemporary management research and practice are well advised to join in this early sociological melancholia.

—although forms of functional differentiation themselves—seem to imply rather than study functional differentiation. In fact, in looking at the key factors of past and present management research and practice, we find that the focus is on variables such as age, race, nationality, culture, or class, not to forget the persistent hype of gender, all of which, however, are associated with earlier forms of social differentiation. The question that we intend to address in the subsequent section of this article is hence what management research and practice can gain if the narrow focus on pre-modern variables is complemented by a research agenda that also turns the former implicit constants of functional differentiation into variables.

APPLICATIONS

The above comprehensive concept of functional differentiation is currently least unpopular in organization studies (Andersen, 2003; Dooley, 2002; Hasse and Krücken, 2008; Nassehi, 2005; Peetz *et al.*, 2010; Roth, 2014; Seidl and Mormann, 2014). Initial applications to management have also targeted the fields of public, regional, or non-profit sector management (Andersen, 2000; Andersen and Pors, 2016; Brans and Rossbach, 1997; Etzkowitz and Leydesdorff, 2000; Leydesdorff, 1996, 2005a; Rennison, 2007; Valentinov, 2012; Valentinov *et al.*, 2015). In this section, we demonstrate how applications in further management disciplines may be fruitful. To this end, we focus on the fields of entrepreneurship, strategy, and human resource management.

Entrepreneurship

Market research in general and the discovery of new market opportunities in particular imply the identification of key variables that impact the outcome of entrepreneurial ventures. So far, the main variables identified and processed in this context are identified mainly by segmentation and stratification.

It is a common sense that value creation as much as new venture discovery often, if not

ideally, involves the crossing of regional or national borders (Acs *et al.*, 2003; Hitt *et al.*, 2001; Keupp and Gassmann, 2009; McDougall and Oviatt, 2000; Oviatt and McDougall, 2005; Wright and Dana, 2003; Young *et al.*, 2003). First movers across national borders expected to benefit from considerable advantages and might even enjoy the view on the *blue ocean* (Kim and Mauborgne, 2005) of a more or less temporal monopoly. Yet, international borders are not the only segmental borders the crossing of which might lead into blue oceans. Further examples include inter-segmental business models that follow and cross the dividing lines of age and gender, for example, face moisturizers being set across the gender border now also targeting male markets, or mobile phones with extra large numbers that aim at certain age segments.

Another set of business models is associated with the systematic transgression of borders made by stratification. Henry Ford's most famous attempt to bring the former luxury product car to the middle-class market is such an example. Today, the Tata Nano is a token for the circumstance that the car is currently being handed further down to the bottoms of the global pyramid. Many of our today's *basics* initially have been invented for the tops of the social pyramids. This includes items as essential as the handkerchief, which had been a luxury product (Elias, 1994) and been used to distinguish the nobles from the lower ranks of society, before, centuries later, the paper handkerchief is now accessible for everybody today. In fact, in reading Rogers (2003), *Diffusion of Innovation*, we realize how many inventions actually have been or are currently being handed down from often privileged *avant-gardes* and early adopters to broader middle classes and eventually to the mass markets at the bottoms of the pyramid. The strategic transgression of borders between the estates, castes, or classes hence clearly is associated with enormous business opportunities, too.

From the above, we may follow that the margins of new venture discovery ventures indeed are defined and confined by social borders made by social differentiation. It is hence obvious that a focus on the transgression of so-far

neglected forms of social borders might lead to new horizons for new venture discovery. In this sense, we assume that the strategic observation and crossing of borders between the function systems of society will also lead entrepreneurs to new blue oceans. In fact, in using this interfunctional lens, we find that many, if not most, business models have an interfunctional dimension (e.g., if works of art are transformed into commodities or investments). A prominent historical example of an interfunctional business model therefore is the *selling of indulgences*, where religious content—here: absolution—was commodified, a proper and very successful business model; witness the Saint Peter's Basilica in the Vatican. More recent examples of interfunctional business models also indicate that an export of business principles to non-economic system may also lead again to business success. In fact, the invention and implementation of *new public management* was a process where business management principles have been applied in—or better: translated into—a public administration context. This implementation of the McKinsey Stalinism (Ulrich Beck in Lorenz, 2012, p. 609) has often been heavily criticized as 'economization' of political organizations, not the least because it proved to be a globally successful business model. A yet purer example of interfunctional business model development eventually is *patent trolling* (Chaudhry and Walsh, 1995; Durand and Vergne, 2013; Pénin, 2012). As patent trolls are defined individual or corporate actors who buy patents in a near-random way, only to look for solvent institutions with running research projects in fields remotely similar to those covered by their patents. Once a target identified, the trolls formally claim damages against the alleged property right infringers. As pending lawsuits may force the defendants to temporarily stop their research activities, some defendants fear the corresponding costs or losses of earnings and sign out-of-court agreements in the context of which they pay considerable amounts in settlements, and precisely these 'compensation' payments are the actual purpose of patent trolling. Patent trolling hence creatively navigates the borders of science and the legal system in order to make economic profit, which

makes it a perfect example of an interfunctional business model.

Against the background of these examples, we are positive that a systematic mapping and management of the interfaces of the function systems will support the discovery and navigation of an entire new dimension of opportunities for both profitable and not-for-profit ventures.

Strategy

Along with SWOT or the five forces, PEST is among the strategic management tools that have stood the test of time. It is almost redundant to say that PEST scans the business environment for political, economic, social, and technological information. Yet, in looking at PEST through the lens of functional differentiation—the distinction of the function systems political system, economy, science, art, religion, legal system, sport, health, education, and mass media system—we find that a PEST analysis implies functional differentiation. In fact, we need functional differentiation to distinguish between political and economic information. Technology has a strong science connotation. Finally, the aforementioned categories need to be distinguished from whatever remains in the social category. In looking closer at the four categories, we find that legal trends originally had been under the political umbrella before they gained an independent status as the *L* in the PESTLE(D) models. In looking at the enhanced model, however, the surprise is not in the second *E*, which refers to environmental trends.⁵ In our context, the

⁵ This said although the observation of this re-entry of the environment into what already is an environmental scanning tool would already justify an independent article. In fact, the puzzle is what this second environment actually is, because even if the concern here is the natural environment, then the question remains how the observation of this natural environment comes about if not by the distinction between nature and society. Since nobody has ever managed to observe the entire society, and consequently, nobody has been successful in observing the natural environment so far, this leads to the question whose (social subsystem's) nature we are actually talking about if we are talking about *the* nature. There is necessarily more than one answer to this question, and hence—if need be, then—more than only one additional *E* to observe. In short terms: The natural environment of the political system might look fundamentally different as compared to the scientific or the religious one (Roth, 2016a; Roth and Schütz, 2015); and also quite different from the natural environment of a particular family, country, or class (Kaivo-oja, 2002).

real surprise is the narrow focus on only two or three out of 10 function systems as well as the arbitrariness of the later attempts to widen the narrow focus: the legal system is upgraded to an independent capital letter, while education remains a sub-category of the *S* container. Further function systems are ignored and continue to be so even in further extensions of the model such as STEEPLE or PESTEV, which bring in *Ethics* or *Values*, however, not—why not?—religion. This arbitrary selectivity may stem from the circumstance that PEST originates from research on a convenience sample of top managers with backgrounds mainly in the chemical industry (Aguilar, 1967), which might have suggested a strong focus on trends in political regulation as well as scientific and technological progress. The question, however, remains whether this particular mid-20th century chemical industry focus on the political system, the economy, and science continues to be—or ever has been—appropriate for business environment scans in, for example, the 21st century creative industries. In this sense, a fresh approach to functional differentiation might well facilitate a desirable opening of the socio-cultural *S* container (Kaivo-oja, 2012) and support the development of an enhanced version of the PEST model that nevertheless avoids the arbitrary and inflationary accumulation of further letters.⁶ The ambition in this context clearly is to avoid that many otherwise accurate business environment scans remain contingent on preconceived sets of variables and therefore run the *third-order risk* (Godet 1986) of giving right answers to the wrong questions. In fact, recent interfunctional research on key variables in foresight and futures studies (Roth and Kaivo-oja, 2016) supports the PEST-bias not only still is dominant, but also is being projected into the future. Yet, who says that political and scientific issues are necessarily more critical for business success than artistic, sportive, or religious factors, e.g., in the context of a FIFA World Cup in the Middle East?

⁶ The design basic accident of function systemic *acronymization* would be *RHESAMPLES*, derived from the initial letters of the 10 function systems. There are worse names for a tool for a resampling of conventional environmental scan data.

Organizational culture is often evoked as main adversary or issue of strategic management, which is particularly true for mergers and acquisitions where *culture clash* (Van den Steen, 2010) or ‘poor culture-fit or lack of cultural compatibility have become much cited, if rather poorly defined, reasons for M&A failure’ (Cartwright and Schoenberg, 2006, p. S3). In looking at Table 1 again, one aspect of this critical definition poverty is that organizational culture is—by implication—mostly defined in terms of inter-segmental diversity (Dauber, 2012; Homberg *et al.*, 2009; Jordão *et al.*, 2014): The focus clearly is on *national* culture distance or on differences in often Hofstede-inspired country scores, the latter of which also include gender-related items. Gender is sometimes also the main topic of research on mergers and acquisitions (Tienari, 2000). In most of the cases, culture is hence defined as the culture of specific segments. The strong focus on segmentation, however, is not self-evident if we consider that in the age of stratification two aristocrats from different countries easily identified more communality between each other than between themselves and their non-aristocratic countrymen. In a similar way, two researchers from Finland and Brazil might find it easier to interact with each other than with their next-door neighbours. In this sense, we suppose that the persistent focus on national or regional culture is not fruitless, but could be complemented by research on the role that different functional backgrounds and preferences play in M&A processes (see Table 2).

Table 2 M&A as interfunctional challenge

Culture company 1	Post-M&A culture	Culture company 2
Economy	Economy	Economy
Political system	?	Religion
Legal system	?	Health
Science	?	Art
Mass media	?	Political system
Education	?	Mass media
Health	?	Legal system
Sport	?	Education
Art	?	Science
Religion	?	Sport

Table 2 presents two firms that give different weight to the function systems of societies. Both rank economy first, which makes them business organizations and not hospitals, schools, or churches. As to the rest of the ranking, however, the differences are quite substantial. In company 1, decisions are often based on (micro) political, legal, and scientific considerations, while in company 2, religion is most important followed by health and again the legal system. A merger between such a 'political' business and a 'religious' business immediately emerges as a culture clash challenge even though we do not know anything about the companies' national background; in fact, the religious company 2 could be based in the Middle East as much as in the Middle West of the United States of America. If we look deeper into the matter, then we also find that a focus on different ranks for health is not absurd either. The anecdote that Daimler CEO Jürgen Schrempp moved into his new office at Chrysler and 'turned off the sprinkler system so that he could smoke cigars, and he installed a bar for his red wine' (Bower, 2001, p. 97) made it to the Harvard Business Review only because health made a difference in the observation of the Daimler and Chrysler cultures. The issue is even repeated: 'The Germans smoked, drank wine with lunch, and worked late hours, sending out for pizza and beer. The old Chrysler banned smoking and alcohol in its facilities' (96). In these and similar contexts, it might not only be more accurate, but also helpful if intercultural differences are not attributed to different national backgrounds, the Germans versus the US-Americans, but rather indicated as different functional preferences. In the above context, such an approach may have allowed to manage across the obviously prevailing laager mentalities.

Against the backdrop of the above examples of directions for theory and tool development for environmental analysis and M&A management, we see an enormous potential for high-impact interactions between multifunctional approaches to organizational culture and design (Andersen, 2003; Roth, 2014, 2016a) and the strategic management field.

Human Resource Management

If we revisit Table 2, then we find that we could replace one of the companies by a person, thus not asking for the fit between two companies anymore, but being interested in the fit between a candidate and the organizational culture of the potential employer. That said, an interfunctional lens may also make perfect sense as a next-generation approach to team diversity, in the context of which the focus on standard variables such as age, race, or gender is complemented by a functional diversity approach that accounts not only for diverse departmental backgrounds (Tekleab *et al.*, 2016), but rather for the full scope of functional differentiation. In fact, functional division in terms of management departments does often not correlate with the principles of functional differentiation. In hospitals, for example, the functional problem is not that medical doctors and managers are in different departments, and the problem might even not be an issue with our classical concept of hierarchy. Rather, the key issue might well be that medical doctors and trained managers have been trained to personify different function system preferences, and thus represent different sequences of the overall organizational program. A medical doctor has sworn to focus on health at any cost, while a manager must focus precisely the costs when tough decisions must be made. A similar lens may be applied to management researchers at universities and business schools (Alvesson and Spicer, 2016; Jemielniak and Greenwood, 2015). These conflicts are not power issues, although they can be translated into these, but rather perfect examples for interfunctional conflicts that may emerge not only between professional roles, but also within individual careers. In fact, interfunctional conflicts are often observed when organizational designs imply that career progression of specialists or experts requires the assumption of management responsibilities, which implies that the person must change its functional program. The reprogramming is often experienced as a painful process in the context of which the expert must learn that they need to devote more—if not most—of their time to political and economic

activities and have less or no time anymore for their original fields of expertise in, e.g., science, art, or health. In this context, an interfunctional lens on human resource and career management discloses new starting points not only for personnel assessment, but also for career coaching.

In brief, an interfunctional approach to human research management will facilitate the development of *new tools for*, among others,

- Candidate assessment
- Team diversity management
- Job profile communication
- Management training
- Career coaching and development

The development of these and further interfunctional tools for human research management will also require that HR managers, together with their colleagues from the strategy departments, imagine and design organizational structures that unlock rather than cancel the benefits of functional differentiation.

OUTLOOK

One of the most critical failures is failure of imagination (Mendonça, Pina e Cunha, Ruff, & Kaivo-oja, 2009). In this article, we suggested that the sometimes-negative appraisal of functional differentiation in management research and practice might be due to a certain failure to imagine functional differentiation as a concept that goes beyond the creation of arbitrary functional silos within organizations. In contrasting this reductionist departmentation approach to functional differentiation, however, we showed that the systematic exploration of a broader, sociologically informed concept of functional differentiation inspires the development or improvement of a broad spectrum of tools for management research and practice. In concrete terms, we demonstrated how and why functional differentiation might well

- Facilitate entrepreneurship activities particularly in the context of new venture discovery, with the keyword being interfunctional

business models as described in the Section on Entrepreneurship,

- Allow for the further improvement of well-established strategy tools such as PEST(LE), and more concretely so by providing a broader spectrum of (social) environmental scanning, yet, still avoiding the risk of inflationary additions of arbitrary supposed key factors (Section on Strategy),
- Help to get a thorough view of a new dimension of organizational cultural diversity, which might be particularly relevant in the context of mergers and acquisitions (Section on Strategy),
- Inspire the design of new human research management tools and practises, e.g., new personnel selection methods or alternative approaches to career coaching (Section on Human Resource Management).

In addition to the above examples, a systematic approach to functional differentiation might also be most useful in

- Innovation management, not least in the context of regional innovation management where extensions of the original triple helix model of knowledge-based innovation (Barre, 2001; Dzisah and Etzkowitz, 2008; Leydesdorff, 2005b; Leydesdorff and Etzkowitz, 1996) toward quadruple (Ivanova, 2014) or n-tuple helix models (Leydesdorff, 2012) are currently being discussed,
- Accounting as much as in the field of CSR, where social differentiation theory might lead to a more distinctive and comprehensive idea of *the social*, thus opening up horizons for broader concepts of organizational performance and (social) accounting or accountability,
- General management theory and theories of organizational design, where a social theoretically grounded approach to functional differentiation might inspire a reassessment of current organizational departmentation or departmentalization habits, and, similarly, in
- Public administration theory, where a systematic interfunctional perspective makes us wonder why, for example, a country like Germany has 5 ministries with a strong or complete economy focus—the Ministries for

Finance, Economic Affairs and Energy, Economic Cooperation and Development, Food and Agriculture, and Labour and Social Affairs—but only one for health or one for both education and research,

- Non-profit and non-governmental organization and management theory, where an increasing focus on the non-economic and non-political function systems would be rewarded not least by less indirect definitions of what organization and management in or of the other function systems actually are about.

A systematic approach to functional differentiation can hence itself be considered a tool for a broader scope of organizational flexibility, reflexivity, and improvisation (Mendonça *et al.*, 2004). Consequently, it might well be worthwhile to re-observe tensions between functional differentiation and organizational, management, or team performance (Tekleab *et al.*, 2016) through a broader differentiation theoretically grounded lens. In a similar way, we see huge potential if current concepts of cross-functionality or functional diversity are further enhanced using social differentiation theory in general and theories of functional differentiation in particular. From an even broader perspective, we eventually find that systematic explorations in functional differentiation raise and reframe fundamental challenges of the management and manageability of polycontextual societies, including questions for the—changing—relative importance of the individual function systems as much as for forms of translations and conversions of or between the logics the individual function systems. Are there such things as exchange rates not only within the economy, but also between the economy, the political system, science, art, and further function systems? These and similar challenges translated back into a research context also confront us with the still unfulfilled promise of more interdisciplinary research and, accordingly, the strategic (research) management challenge of interdisciplinarity, which is a challenge that only arises due to the significance of functional differentiation, and hence requires a thorough knowledge of its foundational principle, to which the present article was devoted.

REFERENCES

- Acs Z, Dana L-P, Jones MV. 2003. Toward new horizons: the internationalisation of entrepreneurship. *Journal of International Entrepreneurship* **1**(1): 5–12.
- Aguilar FJ. 1967. *Scanning the Business Environment*. Macmillan: NY.
- Alvesson M, Spicer A. 2016. (Un) Conditional surrender? Why do professionals willingly comply with managerialism. *Journal of Organizational Change Management* **29**(1): 29–45.
- Andersen NÅ. 2000. Public markets—political firms. *Acta Sociologica* **43**(1): 43–61.
- Andersen NÅ. 2003. Polyphonic organizations. In *Autopoietic Organization Theory*, Hernes T, Bakken T (eds.). CBS: Copenhagen; 151–182.
- Andersen NÅ, Pors JG. 2016. *Public Management in Transition. The Orchestration of Potentiality*. Policy Press: Bristol.
- Baecker D. 2007. The network synthesis of social action I: towards a sociological theory of next society. *Cybernetics & Human Knowing* **14**(4): 9–42.
- Barre R. 2001. The Agora model of innovation systems: S&T indicators for a democratic knowledge society. *Research Evaluation* **10**(1): 13–18.
- Beck U, Lau C. 2005. Second modernity as a research agenda: theoretical and empirical explorations in the ‘meta-change’ of modern society. *The British Journal of Sociology* **56**(4): 525–557. doi: 10.1111/j.1468-4446.2005.00082.x.
- Beck U, Bonss W, Lau C. 2003. The theory of reflexive modernization. *Theory, Culture & Society* **20**(2): 1–33. doi: 10.1177/0263276403020002001.
- Bergthaller H, Schinko C. 2011. Introduction: from national cultures to the semantics of modern society. In *Addressing Modernity. Social Systems Theory and U. S. Cultures*, Bergthaller H, Schinko C (eds.). Edition Rodopi: Amsterdam and New York; 5–34.
- Bower JL. 2001. Not all M&As are alike—and that matters. *Harvard Business Review* **79**(March): 93–101.
- Brans M, Rossbach S. 1997. The autopoiesis of administrative systems: Niklas Luhmann on public administration and public policy. *Public Administration* **75**(3): 417–439.
- Brier S. 2007. Applying Luhmann’s system theory as part of a transdisciplinary frame for communication science. *Cybernetics & Human Knowing* **14**(2–3): 29–65.
- Cartwright S, Schoenberg R. 2006. Thirty years of mergers and acquisitions research: recent advances and future opportunities. *British Journal of Management* **17**(S1): S1–S5. doi: 10.1111/j.1467-8551.2006.00475.x.
- Cattacin S. 2001. Réciprocité et échange. *Revue internationale de l'économie sociale* **80**(279): 71–82.
- Chaudhry PE, Walsh MG. 1995. Intellectual property rights: changing levels of protection under GATT

- NAFTA and the EU. *The Columbia Journal of World Business* 30(2): 80–92.
- Cooper MJ, Gwin CF, Wakefield KL. 2008. Cross-functional interface and disruption in CRM projects: is marketing from Venus and information systems from Mars? *Journal of Business Research* 61(4): 292–299.
- Crittenden VL, Woodside AG. 2006. Mapping strategic decision-making in cross-functional contexts. *Journal of Business Research* 59(3): 360–364.
- Cuijpers M, Guenter H, Hussinger K. 2011. Costs and benefits of inter-departmental innovation collaboration. *Research Policy* 40(4): 565–575.
- Dauber D. 2012. Opposing positions in M&A research: culture, integration and performance. *Cross Cultural Management: An International Journal* 19(3): 375–398.
- Dooley K. 2002. Organizational complexity. *International encyclopedia of business and management* 6: 5013–5022.
- Durand R, Vergne J-P. 2013. *The Pirate Organization: Lessons from the Fringes of Capitalism*. Harvard Business Press: Brighton, MA.
- Durkheim E. 1933. *The Division of Labor*. Macmillan: New York. Trans. G. Simpson
- Dzisah J, Etzkowitz H. 2008. Triple helix circulation: the heart of innovation and development. *International Journal of Technology Management & Sustainable Development* 7(2): 101–115.
- Elias N. 1994. *The Civilizing Process*. Blackwell: Oxford.
- Etzkowitz H, Leydesdorff L. 2000. The dynamics of innovation: from National Systems and “Mode 2” to a Triple Helix of university–industry–government relations. *Research Policy* 29(2): 109–123.
- Fowler A. 2003. Systems modelling, simulation, and the dynamics of strategy. *Journal of Business Research* 56(2): 135–144.
- Giddens A. 1973. *Capitalism and Modern Social Theory: An Analysis of the Writings of Marx, Durkheim and Max Weber*. Cambridge University Press: Cambridge.
- Hasse R, Krücken G. 2008. Systems theory, societal contexts, and organizational heterogeneity. In *The Sage Handbook of Organizational Institutionalism*. Sage: Los Angeles; 539–559.
- Hernes T, Weik E. 2007. Organization as process: drawing a line between endogenous and exogenous views. *Scandinavian Journal of Management* 23(3): 251–264.
- Hitt MA, Ireland RD, Camp SM, Sexton DL. 2001. Strategic entrepreneurship: entrepreneurial strategies for wealth creation. *Strategic Management Journal* 22(6–7): 479–491.
- Homberg F, Rost K, Osterloh M. 2009. Do synergies exist in related acquisitions? A meta-analysis of acquisition studies. *Review of Managerial Science* 3(2): 75–116.
- Humphrey A. 2005. SWOT analysis for management consulting. *SRI alumni Newsletter*: 7–8.
- Ivanova I. 2014. Quadruple helix systems and symmetry: a step towards helix innovation system classification. *Journal of the Knowledge Economy* 5(2): 357–369. doi: 10.1007/s13132-014-0201-z.
- Jemielniak D, Greenwood DJ. 2015. Wake up or perish: neo-liberalism, the social sciences, and salvaging the public university. *Cultural Studies→ Critical Methodologies* 15(1): 72–82.
- Jordão RVD, Souza AA, Avelar EA. 2014. Organizational culture and post-acquisition changes in management control systems: an analysis of a successful Brazilian case. *Journal of Business Research* 67(4): 542–549. doi: 10.1016/j.jbusres.2013.11.011.
- Kaivo-oja J. 2002. Social and ecological destruction in the first class: a plausible social development scenario. *Sustainable Development* 10(1): 63–66. doi: 10.1002/sd.179.
- Kaivo-oja J. 2012. Weak signals analysis, knowledge management theory and systemic socio-cultural transitions. *Futures* 44(3): 206–217. doi: 10.1016/j.futures.2011.10.003.
- Keupp MM, Gassmann O. 2009. The past and the future of international entrepreneurship: a review and suggestions for developing the field. *Journal of Management* 35(9): 600–633.
- Kim WC, Mauborgne R. 2005. *Blue Ocean Strategy: How to Create Uncontested Market Space and Make Competition Irrelevant*. Harvard Business Press: Brighton, MA.
- Laermans R. 2007. Theorizing culture, or reading Luhmann against Luhmann. *Cybernetics & Human Knowing* 14(2–3): 67–83.
- Leydesdorff L. 1996. Luhmann’s sociological theory: its operationalization and future perspectives. *Social Science Information* 35(2): 283–306.
- Leydesdorff L. 2002. The communication turn in the theory of social systems. *Systems Research and Behavioral Science* 19(2): 129–136. doi: 10.1002/sres.453.
- Leydesdorff L. 2005a. The triple helix model and the study of knowledge-based innovation systems. *International Journal of Contemporary Sociology* 42(1).
- Leydesdorff L. 2005b. The triple helix model and the study of knowledge-based innovation systems. *International Journal of Contemporary Sociology* 42(1): 12–27.
- Leydesdorff L. 2012. The triple helix, quadruple helix, ..., and an N-tuple of helices: explanatory models for analyzing the knowledge-based economy? *Journal of the Knowledge Economy* 3(1): 25–35. doi: 10.1007/s13132-011-0049-4.
- Leydesdorff L, Etzkowitz H. 1996. Emergence of a Triple Helix of university–industry–government relations. *Science and Public Policy* 23(5): 279–286.
- Lorenz C. 2012. If you’re so smart, why are you under surveillance? Universities, neoliberalism, and new public management. *Critical Inquiry* 38(3): 599–629.
- Luhmann N. 1977. Differentiation of society. *The Canadian Journal of Sociology/Cahiers canadiens de sociologie* 2(1): 29–53. doi: 10.2307/3340510.

- Luhmann N. 1990. The paradox of system differentiation and the evolution of society. In *Differentiation Theory and Social Change: Comparative and Historical Perspectives*, Alexander JC, Colomy PB (eds.). Columbia University Press: New York; 409–440.
- Luhmann N. 1995. The paradox of observing systems. *Cultural Critique* (31): 37–55. doi: 10.2307/1354444.
- Luhmann N. 1997. Globalization or World society: how to conceive of modern society? *International Review of Sociology* 7(1): 67–79. doi: 10.1080/03906701.1997.9971223.
- Luhmann N. 2013. *Theory of Society, Volume 2*. Stanford University Press: Palo Alto.
- Marx K. 1867. *Capital, Critique of Political Economy. Volume I*. Penguin: Harmondsworth.
- Masterbroek WF. 1990. Information management, organizational design, and organizational theory. *European Management Journal* 8(1): 130–136.
- McDougall PP, Oviatt BM. 2000. International entrepreneurship: the intersection of two research paths. *Academy of Management Journal* 43(5): 902–906.
- Mendonça S, Pina e Cunha M, Kaivo-oja J, Ruff F. 2004. Wild cards, weak signals and organisational improvisation. *Futures* 36(2): 201–218. doi: 10.1016/S0016-3287(03)00148-4.
- Mendonça S, Pina e Cunha M, Ruff F, Kaivo-oja J. 2009. Venturing into the wilderness: preparing for wild cards in the civil aircraft and asset-management industries. *Long Range Planning* 42(1): 23–41. doi: 10.1016/j.lrp.2008.11.001.
- Moon B-J. 2013. Antecedents and outcomes of strategic thinking. *Journal of Business Research* 66(10): 1698–1708.
- Nassehi A. 2005. Organizations as decision machines: Niklas Luhmann's theory of organized social systems. *The Sociological Review* 53(1): 178–191.
- Nowotny H, Scott PB, Gibbons MT. 2001. *Re-Thinking Science: Knowledge and the Public in an Age of Uncertainty*. Polity Press: Cambridge, UK.
- Oviatt BM, McDougall PP. 2005. Defining international entrepreneurship and modeling the speed of internationalization. *Entrepreneurship Theory and Practice* 29(5): 537–554.
- Parboteeah KP, Hoegl M, Muethel M. 2015. Team characteristics and employees' individual learning: a cross-level investigation. *European Management Journal* 33(4): 287–295.
- Peez T, Lohr K, Hilbrich R. 2010. Management, organization, structure. *Theoretical Considerations and Empirical Evidence on Changes in the Management of Educational Organizations*. Paper presented at the Forum Qualitative Sozialforschung/Forum: Qualitative Social Research.
- Périn J. 2012. Strategic uses of patents in markets for technology: a story of fabless firms, brokers and trolls. *Journal of Economic Behavior & Organization* 84(2): 633–641.
- Perez-Freije J, Enkel E. 2007. Creative tension in the innovation process: how to support the right capabilities. *European Management Journal* 25(1): 11–24.
- Ragatz GL, Handfield RB, Petersen KJ. 2002. Benefits associated with supplier integration into new product development under conditions of technology uncertainty. *Journal of Business Research* 55(5): 389–400.
- Raju PS, Lonial SC, Crum MD. 2011. Market orientation in the context of SMEs: a conceptual framework. *Journal of Business Research* 64(12): 1320–1326. doi: 10.1016/j.jbusres.2010.12.002.
- Rennison BW. 2007. Cash, codes and complexity: new adventures in the public management of pay scales. *Scandinavian Journal of Management* 23(2): 146–167. doi: 10.1016/j.scaman.2006.11.002.
- Rogers E. 2003. *Diffusion of Innovations*. Free Press: New York.
- Roth S. 2013. Les Deux Angleterres Et Le Continent: Anglophone sociology as the guardian of Old European semantics. *Journal of Sociocybernetics* 9(1–2): 19–34.
- Roth S. 2014. The Multifunctional Organization: two cases for a critical update for research programs in management and organization. *Tamara Journal for Critical Organization Inquiry* 12(3): 37–54.
- Roth S. 2015. Foreword: trends in functional differentiation. *Cybernetics and Human Knowing* 22(2): 5–10.
- Roth S. 2016a. Growth and function. A viral research program for next organizations. *International Journal of Technology Management* 72(4): 269–309.
- Roth S. 2016b. Market therapy? On intervention in the consociation with non-members. *Systems Research and Behavioral Science, online first, December 7*: 2016. doi: 10.1002/sres.2445.
- Roth S. 2017. From added values to augmented realities. Introducing the special issue of management and functional differentiation. *Systems Research and Behavioral Science* 34(2) in this issue.
- Roth S, Kaivo-oja J. 2016. Is the future a political economy? Functional analysis of three leading foresight and futures studies journals. *Futures* 81: 15–26. doi: 10.1016/j.futures.2015.10.002.
- Roth S, Schütz A. 2015. Ten systems: toward a canon of function systems. *Cybernetics and Human Knowing* 22(4): 11–31.
- Schoeneborn D. 2011. Organization as communication: a Luhmannian perspective. *Management Communication Quarterly* 25(4): 663–689. doi: 10.1177/0893318911405622.
- Seidl D. 2005. Glossary to Niklas Luhmann's terminology. In *Niklas Luhmann and Organization Studies*. Copenhagen: Liber & Copenhagen Business School, Seidl D (ed.). Copenhagen Business School Press: Copenhagen.
- Seidl D, Mormann H. 2014. Niklas Luhmann as Organization Theorist. In *Oxford Handbook of Sociology, Social Theory and Organization Studies: Contemporary Currents*, Adler PS, du Gay P, Morgan G, Reed M. (eds.). Oxford University Press: Oxford; 125.

- Shapin S. 1988. The house of experiment in seventeenth-century England. *Isis* **79**(3): 373–404.
- Spencer H. 1895. *The Principles of Sociology*, vol. 1. Appleton: New York.
- Tekleab AG, Karaca A, Quigley NR, Tsang EW. 2016. Re-examining the functional diversity–performance relationship: the roles of behavioral integration, team cohesion, and team learning. *Journal of Business Research* **69**(9): 3500–3507.
- Tienari J. 2000. Gender segregation in the making of a merger. *Scandinavian Journal of Management* **16**(2): 111–144.
- Tönnies F, Loomis CP. 1957. *Community and Society*. Dover Publications Inc: Mineola, NY.
- Valentinov V. 2012. Toward a critical systems perspective on the nonprofit sector. *Systemic Practice and Action Research* **25**(4): 355–364. doi: 10.1007/s11213-011-9224-6.
- Valentinov V, Hielscher S, Pies I. 2015. Nonprofit organizations, institutional economics, and systems thinking. *Economic Systems* **39**(3): 491–501.
- Van den Steen E. 2010. Culture clash: the costs and benefits of homogeneity. *Management Science* **56**(10): 1718–1738.
- Vanderstraeten R. 2005. System and environment: notes on the autopoiesis of modern society. *Systems Research and Behavioral Science* **22**(6): 471–481. doi: 10.1002/sres.662.
- Weber M. 1978. *Economy and Society. An Outline of Interpretative Sociology*. (G. Roth & C. Wittich, Trans.) University of California Press: Berkeley.
- Wehrich H. 1982. The TOWS matrix—a tool for situational analysis. *Long Range Planning* **15**(2): 54–66. doi: 10.1016/0024-6301(82)90120-0.
- Wetzel R, Van Gorp L. 2014. Eighteen shades of grey?: an explorative literature review into the theoretical flavours of organizational change research. *Journal of Organizational Change Management* **27**(1): 115–146.
- Wind YJ. 2005. Marketing as an engine of business growth: a cross-functional perspective. *Journal of Business Research* **58**(7): 863–873.
- Wright RW, Dana L-P. 2003. Changing paradigms of international entrepreneurship strategy. *Journal of International Entrepreneurship* **1**(1): 135–152.
- Young RL, Hougland JG, Shepard JM. 1981. Innovation in open systems: a comparative study in banks. *Sociology and Social Research* **65**(2): 177–193.
- Young S, Dimitratos P, Dana L-P. 2003. International entrepreneurship research: what scope for international business theories? *Journal of International Entrepreneurship* **1**(1): 31–42.