Rings of fire. Training for Systems Thinking and Broadened Impact

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Why systems thinking in training, and what is it?

What is the impact of training and development activities at work? In this chapter we argue that such a question should not only be an academic concern but also one that gets is built into all decisions about training. Building an understanding of impact into training means more than measuring effects and basing training on evidence (Pfeffer & Sutton, 2006b). It means moving towards a systemic approach where employees get a holistic sense of the totalities they are operating within and are attuned to acquire and understanding feedback from those totalities from their performance at work. We write *totalities* in plural because impact must be seen with at least three sets of realms. These are realms that are partly overlapping but each have their own sets of concerns and implications for training: the realm of business impact, the realm of beneficiary impact and the realm of societal impact. With the term "beneficiary impact" we here do not refer to the impact for trainees but rather for the people benefitting from the increased skills of the trainees, in particular end-users but also colleagues.

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Employee training and development, defined as a systematic approach to learning and development to improve individual, team, and organizational effectiveness (Kraiger & Ford, 2007) is a widespread human resource (HR) practice. Training and development interventions vary greatly in terms of content and scope from basic skill acquisition programs to complex programs, such as diversity training and leadership development. Despite of the variety of interventions, the literature on training and development is supportive of a range of beneficial outcomes following training participation, such as individual knowledge and skill acquisition, individual performance (Arthur, Bennett, Edens, & Bell, 2003; Colquitt, LePine, & Noe,

2000) and organizational performance (Aguinis & Kraiger, 2009; Tharenou, Saks, & Moore, 2007).

The field of training and development research has gradually evolved. Initially, training and development research focused on isolated and specific activities (e.g., needs assessment, training objectives, evaluation criteria, and training transfer) and used the traditional instructional design model (Gagné, Briggs, & Wager, 1992) to explain how training leads to beneficial employee outcomes. As noted by Noe et al. (2010), a shortcoming of this tradition is that it is predominantly technical and instructor-focused. Furthermore, this approach fails to integrate training with all the activities employees perform when at work. This is important because events prior to, during, and after training influence the outcomes of training interventions (Blume, Ford, Baldwin, & Huang, 2010; Mesmer-Magnus & Viswesvaran, 2010). The results from these meta-analyses on training transfer and pre-training interventions show, among other things, that the process of ensuring beneficial individual outcomes from training and development initiatives is embedded in a wider context. Therefore, there may be additional benefits for training research and practitioners in conceptualizing the trainee and the training as embedded within a particular set of systems. Recognizing this requires systems thinking, but the benefits for training on individuals, organizations, and the wider business environment may be substantial when systems thinking is alive and present.

The purpose of our chapter is to investigate how training can contribute to development of systems thinking of trainees as seen through three lenses of building impact; the realm of business impact, the realm beneficiary impact and the realm of societal impact. Knowledge creation is socially constructed through the development of shared meaning between employees participating in training, their trainers, and their respective colleagues *and* beneficiaries during and after training program completion. This implies a need for training

advocates and training research to focus on conditions that enable the training participant to be active and integrate new knowledge into existing knowledge structures (Bell & Kozlowski, 2008) while recognizing the socially embeddedness of training (Noe, Clarke, & Klein, 2014). In short, training should be aligned and integrated with the core drivers for organizational performance, and provide employees with a holistic and systemic understanding to act autonomously and proactively in applying relevant training content when deemed relevant.

Prior work on systems thinking in training has identified two essential processes for training effectiveness, namely horizontal and vertical transfer (Kozlowski, Brown, Weissbein, Cannon-Bowers, & Salas, 2000). Horizontal transfer refers to the critical process of ensuring that individuals acquire the knowledge and skills during training and actually make use of training content after training completion in order to improve individual performance. Vertical transfer implies that employees jointly contribute to increased unit or organizational performance based on coordinated and recognized standards at the organizational level. While both of these processes are clearly important for understanding how training influences organizational outcomes (Kozlowski et al., 2000) empirical research embracing a systems approach to training remains to the best of our knowledge limited. Brinkerhoff and Gill (1994) suggested a paradigm that organizes the principles and processes of an emerging human resource development paradigm requiring 'training to be everyone's business'. They established four basic principles that follow from the new HRD paradigm: strengthen the linkage of training results to critical business goals; maintain a strong customer service focus; integrate training efforts into a total performance improvement system; and use measurement and feedback to continuously improve the process of learning and change.

We acknowledge the approach of Brinkerhoff and Gill (1994) – and related approaches in organizational learning (Jackson, 2003; Senge & Sterman, 1992) and knowledge management (Rubenstein-Montano et al., 2001) - as important foundations.

However, we also see the need for further theoretical and empirical development, including the incorporation of systemic approaches in more recent research traditions. The call for a more integrated approach is also echoed in the literature of strategic HRM (Chadwick, 2010) where it is emphasized that more fine-grained theorizing and empirical analyses are warranted to unveil the benefits of internally consistent HRM. That is, research is needed to understand the extent to which effects of one HR practice such as training is contingent upon alignment with other HR practices.

Systems thinking emerged as a criticism to reductionist view on organizations, at first as generalized system theory (von Bertalanffy, 1956) and later system thinking (Emery, 1969). Emery (1969) saw organizations as complex systems made up of interrelated parts most usefully studied as a whole. Systems' thinking was enthusiastically taken up as the basis of a new form of social theory (Flood, 2010). Brinkerhoff and Gill suggested a form of systems thinking that is primarily directed at the realm of business – a realm where the tradition of design thinking (Dunne & Martin, 2006; Martin, 2009; Seidel & Fixson, 2013) has set a new agenda for holistic approaches to innovation and learning in organizations. Furthermore, research traditions within such fields as corporate social responsibility (Aguinis & Glavas, 2012; Sharma, Sharma, & Devi, 2011), care and compassion (Rynes, Bartunek, Dutton, & Margolis, 2012), high-quality connections (Stephens, Heaphy, & Dutton, 2012) and prosocial behavior (Grant, 2007, 2013) has extended new horizons for what it means to think in systemic ways and to have an impact in organizations. Training should thus not just be seen as addressing matters of impact in the realm of business and competitive landscape, whether considered operational excellence or developmental vitality. Two relational realms deserve consideration – the micro-relational realm of impact on (direct) beneficiaries and the macro-relational realm of societal impact (with indirect beneficiaries). We thus contribute to a system thinking training by developing and illustrating a framework where we deepen,

reorient and expand systemic approaches along three sets of systemic realms; the realm of business, the realms of beneficiaries and the societal realm. We reason from three main sets of contrasting empirical examples.

Case settings and method

The primary form of reasoning in this chapter is deductive in the sense that we start from theories of systemic thinking in each of the three realms of impact and then illustrate, ground, and further develop our argument through three cases. The three cases are Southwest Airlines, the Zingerman's community of small food-related businesses in Ann Arbor, Michigan, and the exploration units of a major oil company that we call Explore[1]. These empirical settings are purposively sampled (Huberman & Miles, 1994) because they contrast on several dimensions of importance to system thinking training, such as types of value creation activities, knowledge base of personnel, frequency of beneficiary interaction and framing of societal contribution.

For *Southwest airlines* we rely on secondary data – as a substantial number of case descriptions (Heskett & Sasser, 2010; John, Ananthi, & Syed, 2008; O'Reilly & Pfeffer, 1995), research papers (Bunz & Maes, 1998; Kuvaas & Dysvik, 2012) and books (Collins & Hansen, 2011; Gittell, 2003; O'Reilly & Pfeffer, 2000) have been written about the company and its training & development practices. For *Zingerman's* we rely on three case descriptions (Baker, 2013a, b; Smerek & Baker, 2010), a tale from one of the founders (Weinzweig, 2003) and personal observations by one of the authors as customer over a six month period. For *Explore* we base our reasoning on a sustained action research engagement by one of the authors over eight years, partly documented in a recent book (Carlsen, Clegg, & Gjersvik,

[1] Explore is short for the exploration units of an integrated oil company. In these units, a variety of geoscientists (engineers trained in disciplines like sedimentology, petrochemics, geophysics and geology) work to identity prospects for where oil and gas can be found. This work requires an ability to imagine processes that took place hundreds of millions of years ago based on synthesis of data that are always incomplete, from well logs, seismic images and rock samples. Exploration can take place close to proven oil fields as well as in frontier basins.

2012). The research engagement involved over 100 interviews and 12 facilitated sensemaking events where researchers and practitioners discussed preliminary findings. The project had a primary purpose of investigating creativity in hydrocarbon exploration but also involved repeated discussion and interventions with staff responsible for training engineers engaged in oil and gas exploration.

The variation in the three cases make them well suited to constant comparison in grounded theory building (Suddaby, 2006). It is nevertheless important to note that we use the three settings not as evidence of a renewed framework or in a normative sense. Rather, they are used as reasoning devices that help us explore the dimensions of systems thinking training and detail a new research agenda. The cases vary in the extent to which they shed light on each of the proposed realms of impact. Other empirical examples are drawn upon and used selectively.

Training for systems thinking – a framework

We define systems thinking training as efforts of training and development activities in organizations that set out to bring systemic understanding to people - whether managers or employees – in ways that make them more capable of acquiring and using feedback from the totalities they are operating within in terms of understanding the impact of their actions and act in more fruitful ways. We suggest three sets of partly overlapping totalities deserve specific attention for such training activities: 1) the realm of business including the operational and developmental systems, 2) the intersubjective and micro-relational realm of immediate internal and external beneficiaries and (3) the macro-relational societal realm, including impact for nearby and more distant communities. See Table 1 below for an analytical framework with definitions of these realms.

Table 1 A framework for systems thinking training

Realm of impact	Description	Chief concerns for training
Business realm	The operational production system of the organization as well as the system of developing new products, services and practices. This realm also includes understanding of the objectives and vision of the organization as well as its position in the larger competitive and regulatory institutional landscape.	Enabling better decision making and task execution in everyday work through providing people with a shared, detailed and comprehensive understanding of how (their part of) the organization performs and contributes to progress in core value creating activities. Enabling people to better take part in and help integrate development activities across disciplines and organizational units to meet unique user needs.
Beneficiary realm	The interpersonal system of interactional and reciprocity dynamics with internal beneficiaries and proximal external beneficiaries. This is a micro-relational realm of understanding one's impact on singular others.	Enabling the ability to take the perspective of others and understand the effect of one's behavior on in everyday interactions; enabling more energizing behavior and stimulating giving behavior with internal and external beneficiaries through increased awareness of how one's actions affect others.
Societal realm	The macro-relational realm consisting of the larger institutional field, communities and potentially global societal consequences that work in the organizations has consequences for and is shaped by. This macro-relational realm includes distant and future beneficiaries.	Enabling to understand larger societal impact of ones work and act on such understanding to facilitate integration of practices for achieving sustainability, citizenship behavior and community development with both production and new business development.

The business realm

There are several streams of training related literature that speak to the importance of having participants in training acquire systemic understanding in business operations as well as development work. The tradition of experiential learning (Kolb & Kolb, 2005; Kolb, 1984) laid the premise for thinking about how to integrate one's ongoing experiences at work with efforts of collecting performance data, reflecting and developing more precise language for

understanding the impact of one's actions and adjust course accordingly. This tradition of research has more recently been paralleled by evidence-based approaches to managing and developing organizations (Michie & West, 2004; Pfeffer & Sutton, 2006a), though mostly applied in the health services (Michie & West, 2004; Rousseau, 2006). Open book management (Mouritsen, Hansen, & Hansen, 2001) with extensive sharing of financial and performance information to all parts of the organization, draws from both these two sets of literatures (Pfeffer, 1998; Pfeffer & Sutton, 2006b).

Another and more direct descendant (Beckman & Barry, 2007) of experiential learning is the tradition of design thinking (Martin, 2009; Rylander, 2009). Design thinking typically sets out to use integrative approaches to solve complex challenges in a way that addresses user feasibility, technical/competence feasibility and business feasibility (Brown, 2008). Design thinking is a broad field of practice more than a clearly defined field of research. There has been repeated calls for uptake of design thinking in education and project based learning (Dunne & Martin, 2006; Dym, Agogino, Eris, Frey, & Leifer, 2005), but as far as we know the tradition has received little attention in research on training design.

So what could systems thinking in the business realm mean for training? The cases prepared on Zingerman's community of businesses by Wayne Baker and colleagues at University of Michigan (Baker, 2013a, b; Smerek & Baker, 2010) are indicative of the potential for enhancing training with systemic understanding as a main target. Waiters or other front line service personnel at Zingerman's are known to be able – and quite enthusiastic about – giving articulated and spontaneous accounts of the company's vision, values, strategies or finances to customers. The firm's mission and vision were often summarized as building shared commitment to a triple bottom line of: 1) great food, 2) great service and 3) great finance (Baker, 2013a). The mission is followed up by deliberate installment of holistic understanding in all employees with extensive sharing of performance data, practices for

participation in strategy discussion and a broad-based ownership program (Baker, 2013b). A key practice is a weekly "huddle" built on principles of open book finance with joint sharing and discussions over past and forecasted performance data visualized on big white boards (Smerek & Baker, 2010). The event involves all available employees, who take turns facilitating and keeping metrics updated between events. Participation from newcomers is particularly emphasized. Training practices also include.

- A new employee introduction course taught by the two founders of the firm: "New employee orientation is the last thing Ari and I would have ever considered delegating or outsourcing" (Baker, 2013a , p. 13)
- Extensive in-house training at the "University of Zingerman's" where employees are requested to attend a series of orientation courses and also can earn training certificates and associate's, bachelor and more advance degrees.
- All managers are expected to spend two hours of formal study every week and all leaders are expected to provide at least one hour of formal teaching every month in this setting.
- Informal learning takes place on the job with regular food tasting sessions where employees learn about new products and potential suppliers

The training practices at Zingerman's and the broader outlook on participation and ownership, have several parallels at Southwest airlines. Just as with Zingerman's, airline personnel at Southwest Airlines are trained to "go the extra mile" and use their common sense when facing unique situations with passengers. Systemic understanding is central to ensuring that autonomy yields exceptional service.

In order to reduce unnecessary red tape, Southwest does not have a formal performance management system. The focus is on the core of their business, ensuring fast turnaround and providing excellent customers service. Southwest conducts most if not all

training in-house with extensive use of experiential learning and large degree of participation of leaders in training activities, including introductory courses for newcomers. For new training initiatives, leaders undergo training first to signal the importance of participation and to be familiar with the content that their employees will learn.

Given the emphasis on employee competence in Southwest, continuous training of its employees is essential. As noted by O'Reilly and Pfeffer: "The emphasis is on performing operations better, faster, and cheaper, *understanding other people's jobs*; delivering outstanding customer service; and keeping the culture alive and well (O'Reilly & Pfeffer, 2000, p. 39). The essentials of Southwest culture is the focus for their introductory courses for all employees where the emphasis is on two of the cornerstones of the business model; relational coordination and excellent customer service. Flight attendants go through extensive training where much of the training focuses on customer service. All training also underpins how to work in teams and cross-functionally. It is key to handling the mutual interdependence of achieving aircraft turnaround within the allocated time, where flight attendants, gate agents and pilots help each other. Training is almost 100% run by internal resources, in order to make the content tailor made and relevant for the participants. Continuously, new training programs are designed when needs emerge, with managers undergoing training along with their peers. Last, but not least, special events such as Front Line forums are set together, where tenured employees discuss the progress of the company, whether training is beneficial, and what needs to be done in order to maintain the company culture (O'Reilly & Pfeffer, 2000).

The empirical grounding in evidence also extends to development work. Collins and Hansen (2011) have coined such grounding "empirical creativity", using Southwest Airlines as one of their cases. A good example here is the development work on changing boarding practices (Heskett & Sasser, 2010). In an experiment in 2007 in San Diego, passengers were

for the first time allowed to reserve their seats in advance. The actual boarding processes were filmed and the passengers were interviewed about their experience. Southwest found that customers preferred its open seating by two to one and that the assigned seating slowed the boarding process by four to six minutes. As a result of this experiment, management decided to maintain open seating but began allowing passengers to "reserve" places in the waiting line (Heskett & Sasser, 2010: 7-8) What we see here is a form of evidence based practice development where members of the organization gather evidence of customer preferences and/or the working of practices (e.g. like boarding), perform small experiments on these practices and re-design them accordingly. It is a form of development activity where training and improvement efforts may blend, that is cyclical and participative and that starts with observations in the field.

Like at Zingerman's frontline employees at Southwest Airlines are noted for being articulate about vision and strategy, "Nothing about nurturing the culture at Southwest Airlines is casual. The result? Southwest people – even at the lowest part of the employee food chain – are extraordinarily articulate about the essence of the Southwest vision." (O'Reilly, 1995/2006 , p. 7)

At Explore, training for systems thinking takes two major forms. First, there is cross-disciplinary training. Geoscientists who explore for oil and gas face inevitable needs for combining information from many different sources and disciplines to: 1) develop geological prospects for where oil and gas can be found, 2) communicate these prospects to internal and internal stakeholders in a way that is system competent (e.g. knowing the larger basin in which they are placed, the position and strategies of this basin as well as competing prospects within and outside the basin), and 3) integrate efforts to bring prospects closer to maturation. Senior explorers in charge of training and mentoring activities talk about the necessity of investing in t-shaped (breadth and depth) competence building (Barile, Franco, Nota, &

Saviano, 2012) to facilitate cross-disciplinary combination. For example, a specialist in sedimentology, having depth, may need to invest up to five years of his or her career into work activities that provide on-the-job training in complementary disciplines, thus acquiring breadth, including the business of oil field development.

Second, systems thinking at Explore is also nurtured via on-the job training in projects. Successful exploration projects and task forces typically rely on extensive mobilization practices with regards to facilitating open discussions of objectives, plans and commitments (Ericksen & Dyer, 2004) in the early phases, seeding the ground for not only enrolment of people but also holistic understanding and autonomy in the project. Senior exploration managers also frequently talk about the need to nurture and grow people who can become integrators in terms of being ready to assume responsibility for the total development of prospects all the way to drilling. A tale from one successful exploration manager about his own growth as a threshold experience is illustrative:

> Those first three years, I delivered specialized services, right. So you care about that little piece there and let go of everything else.… But when it gets to the point that you are investing in a hundred million dollars to drill a well, then you need to be accountable and proper and document things in a much wider scope– and approach the larger, total picture… it takes insanely much to realize an idea, and that is what you get to see, how hard it is to convince everyone around you that this is a good idea, and that you are allowed to use X million dollars to test your idea. And that means you are really beginning to become interested in the totality.

Developing people with such integrator capabilities is recognized as important at Explore. Managers and current integrators believe that the main way to accomplish this is with on-the-job learning, where employees take on responsibility for real-life projects. Such learning is increasingly coupled with systematic efforts of coaching and joint reflection in formalized training arrangements at the internal Exploration Academy.

A particularly interesting feature of training for system understanding at Explore is the role of the visual. Explorers seldom see or touch the material realities they work with, and

interpretive complexity amongst masses of data presents a real danger for fragmentation of work. Newcomer specialists who are delivering small analytics into large projects often voice concerns about such fragmentation and alienation. By contrast, well-working exploration teams typically have arrangements that parallel the huddle at Zingerman's: There are visual sensemaking sessions within projects that place data and maps into larger regional wholes and there are (less frequent) visual delivery schedules and prospect inventories across prospects. The visual becomes the basis for seeing progress in work (Amabile & Kramer, 2011) and for relational coordination (Bechky, 2003; Seidel & Fixson, 2013; Seidel & O'Mahony, 2014), training that literally allow newcomers to see how their work fit into and affect the larger landscape of deliverables. So far such schemes are more part of learning-oriented work practice than training per se.

The beneficiary realm

The beneficiary realm of making an impact with training consist of the interpersonal system of interactional and reciprocity dynamics with internal beneficiaries and proximal external beneficiaries. The perceived importance of this realm has grown along with increasing awareness of the importance of prosocial behavior (Grant, 2007), high-quality connections (Stephens et al., 2012) and increased attention to relational being at work (Dutton & Ragins, 2007; Gergen, 2009; Sennett, 2012). Brown and van Buren (2007) suggest that training involving employee-helping behavior will develop stronger reciprocity norms in organization. More specifically, work on generalized reciprocity and giving behavior show how performance is boosted by being aware of the consequences of one's action in terms of making a difference to others (Grant, 2013; Grant & Berry, 2011).

Much of this theorizing takes an implicit systemic view in the sense that training for one's perspective taking (Buell, Kim, & Tsay, 2014; Galinsky, Maddux, Gilin, & White,

2008; Hoever, van Knippenberg, van Ginkel, & Barkema, 2012) is seen as key to connect, read feedback from immediate others and perform well (e.g. in terms of social processes such as creativity or negotiations). Galinsky et al. (2008) highlight the importance of perspective taking for negotiation outcomes as well as its' differential effect vis-a-vis empathy. While perspective taking was beneficial for negotiation outcomes, empathy was not. Grant (2008) convincingly demonstrated how exposure to primary beneficiary of call center operators' work and psychological mechanism of perspective taking stimulates individual creativity, effort, and funds raised. Hoever et al (2012) conducted a series of experiments to show that diversity only breeds team creativity when supported by perspective taking.

In the high-quality connections literature (Dutton, 2003; Dutton & Heaphy, 2003; Stephens et al., 2012) the micro-dynamics of seeing others, listening to others and being genuine in relation to others all presupposes ability to understand the effect one has on others. Being able to form high-quality connections is an intersubjective systemic skill in the relational realm. The systemic quality is particularly well qualified by the work of Esa Saarinen and colleagues (Luoma, Hämäläinen, & Saarinen, 2008; Saarinen & Hämäläinen, 2010) who talks about systems intelligence as a broadened version of emotional and social intelligence. As defined by Hämäläinen and Saarinen (2006, p. 191), "A subject acting with systems intelligence engages successfully and productively with the holistic feedback mechanisms of her environment. She perceives herself as part of a whole, the influence of the whole upon herself as well as her own influence upon the whole". The wholes that Hämäläinen and Saarinen (2006, p. 191)are particularly concerned with are the relational ones, for example what they call interpersonal "systems of holding back" (Hämäläinen and Saarinen 2006, p. 196-198). Couples may stop doing small gestures of love and people at work may stop trying to do the small positive behaviors that make others thrive and make a difference to customers because of lack of sensitivity and unchecked assumption about others.

We risk being trapped into to negative behavioral dynamics because of lack of systems intelligence.

Finally, the beneficiary realm has been further accentuated by a stream of research on help-seeking and help-giving behavior (Amabile, Fisher, & Pillemer, 2014; Cerne, Nerstad, Dysvik, & Škerlavaj, 2013; Fisher, Pillemer, & Amabile, 2014; Grodal, Nelson, & Siino, 2014; Hargadon & Bechky, 2006; Shapiro, 2013; Wood Brooks, Gino, & Schweitzer, In press). For example, being system competent in an organization like the design firm IDEO pre-supposes learning about and acting upon expectations for actively seeking help for complex problem solving outside one's project team (Amabile et al., 2014). Other examples of organizations that systematically nurture help seeking and help giving behaviors at work include Google and ConocoPhilips where peer-to-peer appreciation is used to signal benefits and collaborative systems offers a means to giving and receiving help. Addressing overwhelming fear of losing face or exposing oneself for vulnerability while asking for help, Wood Brooks et al (in press) have recently found that asking for help actually increased perceptions of help seekers competence (especially if problems were seen as tough and person asked was an expert in the field). Knowing where, when and how to ask for help and being able to offer help in return should be part of the agenda for training.

Training that addresses the beneficiary systemic realm is well exemplified at Zingerman's. Its importance is shown clearly by the founders who championed an explicitly giving-oriented culture with emphasis on trust and care. Several parts of the vision statement and the guiding principles allude to the importance of this realm. Examples include (Baker, 2013a , p. 4): "Showing love and care in all our actions. To enrich as many lives as we possibly can" (from the mission statement) and "Strong relationships! Successful working relationships are an essential component of our health and success as a business" (from the

guiding principles statement). In terms of HR and management practices, examples of beneficiary related training arrangements include (Baker, 2013a, b):

- teaching relational skills of servant leadership as core to giving great service and handling complaints
- instituting a concept called "positive energy" where all employees should strive to have professional fun and a positive attitude
- fostering open communication with inviting newcomers and others to partner meetings and ensuring key decisions are made in face-to-face meetings with consensus
- practices for publicly giving appreciation of co-workers at the end of meetings, expressing gratitude to co-workers for specific actions in the monthly newsletter and giving formal and public awards for actions qualifying for the "x-tra mile files" and "service stars"
- teaching a process known as "caring confrontation" where employees are told to handle work concerns in a direct and respectful manner
- letting employees fill out donation request forms for charity contributions to recipient organizations in the local community

Again, several of these ways of thinking about training are mirrored at Southwest Airlines in terms of purposively emphasizing and investing in relations as the major basis of competitive advantage and employee well-being (Gittell, 2001). Like at Zingerman's the company was set up with an egalitarian family-like culture emphasizing deeply meaningful work. Relational competence is continually emphasized not just in training, but in recruitment and leadership practices as well (O'Reilly & Pfeffer, 1995).

Indeed, Judy Gittell's in-depth studies claimed that relational coordination – as in the fast turnaround processes - is a major explanation of the company's competitive advantage

(Gittell, 2006a, b). Such relational coordination, according to Gittell, resides in shared goals, shared knowledge and mutual respect, factors that in turn promote more frequent, timely and joint communication on crucial issues. From the early days, relational practices at Southwest airlines included (O'Reilly & Pfeffer, 1995):

- celebration of a fun-loving culture with serious attention to parties and celebrations
- empowerment of employees to make on-the spot common sense decision to provide customer service, and celebration of examples of helping customers in need
- cherishing the customer centric by arranging a "day in the field"-program for officers and directors and staffing the human resource department with people with front-line experience only
- allowing peer recruiting to better screen for value fit, positive attitudes and ability to do team work
- practices for systematic appreciation of peer to peer and cross-function contributions as well as positively deviant customer service experiences

In addition, compared to Zingerman's, people at Southwest Airlines seem to be more conscious about the value of beneficiary contact practices for creating, gathering and using stories of positively deviant services. Employees of the company were famous for rapping or singing security announcements and freely using other opportunities to provide unexpected entertainment for passengers. Even turning down people in recruitment in a gracefully and respectful manner seems to have been a means to create positively deviant beneficiary service (O'Reilly & Pfeffer, 1995).

Moving on to *Explore,* we can say that relational practices have, quite unlike the two other case companies, traditionally not been a major concern in training or team development. Technical concerns and subjects are prioritized and there is little local language for relations

that are enlivening and mutually rewarding. Interaction with direct outside beneficiaries is not a part of everyday work. There are no immediate external beneficiaries (as opposed to anonymous energy users) of exploration to interact with except family and other local community members for whom an eventual discovery could mean more investments and high-paying jobs in their area.

Nevertheless, the relational dimension that appears crucial in hydrocarbon exploration activities at Explore is the ability to maneuver in a landscape of specialists and knowing how other specialists or integrators may benefit from one's work. Finding good ways of asking for help and offering help is of major importance in order to move prospects further up the line, as there is no such thing as single person prospect development. Training schemes are giving increased attention to practices for giving appreciation within and across departments. Furthermore, while the organization has for a long time staged peer review and peer assist sessions, the generative, energizing and connective aspects of such sessions are now being recognized along with technical matters.

A qualitative study of knowledge creation in one exploration unit and a consulting firm found that high quality connections played a major role in projects considered particularly fruitful (Aarrestad, Brøndbo, & Carlsen, 2015). In short, explorers experience being more productive and alive in knowledge creation when there is room for more emotionally intense and overlapping interactions, when an open-ended and respectful questioning expands reciprocity in interactions and when connectivity is helped by the sensory richness of proximity and more use of visuals and tangibles in synchronous interactions. The use of visuals and tangibles in relating is more accentuated in Explore than at Soutwest and Zingerman's, probably due to the complexity of work with need for knowledge co-creation and coordination between many sub disciplines. When transcending

knowledge differences (Majchrzak, More, & Faraj, 2012) and encouraging seeking and providing help, active use of visual boundary objects seems to be necessary.

The societal realm

Beyond the business realm and beyond the realm of internal and proximal external beneficiaries are larger societal wholes – be they environmental, human rights related, matters of regional social economic growth or ethical concerns - that people's work in organizations may influence. Ultimately, this societal realm, or realms in plural to be more precise, can be seen as a set of corporate social responsibilities (CSR) that are immanent in work in ways people are normally not aware of. The consequences of CSR for training at work is a topic that transcends levels of analysis, and for which there is little current knowledge (Aguinis & Glavas, 2012) . We know little about how concrete activities within human resource management and training impact corporate social responsibility (Sharma et al., 2011). Our discussion here is thus tentative. We open for consideration of larger questions than we can hope to answer: Are there systemic realms of a societal nature that training in organizations could target, and if so, how?

Returning briefly to our three cases, the answer to the first part of this question must be a clear "yes." This is easiest to see in the case of Zingerman's community of businesses. The founders of the firm appear to have been successful in integrating new business development and ownership with an agenda of local community development in Ann Arbor and Washtenaw County, as well as sustainability and food justice. One of the guiding principles of the business taught to all employees is that Zingerman's should be "an active part of the community. We believe that a business has an obligation to give back to the community of which it is a part." (Baker, 2013a: 4). The owners of the firm have declined several offers to sell or expand upon the brand to other cities and emphasize engaging employees in development of local work places and healthy, sustainable food from local

suppliers. The community agenda includes the founding of the Food Gatherers, an independent not-for-profit food rescue program and food bank that in 2011 delivered nearly 12000 meals a day to nearly 44000 residents of Washtenaw County. Employees handle up to a dozen requests for food donations every day, based on a standardized form given out in all service outlets. 10% of the profit post-tax is donated to the community as cash. Other initiatives for achieving zero carbon footprints and maintaining "thriveable wages" give further credit to Zingerman's efforts for making social contributions.

For Southwest Airlines, the clearest systemic societal realm here seems to be workplace democracy. While democracy at work may have several limits as a form of governance (Kerr, 2004) there is little doubt that Southwest airlines was an industry pioneer in promoting organizational practices – including training, ownership, collaboration and labor relations - that were considered participative and in promotion of better and more meaningful and egalitarian places to work. The organization seem to have been infused with a societal mission (O'Reilly & Pfeffer, 1995) of showing the possibility of creating a work place where people can find deep meaning, bring their whole self to work, do well when doing good - a "level five ambition" (Collins & Hansen, 2011). Systems thinking in this regard would be more than merely knowing the internal practices well. Employees' credibility as spokespersons and exemplars of the pioneering quest would require knowledge of the larger discourses of workplace democracy, including knowledge of institutional arrangements concerning democracy and labor collaboration in the aviation industry and other service sectors.

At Explore, the need for systems intelligence in the societal realm is evident in many parts of exploration: 1) regional socioeconomic consequences of locating discovery activities and concept decisions with regards to infrastructure for exploiting resources and transport oil and gas (reflected in training arrangements for analysts); 2) safety and environmental

consequences of exploration practices, including for example the need for emergency preparations regarding oil spills along the coast, something that also affects ship traffic (a key part of the security training for drilling personnel and engineers involved in planning and project management); 3) socio-political impact of international exploration activities, in particular in third world areas in terms of building institutional capabilities and contributing to democratic development (part of training arrangements for all personnel going abroad, increasing in scope and depth with length of stay and role); Additionally, there are obvious larger environmental and geopolitical issues tied to long-term sustainable energy supply, though this has not been a concern for training so far.

In summary, training for systems thinking in the societal realm may potentially cover a large and varied set of societal systems, depending on nature of value creating activities and the environments they meet. Even a cursory look reveal that training to help employees meet such concerns is complex in various ways, many of them mainly targeted to mid-level managers and project leaders.

Implications for future research

We have suggested a training framework for systems thinking in organizations and developed it through exploring three realms of creating impact. We started from renewed attention to holistic thinking and impact orientation in research traditions such as design thinking and pro-social behavior and used three cases as reasoning devices. Looking across the reasoning in the three realms of our suggested framework, we end up with three sets of insights that both summarize what we have learned and conjure implications for future research: 1) fostering interdependent autonomy, 2) getting visual with perspective taking and transparency, and 3) creating embedded training arrangements.

Fostering interdependent autonomy and becoming systems competent: Job autonomy appears to be one of the essential tenets for integrating training and systems

thinking. Job autonomy, or the extent to which a job allows freedom, independence, and discretion to schedule work, make decisions, and choose the methods used to perform tasks (Morgeson & Humphrey, 2006) is a cornerstone in contemporary work design theories and is convincingly related to a number of employee outcomes focal to training, such as increased work performance, organizational commitment and helping behaviors, as well as reduced stress and turnover (Humphrey, Nahrgang, & Morgeson, 2007). In our cases, we have seen that autonomy is both given and expected in the sense that people are brought into roles and organizational arrangements where they are provided knowledge and leeway to make decisions and initiate actions that have impact – whether that means servicing a customer or bring a hydrocarbon prospect closer to drilling.

One could probably flag systems thinking as a label for a very different organizational philosophy in which people were trained to follow prescribed behaviors based on organizational structure and mechanisms. Such a control-version of system thinking is not the situation in any of our cases. Rather, what we see is the nurturing of proactive behaviors in which people are encouraged to produce fast and fruitful responses from different part of their working environment and themselves acquire the needed information to do so. This requires interdependent autonomy in where each node carries responsibility for aligning actions in a system consistent manner. Autonomy is thus accentuated as both an outcome and contingency of systems thinking, and for some (like the exploration project leader), the challenge of a new role may provide the threshold experience to grow into a fully autonomous and system competent actor.

Further research would be needed to understand the development trajectories of individuals who are growing to become system competent in this manner and shape their work-related identity accordingly. We know little about the formative experiences, training arrangements set people on the pathways of becoming integrators, givers or socially

responsible. There is a rich tradition of research within narrative psychology that qualifies how individuals tend to grow into becoming more generative and increasingly contribute to both proximal and distant beneficiaries as they pass mid-life (e.g. McAdams & Guo, 2015). We may speculate that this type of life motive amounts to the equivalence of becoming more system competent along the beneficiary and societal realms. And perhaps it is so that being more holistically attuned along one realm smittens to the others. But we know of no research on training that tries to investigate such growth trajectories.

Furthermore, other cases would be needed to understand variations of systems thinking, autonomy and individual growth trajectories across industries. For a fast–paced software development environment like for example Spotify[2], it seems that autonomy represents a necessity in order to answer demands for agile development activities of new services and upgrades, in addition to rapid responses to customers' demands. Development activities, from programming to systems design to service development, are done in parallel and in response to multiple real-time scenarios. Such activities involve many small and large decisions for which formal coordination and control must be limited. Here autonomy necessitates high levels of systems understanding in the sense of being able to see how one's work relates to work of together within and across developments teams and to the larger portfolio of services as seen by users. Growth of the organization and broadening of service offers may pose further challenges. Initial evidence for this proposition was recently found by Dysvik, Kuvaas and Buch (In press) who observed a positive relationship between perceived investment in employee development and taking charge behavior for employees with high levels of job autonomy. In other words, investments in developing employees competence needs to be accompanied by the everyday perception of having the leeway to make use of acquired knowledge and skills, in line with our systems thinking approach.

[2] Based on group interview and site visit October 2014

Getting visual with perspective taking and transparency: Training for systems thinking means institutionalizing practices for perspective taking and creating transparency, both of which underpin interdependent autonomy. A striking feature of these practices is their visual and physical character. Key to the huddle and open book management at Zingerman's is the large whiteboard as a shared visual resource for providing overview of key financial metrics and forecasts. This organization also emphasizes making beneficiary stories visible in internal pamphlets and other graphic boundary objects to communicate awards for going the X-tra mile. At Explore, the extensive use of large maps, seismic charts and well logs in shared office space is regarded key to fostering collaboration in exploration, in particular with regards to involving newcomers. Visuals become central to a way to transcend knowledge boundaries (Majchrzak et al., 2012) and create shared imaginings, literally seeing how one makes a difference to colleagues in their knowledge creation. We also note that several of the training arrangements at Southwest Airlines, such as "a day in the field", or joint work on turnarounds and luggage handling, presupposes physical proximity in relational coordination.

A growing body of literature on the role of visuals in perspective taking and transparency is promising. It is pointing towards several impactful training interventions. For example, visualizing the end-user has a significant effect on the task performance. In the health care sector, a group of Israeli radiologists (Turner, Silberman, Joffe, & Hadas-Halpern, 2008) conducted an experiment on the task of diagnosing computed tomography exams from patients. It is a striking finding that attaching patient photo next to the CT exam improved diagnostic accuracy by 46 percent and that almost 80 percent of the key results came about only when the radiologists saw the patient's photograph. Similarly, Buell et al (2014), show that restaurant chefs who saw their customers made them make (objectively) more tasty food and achieve 10 percent higher customer satisfaction through feelings of appreciation and meaningfulness. When both customers and cooks were able to see one another (without

speaking to each other), the customer satisfaction increased by 17.3 percent and speed of service delivery increased by 13.2 percent. In a series of different settings, from call center operators to firemen, Adam Grant and colleagues report even more impactful evidence of triggering prosocial motivation through perspective taking on creativity (Grant & Berry, 2011), persistence, performance and productivity (Grant & Sumanth, 2009). Training for perspective taking, including visualizing, is thus a powerful driver of system thinking at work.

There is a strong research agenda for the systematic focus on perspective taking and visualizing as essential ingredients of integrated training systems – 'systems predicated on influencing organizational effectiveness' (Kozlowski et al, 2000, p. 203). Future research should span across multiple levels of analysis to help understand the role of perspective taking in facilitating training contexts and processes for broader impact and vertical transfer of training. For example, as far as we know, little research exists about systematic collection and display of end-user testimonials, or other reminder of beneficiaries, for training purposes.

Following the visual and material turn in organization studies (Ashcraft, Kuhn, & Cooren, 2009; Meyer, Höllerer, Jancsary, & van Leeuwen, 2013) there is also a broader agenda for studying the use of tangibles and work space in training arrangements. The promise here is that use of visuals will help build transparency, aid coordination and foster better collaboration (de Vaujany & Mitev, 2013; Doorley & Witthoft, 2011). One example is the use of huddles, like at Zingerman's. There is some research on huddles (Provost, Lanham, Leykum, McDaniel Jr, & Pugh, 2014; Quinn & Bunderson, 2013), but not regarding the role of the particular visuals being used or the effect and relevance for training.

Creating embedded training arrangements: The cases we have looked at here all confirm and extend the importance of internally consistent human resource practices, that is, the effect of one HR practice such as training is contingent upon the wider organizational context including other HR practices, job design features and managerial styles. For example,

Kraimer, Seibert, Wayne, Liden, and Bravo (2011) found that while employees may be satisfied with their developmental opportunities, a lack of career opportunities may make them more likely to leave the company and work less effective while they remain. In contrast, a systems approach to training would imply ensuring both horizontal and vertical processes ensuring that employees are allowed to make use of acquired knowledge and skills through horizontal transfer within roles that develop as their understanding of their role embedded in the wider organizational context increases through vertical transfer (Kozlowski et al., 2000). In addition, Blume et al (2010) found that perceived support from the work environment fosters training transfer. Thus, support from both colleagues (Chiaburu & Harrison, 2008) and supervisors (Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002) is important for systems thinking towards training to be sustainable over time since a lack of support could lead to less transfer and consequently less systems thinking. This is most evident at Southwest Airlines and Zingerman's where core values, service concepts, ownership models and recruitment all shape and are shaped by training arrangements.

Training with a systems perspective is not always defined strictly as training but may be a mix of embedded and interrelated organizational practices. In line with such a trend, an increasing number of organizations world-wide are adopting so called 70:20:10 learning strategy implementations (Jennings, 2013; Lombardo & Eichinger, 1996), where the emphasis on the time, effort and money spent on training is on the informal learning part, mostly through experiential learning (70%) and relationships (20%), whereas merely 10% of training investments are devoted to formal and traditional learning activities (Lombardo & Eichinger, 1996). This underlines our call for a shift in how training providers understand training and development as broadening impact, whether for business, beneficiaries and society.

Conclusion

By emphasizing three distinct, yet related realms (business, beneficiary, societal) for training impact we have attempted to extend prior work on systems thinking in training. First, we have extended previous work on horizontal transfer to argue that training should not only be used as a means to improve in-role performance of employees but to serve beneficial outcomes within a wider set of realms. Second, we align with ideas of vertical transfer to ensure that the efforts and contributions made by employees form coordinated patterns aimed at achieving recognized standards. These include but are not limited to organizational performance, but a broadening of the impact of training. The cases described in this chapter illustrate organizations succeeding more than they fail in facilitating such processes. One of the contingencies that seem essential for establishing and maintaining a broadening of impact is autonomy, since employees embedded in such systems work harder being more involved and committed owing to having more say in their work, smarter because they are encouraged to continuously develop their competence, and more responsible since there are actually empowered to do so (Pfeffer & Veiga, 1999, p. 40). While such a contention looks relatively straight forward, growing people to become system competent, implementing a system thinking approach in training and actually making it work is not. The promise we take from the empirical evidence presented in our three cases is however clear: It is possible and beneficial to train people in organizations for systems thinking and broadening of impact. When at its best such training may produce rings of fire that make both people and organizations thrive.

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Figure 1 Training for systems thinking along three realms to broaden impact