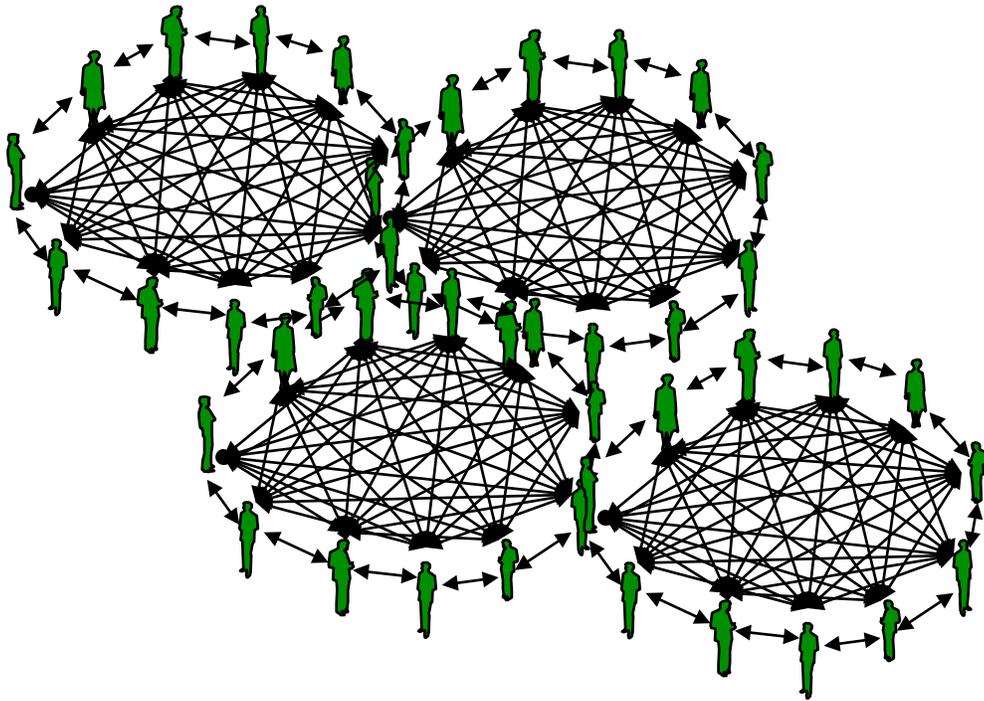


Social action research

Dennis Sandow
Reflexus Company
July 2016



Introduction

We are in the midst of an economic era that continues to generate biological [1], social [2, 3] and financial [4] degradation. A prolonged period of double digit unemployment, unprecedented home foreclosure rates, increased poverty and well educated young people who instead of entering the labor market are moving to the streets and organizing social protests from Cairo to London to New York City. While the political response to these times have been divisive, most of us share a common desire to quickly restore the economy in such a manner to reverse these conditions so we will begin to see economic recovery and the emergence of an economy of well-being. This raises a question. Are organizations poised to accelerate economic growth by augmenting the individual and collective productive capacity of their workforce? It does not appear so. To the contrary research is proving that those still working are sick of work and becoming sick at work neither of which will augment productivity and both of which will delay the well-being we all desire.

We are also in the midst of massive institutional failure that accelerates the degradation of our wellbeing. The iconography for our modern institutions is familiar to us all. The

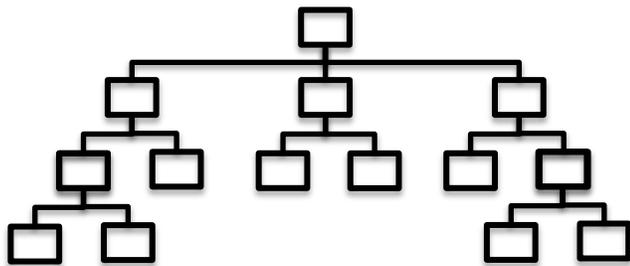


Figure 1 Network of social control

organizational chart depicts a network of relations with an aim of expanding value for the whole. Some assume that dominant-subordinate relations and relations based on specialization augment the productivity of the whole. Of course, the image I am presenting is of the tiniest organization of fourteen people. Rarely would such a small group need this to understand their networks of conversations. For large institutions like the

US Government, Ford Motor Company, Intel or the Red Cross, the network graphic is immense. The structure of the modern institution is at the heart of the failure. In it is a implicit belief in social control through cultural domination. Controlling the relational behaviors of others can have more value than making a product or delivering a service. Those under the command of others co-generate the institution while at the same time they live in stress. The stress creates sickness. What occurs at the bottom layers of the organization as they relate to the failure has little chance of reaching the top. The stress expands.

We know that job satisfaction has been in a steady decline for over twenty years [5]. We also know that 15% of American workers are disengaged and are not only unhappy at work but act to undermine the accomplishments of those co-workers engaged at work thus costing the US economy over \$300 billion in lost productivity [6]. We know that the cost of those reporting poor well-being have losses in productivity due to sick days costing their employers an average of \$28,800/year compared to those reporting that they

are thriving at work costing their employers an average of \$840/year [7]. Over 30% of 11,000 Swedish workers have reported being bullied at work [8]. In yet another study bullies were found to be targeting co-workers who were independent, more technically competent than the bully, liked by co-workers and customers, ethical and honest and not sufficiently political [9].

As troubling as these workforce trends are they do not pose the threat that antiquated management approaches to organizing work do. Decades of epidemiological research has proven that the continued use of traditional hierarchical management practices described by the mechanical engineer Frederick Taylor [10] over 100 years ago create significant health risks [3]. Men and women reporting low job control have twice the likelihood of having coronary heart disease compared to those reporting high job control [2, 11] and are three times more likely to have high blood pressure [12]. Those reporting low social support at work are 60% more likely of having ill mental health when compared to those reporting high social support. And working in an environment with high demands and low rewards increases the likelihood of having coronary heart disease by 30% as compared to those in low demand jobs receiving high rewards [11]. Despite the abundance of this evidence accumulating for decades little progress has been made in mitigating these psycho-social health risks [13] leaving epidemiologists in search of a new form of work organization [14].

If we wish to restore economic growth by improving our productive capacity and we know that workers are both sick of work and becoming sick at work we are left with an ethical question. *Now that we know that we know this, what shall we do and how do we do so?*

How we do what we do in creating social, biological and financial wellbeing in organizations has been the single question I have been asking workers in the US, Puerto Rico, Sweden, the UK and China for the past twenty years. As you will see, social action research is diametrically opposed from traditional experimental psychology and sociology research methods and their foundations. This is not by design but by practice. I have been learning that the collective coordination of action (knowing) in relational networks where everyone accepts everyone else as legitimate collaborators (loving) expands health and productivity. I drew a particular network map when I asked people to tell me who they collaborated with. I used arrows to show who listed who as a collaborator. *Mark -> Maria* shows that Mark listed Maria as a collaborator but Maria hadn't listed Mark. All of the maps I began to map were collaborative *Mark<->Maria*.

I began developing social action research in 1976 when my colleagues and I set out to reverse the social policies of eugenics by serving people with developmental disabilities left to suffer atrocities in state institutions [15]. Social action research is both an art and science that I have created in the praxis of daily living. This being the case, I will cite literature I have read along the way that has contributed to my practice.

Epistemology

Public health researchers have found that participatory action research founded on the work of Kurt Lewin is effective in mitigating psychosocial work risks [16]. Social action research has benefitted from the work of the Gestalt psychiatrist, JL Moreno who went to great lengths to contrast his action science and Lewin's participatory action research [17]. Moreno made four important distinctions [18]. He began by pointing out that unlike any other scientific domain, the objects of social studies are observers thus requiring reflexivity on the part of the observer. When we study relational behaviors amongst two or more people we necessarily study ourselves in the act of generating reflective-reflexive relations with others. A second distinction he made was to draw maps with lines and arrows pointing from one person to another to show psycho-social networks that flow amongst people and through communities [19]. This he called sociometry [20-22], which later evolved into social network analysis or the decomposition of groups [23-26]. Thirdly, he described dynamic sociometry whereby the new sociometric order replaces the presociometric order combining social change, diagnostics and measurement [22]. Finally, he claimed that research was frequently carried out by researchers who did not explain the epistemological grounding for their experiments [27].

But illuminating the importance of epistemology does not necessarily lead to an epistemology that one can validate. Philosopher and cognitive psychologist Piaget described knowledge as the coordination of action and went on to write: "*...almost no theorist of logico-mathematical knowledge has thought of explaining (human) knowledge by going back to the obviously necessary frameworks of the living organizations* [28]. This requisite framework was explained in Autopoiesis and Cognition: Realization of the Living [29]. Maturana explained cognition as a matter of living and that "*All doing is knowing and all knowing is doing.*" [30]. He explained how living systems were structurally determined systems in that all that happened within them was determined by their structure [31]. Hence, our distinguishing between perception and illusion was not a matter of reference to a transcendent reality but determined by the structure of our sensorial-neuronal systems. Maturana wrote of the biology of love [32], not in the romantic sense but as a domain of relational behaviors through which another arises as a legitimate other in coexistence with oneself [33].

In 2000, I traveled to Santiago to visit Maturana soon after he had co-founded the Matriztic Institute with Ximena Dávila. Ximena had been sharing her liberating conversations [34] with Humberto observing that whenever someone came to her for relational help she found that their pain and suffering were of cultural origins [35]. During our meeting, they drew their Institute's logo on a whiteboard. At the top they wrote, Biology of Cognition and below it they wrote Biology of Love both connected in by a line flowing in a spiral like circularity. One entered the Biology of Cognition through curiosity and the Biology of Love through pain. As I looked upon the drawing and listened to them explain the Biological Matrix of Human Existence I felt the same as I did when I first saw the taichi as a continuous dynamic interplay between yin and yang. What I heard was simple, the more one loves the more one knows and the more one knows the more one loves. This was the beginning of my studies of Maturana and Dávila's Biological Matrix of Human Existence [36] which has become the epistemological substratum of social action research. Social action research has been

influenced by Humberto and Ximena's work as it applies what I have come to understand of cultural biology [36-40]. I have woven their ethical matrix into social action research whereby everyone in the network of conversations care for everyone else in the network of conversations out of a concern for their well-being - all beginning in an invitation to listen to others explain how they do what they do in the creation of value at work.

The practice of social action research

Invitation

Each social action research study begins with an invitation to reflect on how we do what we do in the creation of value in order to understand, conserve and expand social, biological and financial well-being. This is the purpose of social action research. This invitation is either accepted or not. When it is accepted I begin to listen to people explain how they do what they do in creating value for their organizations.

Listening

Human beings are capable of hearing and seeing each other. What is heard is not determined by what is said but by the listener who hears what he or she specifies is being said [41]. Prior to every social action research study I try to clear my mind of any attachments to certainty, pre-conceived notions, pre-determined outcomes from the study, or plans other than beginning by asking others to explain to me, "*How do you do what you do in creating value at work?*" I have joined people in schools, factories, farms and businesses and have listened to teachers, administrators, scientists, water department workers, gardeners, cooks, assembly line workers, students, managers and supervisors in the US, Puerto Rico, Mexico, China, the UK and Sweden. When I ask this question they sometimes reply, "*What is it you would like me to tell you?*" "*Anything you wish.*", I reply. "*What specifically would you like me to talk about?*" "*Whatever you like to.*" So the dance begins. I then quietly listen, writing down as best I can what I hear being said. I listen and write as long as they wish to talk. Some talk for five minutes and others for over an hour. In the course of their talking, I do not interrupt them or ask them to elaborate on something they have said. When they pause, I pause and smile, genuinely grateful for the knowledge that they are sharing. Frequently they will stop and ask, "*Is this what you want to hear?*" "*Absolutely*", I'll reply as they resume their reflections. I find that their reflections are recursive with one thought triggering another thought that triggers another one, and so on. They may begin by describing their performance in a step-by-step fashion. With time they may begin to talk about their co-workers and of the pleasure of knowing them. When they finish I thank them for telling me how they do what they do in creating value at work and I put my pen down and close my journal. It is then and only then that I talk, explaining what I learned from them and how much I appreciate what they have accomplished. I'll sometimes laugh from the joy of learning about what they have accomplished and how they take care of others. Sometimes I do not. Social action research cannot be scripted. It is not a prescribed method. It happens in the spontaneous moment life happens in [21, 34, 42] and within the uncertainty of each moment. At end of our conversation it is not unusual for someone to say, "*No one has*

ever asked me this before.”, an observation I still find to be sad because it is a statement that reveals how infrequently people are asked to explain how they create value in their daily work. This manner of listening is accompanied by invitations to visit laboratories, water recycling facilities, gardens and classrooms to expand my understanding of how they do what they do.

Listening generates understanding. Understanding is not a claim made by the listener but by those who have been listened to. This is an important distinction. All too often I find that it is the listener who establishes the criteria for understanding sometimes interrupting others and claiming, “*Yes, I know what you are saying.*” But how can this be the case if the person they were listening to were interrupted and could not finish their thoughts? When the criteria for understanding is established by the one being listened to there are at least two realizations. The first being the listener does understand what I am explaining and the second being that I now understand the listener has a *desire* to understand me. Understanding can be a reciprocal relation, as those I listen to understand that the aim of social action research is to understand how they do what they do in creating value in social organizations. When those listened to feel understood trust emerges without discussion about trusting, but from understanding we are understood. From this trusting we all begin to collaborate on our collective reflections of how value and well-being are created. This is how everyone becomes a legitimate social action researcher in relation to the social action researcher [43].

Validation

After listening to someone I type up my notes and return them, asking them to read my notes, correct any mistakes I have made or add to them. I tell them that the criterion for social action research lies in their validation of the narrative from their interviews. Some will return my notes with several significant edits. Some will write down their reflections from scratch abandoning my notes all together. Many, return my notes without a comment other than, “*This is exactly what I said.*” This criterion of validation by those I listen to is the foundation for using the set of individual interviews to construct common or reoccurring themes.

Coding what is common

Once all of the notes have been validated I will sit someplace quiet and read and re-read them. I may re-read them many times over with sensorial memories of the listening and understanding that has happened. This is a rich and wonderful memorial experience for me. At some point I will begin to underline or highlight re-occurring explanations. These do not have to be word for word expressions, but simply reoccurring explanations. I highlight the common explanation every time I find it amidst all of the notes. I group the common explanations together until there are no other reoccurring explanations I can find. I then will code them, describing them in one or two words followed by the list of comments the themes were constructed from. This is a practice taught to me by two of my colleagues when I was at the University of Oregon [44] and described as “grounded theory” [45]. I believe this is very congruent with Maturana’s biology of cognition.

Social action research is an inductive process of us all discovering the regularities of creating value together. It is not deductive nor does it set out to test a hypothesis. This is not a trivial distinction and contributes to the difference between traditional social research as a deductive process and social action research as an inductive process. Deductive research process begin with a theory then generates a hypothesis which through observation can be confirmed or denied. Inductive research inverts the deductive process. It begins with open-ended observation and constructs the coherences as abstractions of the observations thus generating hypothesis that can be further explored and validated. Grounded theory emerges from inductive processes as a shared realization of the abstractions of coherences in the social action research.

Social network mapping

While at the University of Oregon we used social network analysis in our research studies [46, 47]. But I was not interested in decomposing the social whole as a means to explain individual actors. I have always been interested in systems or relational connections that constitute the whole in a manner in which any relation that one experiences, everyone experiences. Where as social network analysis aims to understand the role of the parts, social network mapping aims to understand how the social “whole” is greater than the sum of its parts as is done in gestalt psychology. Once the coding has been completed I send everyone a social network survey and ask them to simply list those they have collaborated with in doing whatever they have done in creating value at work. Most of the times they will list others that I have not spoken to or even met. When this happens I will send those people a social network survey and explain the purpose of social action research, what I am doing and ask them to complete the survey and return it to me. I do not tell them who identified them or who else has been involved. Some return the survey and some do not. Occasionally, some will ask me about social action research, most of the time they do not. When there are no more surveys to be returned I map the social network by listing the names of everyone on the survey in a circle on one sheet of paper. I then connect everyone by lines and arrows. If Bob has listed Maria, I will draw a line with an arrow from Bob pointing to Maria. If Maria has listed Bob, I will draw a line with an arrow from Maria to Bob. This would show that Bob and Maria have reciprocal relations or identified each other as legitimate others in doing what they have done to create value at work. The “map” of the social network reveals the whole system so we can understand the nature of the configuration of relations that generate value and well-being.

Reflective conversations

With the social action research documentation complete, I use a computer display program such as Powerpoint or Keynote and first list the common explanations (themes) and under each theme the list of comments I derived them from. Each common theme is on one slide or piece of paper. On the last slide or piece of paper, I include the social network map. I invite everyone who has participated and their managers to a meeting to review this data and to understand, conserve and expand social, biological and financial well-being. This meeting usually last for one hour, but sometimes it goes on longer.

Many times, I'll bring fruit or cookies to the meeting. I introduce the purpose of the meeting and quietly project one slide at a time without commenting until I am done. I have found that people are very interested in reading the comments used to construct the themes and studying the structure revealed by the social network map. Some will comment on each slide or ask questions that are answered by others, not by me. For every slide, I will ask everyone if the theme or the social network map is valid. Many have said that I am holding up a mirror to show them how work gets done [48]. After commenting on the individual slides and the social network map a dialog will emerge as we talk about what we have learned. Social action research is a rewarding experience with everyone feeling recognized and understood for his or her contributions. The use of a systemic or gestalt approach helps us to understand that social networks are multi-dimensional, hence, more than one social phenomenon occurs in the same social network at the same time. For example, when production workers have freedom to organize their work in such a manner to improve quality, we see that they have saved their company money and kept waste from being thrown into the local landfill all at the same time. This is an example of one social network of relations generating social, biological and financial well-being. In the reflective conversations this is also true. We reflect on value created for the organization thereby generating social well-being as all are recognized and rewarded for their contributions while learning a new grounded social theory of productivity, performance and well-being.

Findings

Between 2009-2011 I practiced social action research in a multi-national corporation composed of many acquired unaffiliated sites. I was invited by one of the founders of the company to do so and, over the course of a year we visited eight separate sites with me spending at least one week at each site and the founder joining us for the reflective conversations on the last day. What follows is a summary of our findings across all eight sites. The findings are surprisingly uniform despite the sites not only being geographically separate but also having very different products and services. I'll present the themes with representative comments they were constructed from the qualitative interviews. The themes are compiled by comments from all eight sites. It is important to note that the first two themes are enabling themes. What do I mean by this? When managers have created the conditions for the first two themes to occur workers create the four following themes naturally.

Theme 1 Performance and well-being

When I listened to workers, supervisors and managers explain how they did whatever they did in creating value at work they talked about well-being. They talked about respecting and trusting each other, collaborating, social cohesion and not being micro-managed. They also talked about having, job control, social support and being recognized and rewarded for their contributions.

For me this place is very stress free, comfortable and anyone could be a friend outside of work.

This has been like heaven to me.
We have a culture of health and wellbeing here that is contagious.
We have a lot of healthy people as well as healthy relationships in what they do.
The aim of each organization is having people feeling engaged, under control and feeling that they can make a difference. In this case people feel well and will make the proper decisions.

Theme 2 Transparency, openness and trust

There is a trusting relationship here.
The key was a lot of open discussion with no one saying this is the way to do it.
I think the reason the team works well is the interaction between team members. It is open and level.
I have never been in an environment where people share so freely.
There's a lot of trust. You know if you ask someone to do something they will do it and not half way. In a lot of places there is stress but you don't have to worry about that here. It's really nice.

Theme 3 Freedom, autonomy and job control

There are no minions and no hierarchy.
It's good that in R&D when you need resources or assistance you have the freedom to collaborate and communicate with anyone to get those resources.
I've never felt micro-managed here.
We let the employees get on with it and instead of managing, steer it from a distance.
I think it's better for all if you assign the responsibility and let that person have control of the problem.

Theme 4 Recognition and rewards

The team takes pride in their foresight and innovation.
It was really rewarding. You knew when you finished and could move on.
When we had breakthroughs we would recognize them. The sense of accomplishment was significant.
Being appreciated is a way of being here. We're all about doing work. Your success means my path will be easier.
We developed an incentive system to empower people.

Theme 5 Social support

The majority of employees feel support from everyone. This brings higher productivity and job satisfaction.
They just support you here. It's been amazing.
I enjoy a lot being able to help my workmates with whatever they need to do.
We help each other.

They take really good care of you.

Theme 6 Collaboration and social cohesion

All of the team members all overlap. We are not silo'ed.

When I got here I noticed that everybody was cohesive. It flowed. There were no departmental boundaries. It was very lateral. It helped me in my job.

Now there's a lot of young people willing to collaborate at work, having fun.

There's no top down management here. It's very collaborative and everyone gets involved.

I've never been part of a project team that's so collaborative.

Social network map

The iconic network structure of the industrial age still used today is the organization chart [49]. It is organized along the vertical axis by job rank and along the horizontal axis by departmental function.

This organizational network structure represented Taylor's theory of scientific management [10] and accompanied a social contract aimed at improving the productivity of assembly line workers, many of them recent immigrants, so they could afford the products they were producing. This social contract was achieved by constructing a bureaucratic social hierarchy where job control was limited to the higher ranks. This social hierarchy has been cited as the cause of low job control and an increased likelihood for cardiovascular disease [3, 11, 50, 51]

In the social action research studies, I have found that value and well-being are simultaneously created in collaborative social networks. This is the most cohesive social structure. It optimizes social productivity, innovation, performance caring and well-being.

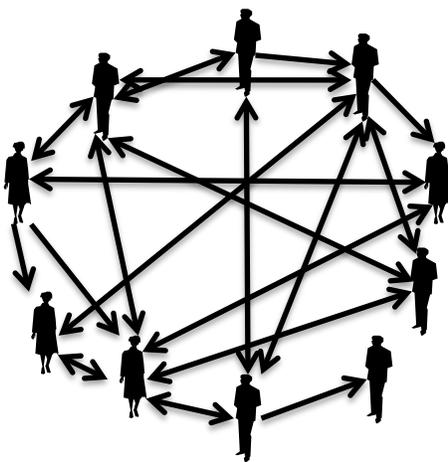


Figure 2 Collaborative Social Network'

Contrary to a management hierarchy seen as a static division of rank and function with no ties to external organizations all eight social networks we mapped were: 1) dynamic and self-organizing, 2) cross functional and inclusive of many ranks, 3) multidimensional, and, 4) trans-organizational including numerous legal organizations. Self-organization occurs when those inside the social network constitute the social networks structure by coordinating action with those they choose. The social network maps showed that employees and managers from specialized functions or departments were collaborating to create value hence the social network was cross-functional. Multidimensionality refers to the social network that we mapped to create multiple

social experiences found in the common themes besides value to the company such as

well-being, social support and recognition and rewards. The social network maps included employees, scientists and managers from more than one company a measure of their trans-organizational composition. What we found to be compelling about the social network maps is that they could not be designed but designed themselves thus eliminating any administrative overhead related to re-structuring or organizational design.

Reflective conversations

The founder and I concluded each social action research study by inviting everyone to review the qualitative themes and social network maps. The purpose of the meeting was to understand, conserve and expand performance and well-being. After practicing social action research for more than 20 years, I'm still surprised to see the attention participants pay to the data. They read each other's comments very carefully and will study the social network map not only for their connections but others as well. When we finish reviewing the data the founder has always thanked the participants for their contributions. This is a simple act with very significant results because the co-workers are recognized for their contributions and for their collaboration. Employees have been moved and inspired by the founder taking time to so thoughtfully consider their collective contributions. It may be the single interaction that results in the conservation and expansion of well-being. Many times he also points out how common the themes and social network structures are across studies deepening the collective understanding of the systemic dynamics of value creation. While the understanding of the social action research takes place in this reflective conversation, the conservation and expansion of performance and well-being typically lags. It naturally occurs as the group continues to create value and well-being as they have been and apply what they learned in the social action research to expand well-being. This is very much like the individual and collective transformation Deming described in his theory of profound knowledge [52].

At one site, employees and managers established a Wellness team after the social action research. The Wellness team brought in outside resources for nutrition and exercise, established challenges for employees to engage in friendly competitions based on exercise and knowledge of healthy living and gave every employee wireless pedometers. They built a wellness room equipped with a wireless scale and wireless blood pressure cuff. The pedometers, scale and blood pressure cuff all wirelessly uploaded data to a private wellness website for each employee where they could monitor and adjust their healthy living practices.

Implications

The most significant implication of social action research is the augmentation of social capital in an economy of well-being where value lies in the integration of social, biological and financial well-being. It has been stunning to see how this manner of reflection reveals how employees *naturally* mitigate the social determinants health risks when they are given the autonomy to self-organize their work. We are conscious beings and performance, autonomy, social support, recognition and rewards, collaboration and well-being emerge from the collective reflections social action research triggers.

Emergence is to become aware of something that we previously were not aware of and when this occurs we then can take action. In the case of social action research, the participants understand that value creation does not occur in industrial age hierarchies but in dynamic and collaborative social networks that generate value and well-being and so they are invited to conserve and expand social, biological and financial well-being.

There is a significant implication for bureaucratic hierarchies and their human resource departments. Specifically, practices such as annual individual performance evaluations, ranking employees and a dependence upon analysis will need to change to new practices such as the continuous study of performance, rewarding employees for collaboration and balancing analysis with gestalt approaches to understand systems such as social action research. While this is simple, because it is a manner of reflecting on the praxis of daily living, it is not easy because of the historical conservation of bureaucratic hierarchies being perceived as augmenting productivity.

Summary

We know that we are living in an economy that is generating social, biological and financial degradation. We also know that the conservation of bureaucratic and hierarchical management practices make people both sick at work and sick of work. Finally, we know that collectively we wish to live well and to restore well-being as quickly as it is possible to do so. We are left with an ethical question. Now that we know that we know this what shall we do?

Through an inductive process of collective reflection social action research reveals that performance and well-being are simultaneous consequences that occur when people are free to organize their work while caring for each other in collaborative social networks. Social action research calls for a transformation from an orientation toward human resources to an orientation toward human relationships. This is not a matter for human resource departments but for all executives, managers and employees to realize that it is in the caring, supportive and collaborative relations value to their company is maximized. In the first phase of the transformation, social action research studies how performance and well-being are simultaneously created in autonomous, self-organizing and collaborative social networks not bureaucratic hierarchies. In the second phase, this new understanding will help managers facilitate continuous improvement in performance and well-being by creating the conditions for the first two enabling themes to occur. In the third and last phase of the transformation a new social contract will arise, assuring people that the health risks associated with social control hierarchies will be prohibited, hence, ending the bureaucratic hierarchical theory of the industrial age and recognizing the emergence of a new economic era founded on social, biological and financial well-being where love, social caring, support and collaboration across organizational boundaries augment performance and productivity.

1. Kerschner, E.M. and M. Geraghty, *Water worries*, 2008, Citi Investment Research: Dallas, TX.

2. Wilkinson, R. and M. Marmot, eds. *Social Determinants of Health: the solid facts. 2nd edition.* 2003, World Health Organization: Copenhagen, Denmark.
3. Marmot, M., *The Status Syndrome.* 2004, New York: Henry Holt and Company.
4. Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years 2011 to 2021,* 2011, Congress of the United States.
5. Tortorici, F., *U.S. Job Satisfaction at Lowest Level in Two Decades,* 2010, The Conference Board.
6. Gallup Organization *Gallup Study: Engaged Employees Inspire Company Innovation.* Gallup Management Journal, 2006.
7. Robison, J., *The Business Case for Wellbeing.* Gallup Management Journal, 2010.
8. European Foundation for the Improvement of Living and Working Conditions *Survey explores trends in working environment and health.* 2010.
9. Namie, G. *2003 Report on Abusive Workplaces.* 2003.
10. Taylor, F., *The Principles of Scientific Management.* 1911.
11. Public and Commercial Services Union, *Work stress and health: the Whitehall II study,* 2004, Council of Civil Service Unions/Cabinet Office: London.
12. Gordan, D. and P. Schnall, *Introduction,* in *Unhealthy work: causes, consequences, cures.* 2009, Baywood Publishing Company: Amityville, NY.
13. Packham, C. and S. Webster, *Psychosocial Working Conditions in Britain in 2009,* 2009, Health and Safety Executive: London.
14. Schnall, P., et al., *Conclusion: Curing Unhealthy Work,* in *Unhealthy Work: causes, consequences, cures,* P. Schnall, M. Dobson, and E. Rosskam, Editors. 2009, Baywood Publishing Company: Amityville, NY.
15. Bartley, B., *Pendleton hospital patients reported victims of atrocities,* in *The Oregon Statesman* 1980: Salem, OR. p. 28.
16. Rosskam, E., *Using Participatory Action Research Methodology to Improve Worker Health,* in *Unhealthy work: causes, consequences, cures,* P. Schnall, M. Dobson, and E. Rosskam, Editors. 2009, Baywood Publishing Company Inc: Amityville, NY.
17. Moreno, J.L., *Preludes to my autobiography.* 1955, Beacon, NY: Beacon House Inc. 100.
18. Moreno, J.L., *Who Shall Survive?: A New Approach to the Problem of Human Interrelations.* 1934, Washington, D.C.: Nervous and Mental Disease Publishing Co.
19. Moreno, J.L., *Sociometry and the Cultural Order.* *Sociometry,* 1943. **6**(3): p. 299-344.
20. Moreno, J.L., *Sociometry in relation to other social sciences,* in *Sociometry, experimental method and the science of society,* J.L. Moreno, Editor. 1937, Beacon House Inc.: Beacon, NY. p. 219.
21. Moreno, J.L., *Sociometry, experimental method and the science of society.* 1951, Beacon, NY: Beacon House INc. 219.
22. Moreno, J.L., *The three branches of sociometry.* *Sociometry,* 1949. **11**(1/2): p. 121-128.
23. Freeman, L.C., D.R. White, and A.K. Romney, *Research Methods in Social Network Analysis.* 1989, Fairfax, VA: George Mason University Press.
24. Scott, J., *Social Network Analysis.* 1991, Newbury Park, CA: SAGE Publications Inc. 210.
25. Wasserman, S. and K. Faust, *Social Network Analysis: methods and applications.* 1994, New York, NY: Cambridge University Press.
26. Knoke, D. and J.H. Kuklinski, *Network analysis. Quantative Applications in the Social Sciences,* ed. J.L. Sullivan and R.G. Niemi. 1982, Beverly Hills: Sage Publications. 96.

27. Moreno, J.L. and H.H. Jennings, *Sociometric Measurement of Social Configurations: Based on deviation from chance*. Vol. 3. 1945, New York, NY: Beacon House. 35.
28. Piaget, J., *Biology and knowledge*. 1971, Chicago: University of Chicago Press. 383.
29. Maturana, H.R. and F.J. Varela, *Autopoiesis and Cognition: Realization of the Living*. 1980, Dordrecht, Holland: D. Reidel Publishing Co. 140.
30. Maturana, H.R. and F.J. Varela, *The Tree of Knowledge*. 1992, Boston, MA: Shambhala.
31. Maturana, H., *Biology of Cognition*, in *Autopoiesis and Cognition: Realization of the Living*. 1980, D. Reidel Publishing Co: Dordrecht, Holland.
32. Maturana Romesin, H. and G. Verden-Zöller. *Biology of Love*. [Internet] 1996.
33. Maturana, H. and P. Bunnell, *Biosphere, Homosphere and Robosphere*. Reflections, 1998. **1**(1): p. 82-86.
34. Dávila Yañez, X., *Liberating Conversations*. Constructivist Foundations, 2011. **6**(3).
35. Maturana Romesin, H. and B. Poerksen *From being to doing*. 2004: Zeig, Tucker & Theisen, Inc.
36. Romesin Maturana, H. and X. Dávila Yañez, *Habitar Humano: en seis ensayos de Biología-Cultural*, ed. J.C. Saez. 2008, Santiago de Chile: Comunicaciones Noreste LTDA.
37. Maturana, H. and X. Dávila, *Education as viewed from the biological matrix of human existence*. Prelac Journal, 2006. **2**.
38. Davila, X., et al., *Ethical Matrix of Human Habitat: Interlacing of seven reflection-action ambiances in a biological-cultural matrix: Democracy, Poverty, Education, Biosphere, Science and Spirituality*, 2009, Instituto Matriztica: Santiago, Chile.
39. Dávila Yañez, X. and H. Maturana Romesín, *The great opportunity: The end of Leadership and the emergence of the Co-inspirative Management*, 2006, Matriztic Institute.
40. Dávila Y, X., et al., *ORGANIZATIONAL MATRIZTIC UNDERSTANDING*, 2006, MATRIZTIC INSTITUTE: Santiago, Chile.
41. Dávila Yañez, X., *Liberating Conversations*. Constructivist Foundations, 2011. **6**(3): p. 381-387.
42. Maturana, H. *The Nature of Time*. [Internet] 1995 November 27, 1995.
43. Moreno, J.L., *Who Shall Survive? : Foundations of Sociometry, Group Psychotherapy and Sociodrama*. 1953, Beacon, NY: Beacon House Inc. 763.
44. Olson, D. and P. Ferguson, *The meaning of relationships in a supported employment site*, in *Integration at Work: Multiple Methodologies in Research*, D. Sandow and D. Olson, Editors. 1991, University of Oregon: Eugene, OR. p. 65-84.
45. Glaser, B.G. and A. Strauss, *The discovery of grounded theory: Strategies for qualitative research*. 1967, Chicago: Aldine.
46. Yan, X., et al., *Clique analysis of interpersonal interactions: Grouping patterns in a supported employment setting*. BA, 1990. **12**: p. 337-354.
47. Yan, X., et al., *The network image of social competence: Social cliques at supported employment work settings*. JABA, 1991.
48. Sandow, D. and A.M. Allen, *The Nature of Social Collaboration: How work really gets done*. Reflections, 2005. **6**(2/3): p. 13-31.
49. Conference Board. *Organization Chart Collection*. 2011 [cited 2011 October 13, 2011]; Available from: http://www.conference-board.org/images/products/publications/image_sampleOrgChart.gif.

50. Landisbergis, P., P. Schnall, and M. Dobson, *The workplace and cardiovascular disease*, in *Unhealthy work: causes, consequences, cures*, P. Schnall, M. Dobson, and E. Roskam, Editors. 2009, Baywood Publishing Company: Amityville, NY.
51. Bosma, H., et al., *Two alternative job stress models and the risk of coronary heart disease*. American Journal of Public Health, 1998. **88**: p. 68-74.
52. Deming, W.E., *The New Economics*. 1993, Cambridge, MA: Massachusetts Institute of Technology. 240.