The Quantum Organization

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How Social Technology will Displace the Newtonian View

INTRODUCTION

We find ourselves standing on the crux of a change so profound that it will affect every aspect of our working lives. It is a change in the very way that we think about organizations and how people interact within organizations.

While this book is about technology that is used in the workplace, the root of the change is not a technological one. It is a change in how organizations work. The old way of viewing the workings of an organization was founded in the revolutionary ideas of Newton and Descartes, which brought about organizational structure in the Industrial Revolution. But *Industrial* Revolution ideas are being replaced by *Information* Revolution ideas, and management is feeling a crisis similar to that felt by physicists when the Newtonian view of the universe was replaced by a quantum view of the universe. We can use this shift in the field of physics as a parallel that illustrates the same kinds of changes that management science and information technology are seeing today.

The subject of this book is *Social BPM*—the combination of social technology and business process management. This term is problematic because of the variety of definitions of BPM: some use it to mean a technique for integrating servers, and others as a practice of management. Social technology has essentially nothing to do with integrating servers. Those who view BPM as being a way to integrate servers will tend to see social technology as a non-essential embellishment, possibly even a fad. However, those who see BPM as a management practice will see social technology as something that may transform the fundamentals of an organization. This paper focuses on this latter audience, and attempts to show that this change is not caused by social technology, but only facilitated by it. Social technology is simply a door opener to a change already occurring, but previously hard to realize.

We are seeing a huge shift in the way that leading edge companies are operated. Organizations are becoming more flexible, more agile, or else they are being replaced by organizations that are. We see political movements that are easier to set up and run using social technology. We are seeing companies that can reach out to thousands of individuals and act on their individual needs. The quantum organization is able to deliver more personalized services than ever before possible.

The shift to a quantum organization is not about technology, but it is enabled by technology, particularly by a greater ability to communicate and organize communications interpersonally. That ability is what we mean by social technology.

Before launching into a discussion of how the world will be changed, let's start with a clear definition of social technology offered by Schmidt and Nurcan:

> Social technology is "software that supports the interaction of human beings and production of artifacts by combining the input from independent contributors without predetermining the way to do this."

It is important to note that the focus is on communications between independent contributors who determine their own course of events, and not that the course is

predetermined. As we will see, predeterminism is a characteristic of the Newtonian point of view, but one that is waning in usefulness, and giving way to the quantum view of unpredictability.

This paper will cover how the physics world was changed by a quantum view of the universe and how a similar shift is happening in management of organizations; how that shift can be categorized as a change from "push" organizations, to "pull" organizations; how there are many indicators of this shift; how such organization behave fundamentally different from traditional organization; and finish off with some projections on how we might see the future unfold.

THE NEWTONIAN VIEW OF THE WORLD

The change that we are going through on a management / organizational level is similar to the one that the world of physics went through about a century ago. Somewhere between the years 1500 and 1700, there emerged a new way of thinking: the Newtonian view[1] of the world. Gravity became simply a force that was proportional to the product of the two masses involved divided by the square of the distance between them. A body in motion remains in motion unless acted upon by an external force. This put in place the building blocks that could describe a large variety of natural phenomena.

The relevance of the Newtonian view is not that it was right or wrong, but that it led people to believe that the world was a big machine that obeyed very simple laws. Everything, it was thought, could be predicted if you could measure the initial conditions carefully enough. There was, in principle, infinite precision possible. Using a measuring device fine enough, you could predict the future of world events.

Built into the Newtonian point of view is an aspect of "smoothness": the idea that a rough approximation of the input conditions would give you a rough approximation of the output answer. Greater detail on the input would give you greater accuracy in the answer, but would never fundamentally change the result.

Turbulence disturbed the Newtonians. When air flowed around an object, it did not snap smoothly back together on the far side, and instead it swirled around with extra motion that could not be explained by the force necessary to go around the barrier. It didn't fit. Everything was supposed to be smooth, and there was nothing in the Newtonian view of the world that would explain the extra motion that occurred. Here was a case where as you got more detailed measurements, you got larger variations.

The standard explanation was that the laws "broke down" when some limits were crossed. Many of those limits were viewed as "imperfections" to be avoided if at all possible.

Briggs & Peat (1989) commented that "chaos was believed to simply be complexity so great that in practice scientists couldn't track it, but they were sure that in

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[1] What I am calling the Newtonian viewpoint, and sometimes called a Cartesian world view, should not be credited exclusively to Sir Isaac Newton. It really is a philosophical approach to viewing the world influenced by a number of scientists and philosophers after the renaissance, starting possibly with Copernicus, Kepler, Gallileo and Bacon, with a profound embellishment by René Decartes, but in many ways crystallized and best illustrated in Newton's "Principia." This general viewpoint of the world as a machine has come to be known in general as a Newtonian view.

principle they might one day be able to do so. When that day came, there would be no chaos, so to speak, only Newton's laws. It was a spellbinding idea."

The Newtonian view is that machines are mechanisms that work on fairly simple principles. Large parts of the machine performed basic functions and interacted with other parts in basic ways. High reliability, durability, and effectiveness come from the precision of the manufacturer. The concepts that ran the machine could be abstracted away from the environment, and boiled down into some basic principles that might be easily controlled.

QUANTUM PHYSICS

Over the first couple of decades of the 20th century, the Newtonian world view was shattered by ideas like relativity and quantum mechanics. There is a fundamental fuzziness in the universe. Matter appears to have both particle-like properties, and wave like properties[2]. The Heisenberg uncertainty principle says that we cannot measure both the precise position and the precise momentum of matter at the same time. We can know both to some degree of precision, and then no greater precision. This dramatically contradicts the idea that chaos might be banished through perfectly precise measurement.

Heisenberg was not comfortable with this change: "The violent reaction to the recent development of modern physics can only be understood when one realizes that here the foundations of physics have started moving; and that this motion has caused the feeling that the ground would be cut from science."

Einstein also reflected on how difficult it was: "All my attempts to adapt the theoretical foundation of physics to this [new type of] knowledge failed completely. If was as if the ground had been pulled out from under one, with no firm foundation to be seen anywhere, upon which one could have built."

In the latter half of the 20th century, the consequences became worse; if you can't measure the initial conditions precisely, you can't predict the outcome at all. The Plank constant is very small, so what difference does it make if your measurement is off by that very small amount? The problem is that these small errors do not cancel out as one might assume in a Newtonian view, but instead they accumulate giving rise to the "Butterfly Effect." The behavior of the system may depend so sensitively upon the initial conditions that a small, inconsequential error can accumulate to give entirely different final results. These are not just errors in a computational model of the system, it appears that the world itself is inherently chaotic.

With the quantum view, randomness is not the breaking down of laws, but as a fully accepted and accommodated part of the world view. There is no built-in assumption of "smoothness." There is no concept that the macro scale is simply an approximation of the finer scale, and that if you measure approximately, you will obtain suitably approximate results. Instead, there are strange things like quantum jumps where something can go from place to place without going through the points between; the uncertainty principle where it is not possible to measure a value beyond a certain level of precision.

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[2] This so called wave-particle duality is not inherently a dilemma as many suggest. It appears to be a dilemma only because of our inability to understand. The true nature of matter is neither a wave nor a particle, but instead we can use the terms "wave-like" and "particle-like" to describe the behavior of matter in terms that we understand from our scale of experience.

If the world is inherently chaotic, then why do we see what appears to be stable structures around us? This is the fundamental question and the branching point between these two world views. The Newtonians believe that the universe fundamentally is a stable machine crafted from many separate parts which interact according to a few simplified basic laws. The quantum view holds that there is continual turbulence within the universe; that relationships are the all important components, and that orderliness emerges from stable patterns of interactions. The world is not a machine crafted along principles that can be abstracted, but instead, an infinitude of infinitely detailed parts interacting in ever more complicated ways.

While the above discussion was mainly about Physics, the Newtonian view has pervaded all areas of scientific endeavor, and most notably, for the purpose of this paper, Scientific Management.

The Newtonian View is based on these central concepts:

- **externally observable**—the essential aspects of the system are all observable and can in principle be known.
- **smoothness**—The large approximates the small. A rough estimate will indicate roughly the outcome. Finer detailed measurements will allow one to calculate the result to finer precision, but will never yield a different result.
- **basic rules are simple**—there are a fixed number of laws which are fundamentally simple, and can be applied easily given accurate initial conditions.
- **predictability**—based on the rules and the starting states, you are able to calculate what has to happen to any degree of precision you need. If you are able to set up the initial conditions with sufficient precision, you will get predictability and repeatability to theoretically any level.

Starting in the 1600s, these concepts were applied in all fields of endeavor; biology, physiology, sociology, even psychology. The successes of Descartes and Newton were so dramatic that it appeared to many that the world consisted of nothing but machines.

The quantum view holds some strikingly contrary points:

- **uncertainty principle limits what can be observed**—things can only theoretically be externally known to a certain level of precision.
- **turbulence**—there is a steady continual flow of interaction, a fundamental graininess to the universe
- **relationship is the fundamental unit**—everything is related to everything else, and the interactions are complex and can't be abstracted away from each other into simplified rules.
- **unpredictability**—sensitive dependence on initial conditions means that small errors in measurement will build up to the point that after a certain period it is impossible, even theoretically, to predict the final state.

As the Newtonian view is torn down in physics, it is also being torn down in other fields including sociology, organizational structure, and management. We will eventually see how this has an effect on how we build our IT systems.

FUNDAMENTAL SHIFT IN ORGANIZATIONS

At the time of the industrial revolution, in order to get the benefit of mass production, human beings had to learn very unnatural ways to organize themselves. They had to specialize in very small parts of the job, and behave as a very small

part of an aggregate. Thousands of people would work in simplified jobs made routine so that the aggregate behavior was very simple.

In order to market products effectively, the consumers have to be organized into aggregate groups, associating people by similar characteristics. Customers were categorized into basic groups, and products made for those groups. This aggregation was necessary to simplify the incredible complexity of the world into a simple model which a centralized command center could reason and make decisions about.

After the big shift, we will see organizations that no longer need to aggregate customers into groups, but instead can tap directly into the desires of individual customers, and meet their needs. Imagine a company that has the production capacity to produce 50 items a year, and has a market of 50 people spread around the world, and can still find and sell to that market no matter where they are. There is no reason to determine what kind of garment the people geographically near New York prefer to wear. One only needs to find the people wherever they are that are interested in a particular style of clothing.

The idea of thinking and working in the aggregate will continue to become more a thing of the past. The ability to, on a large scale, be able to understand and cater to individual customer needs will become more and more the norm. For this to happen, organizations will go through a fundamental shift. Instead of making decisions based on simplified models centrally, and push them to the market, the mode will be oriented around organizations that can actually tap the actual customer and ask them precisely what they want, and then respond. This will mean a radical decentralization of the organization.

Margaret Wheatley, in her book "Leadership and the New Science," puts it this way: "At present, our most sophisticated way of acknowledging the world's complexity is to build elaborate system maps, which are most often influenced by a quest for predictability. When we create a map—displaying what we think are all the relevant elements and interactions—we hope to be able to manipulate the system for the outcomes we desire. We are thinking like good Newtonians. But what we hope for is not possible. There are no routes back to the safe harbor of prediction—no skilled mariners able to determine a precise course across the quantum ocean. The challenge for us is to see past the innumerable fragments to the whole, stepping back far enough to appreciate how things move and change as a coherent entity."

She goes on to say: "Roles mean nothing without understanding the network of relationships and the resources that are required to support the work of that person. In this relational world, it is foolish to think we can define any person solely in terms of isolated tasks and accountabilities."

Organizations are created to make order out of what would normally occur with a large group of people. Order in an Industrial Age organization is created through simplification and making a choice about a single way to go.

It is a change in the way that we organize ourselves. Some would say that it is a change away from an unnatural form required by industrialization, and returning to a form that is in many ways more human and personal. In some ways, it is a return to the mentality of a cottage industry, but on a scale that was never possible in the pre-industrial era.

An IT system built to support a Newtonian view of organizations will work to support the view of the organization as a machine: supplying people as parts of that machine with information that they consume and collecting results they produce,

expecting predetermined patterns of interaction, with predetermined data structures to carry exactly what is needed to carry out the work. Wheatley says: "If an organization seeks to develop these life-saving qualities of adaptability, it needs to open itself in many ways. Especially important is the organization's relationship to information, particularly to that which is new and even disturbing. Information must actively be sought from everywhere, from places and sources people never thought to look before."

WHERE DOES SOCIAL TECHNOLOGY FIT IN?

Remember that the definition of social technology was "software that supports the interaction of human beings and production of artifacts by combining the input from independent contributors without predetermining the way to do this." Social technology enables richer direct peer-to-peer communication than was possible before. It is this enhanced ability to communicate that enables the new form of organizations.

You can't communicate with someone whom you don't know exists. Social technology links people together who would not have been connected before. The ability to find others with similar interests or needed skills is greatly enhanced. In a Newtonian organization, one function of centralized management was to plan and connect the required workers, but social technology can fully distribute the job of making these connections. People can work more independently, and still find the right others to form teams and accomplish goals.

In the past year we have seen a big rise in something known as **Adaptive Case Management** (ACM). ACM is dedicated to helping knowledge workers when their work is not predictable. ACM will be the technology to support a quantum organization. Case management is used here to mean the approach to establish goals, and to collect information around accomplishing those goals, without knowing ahead of time what will need to be done. Adaptive case management is then technology that supports this, allowing users to make connections, collaborate with others, communicate status and progress, and to see patterns of behavior that can be re-used over time. A full explanation of ACM is out of scope for this paper, but instead the reader is referred to the book "Mastering the Unpredictable" (Swenson 2010) which covers this vision in some depth.

Some have argued that ACM is a kind of BPM, and others argue that it is distinct from BPM. Once again the problematic BPM term tends to confuse the discussion, so there is not much point in arguing either way. Vendors of technology will advertise that they support both BPM-like and ACM-like approaches, and there is no reason that a single vendor can't offer a system that supports both modes of use. This is not a question of one vendor over another vendor. It is important to keep concept of ACM distinction from traditional BPM because they aim to support different patterns or behavior, used by different users. Traditional BPM is designed for IT personnel to develop custom applications that are deployed and used by workers. Traditional BPM is sold to IT and includes features that help a process professional create processes for others. ACM is designed to be used directly by the knowledge worker, who is not a process professional, and otherwise completely busy with their profession. The needs and requirements of this user are strikingly different from those of traditional BPM.[3]

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[3] Compare a modern spreadsheet to an Eclipse-based software development environment, and you will get an idea of the difference. The spreadsheet can be used to bring in data, calcu-

A non-obvious aspect of ACM is that it must be the knowledge worker's primary work environment for everything they do. The technology necessary to support knowledge workers in a quantum organization is not likely to be something that is isolated for a particular purpose, but because this work is so unpredictable, it is going to need to be something that is being used all the time. Justin Rosenstein, a co-founder of Asana, argues that if a collaborative environment is separate from a personal work environment people waste a lot of time copying documents and information back and forth. He says: "If something is going be successful the way that a group organizes its information, it also has to be the way that individuals organize their information. In order to be the best group collaboration environment, it needs to be the best personal productivity tool."[4]

Industrial age processes were oriented toward optimizing resources by finding the single best process, and constraining everyone to follow that. The theory about finding the best process is good, but the problem is thinking that there is one process that will fit everyone. Margaret Wheatley points to a flaw in this thinking: "Why would we stay locked in our belief that there is one right way to do something, or one correct interpretation to a situation, when the universe demands diversity and thrives on a plurality of meaning?" It is a Newtonian idea that the rules behind the behavior must be guided by simple rules that can be abstracted away from the situation.

What if, in fact, every branch of the store is in a different community and has a different set of customers with different situations. Complexity discouraged Newtonian organizations from attempting to address this, but the quantum organization is able to handle this complexity. Workers are not viewed as cogs in a machine, but instead as intelligent units that can make decisions and find creative new ways to meet those customer demands. Quantum organizations are able to personalize their response to customers in a way never before imagined.

Given that social technology can link people in ways not possible before, and facilitate collaboration on a far more flexible basis, it directly enables a shift from a Newtonian organization to a quantum organization. The rest of this paper covers how notable thinkers see this shift in organizational structure.

THEORIES OF WORKER MOTIVATION

Theory X management[5] assumes that workers are lazy and self-interested and need to be placed into a strict hierarchical structure where their options for action are closely regulated. The jobs have to be defined fairly completely, and thus only the large scale behaviors can be rigidly defined. The people with jobs are organized into large departments with specific functions, so that the working of the entire organization can be abstracted out into simplified principles. The organiza-

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late results, and product reports. The Eclipse-base software development environment can be used to make programs that will do the same thing. It would be foolish to suggest that a typical doctor or a lawyer might use the software development environment. The development environment is designed for a professional to create software. However, a doctor or a lawyer might easily use a spreadsheet. To claim that the spreadsheet and the development environment are the same, is to completely misunderstand the differences between these users.

[4] From a demonstration of the Asana product on the web, March 2011

[5] Douglas McGregor at the MIT Sloan School of Management explained the perceived motivation of workers by managers who build organizations as either Theory X or Theory Y in his 1960 book "The Human Side of Enterprise".

tion works like a large machine, and like the Newtonian view of the world, precision and repeatability are the secrets to large scale efficiency.

Theory Y, management assumes workers are self-motivated and exercise self-control. Workers actually think about what they are doing, and have an incentive to do it better. It is believed that workers enjoy their mental and physical work duties.

A manager working under the assumptions of Theory Y have every reason to delegate as much responsibility as possible. A manager takes the role of helper and mentor, instead of commander and controller.

McGregor's study of motivation is not new, so why is this relevant to social technology today? At the time McGregor wrote of "The Human Side of Enterprise," it was still very difficult to give workers large latitude and still hope that they remain coordinated. The structure of the organization was needed to help people from accidentally working at odds with others. The ability of an individual worker to know and be aware of all the right things that others were doing was extremely limited.

Armed with a far greater ability to track, follow, and understand what others in their organization are doing, workers are now more capable of making good decisions. Theory Y managers can delegate far more than ever before, and still have effective workers. It means that organizations can be decentralized to a degree that was never possible before. In a very real sense, an organization can tap into the *intelligence at the tips* in a way that has never been possible before.

A Theory X manager can retain centralized control, and will still benefit from social technology because it will give them better awareness of what is going on in their organizations. I hasten to add though that a Theory X manager will not be able to tap into the collective intelligence of their organization in the way that a Theory Y manager will.

PUSH AND PULL

John Hagel III, John Seely Brown, and Lang Davison in their book "The Power of Pull" have categorized the world of industrial age organizations as the world of Push. Their description of a push environment sounds very familiar, because that was the standard paradigm that we all grew up in.

The Newtonian view that the world is predictable is apparent in the way that managers attempt to boil the actions of the company down to simplified rules of behavior: "Push approaches are typified by what might be called "programs" or "routines"; tightly scripted specifications of activities designed to be invoked by known parties in predetermined contexts."

They point out that: "Push models treat people as passive consumers whose needs can be anticipated and shaped by centralized decision makers. Push programs represent a top-down approach to dictating activities." "The people participating in push programs are generally treated as instruments to ensure that activities are performed as dictated."

It is easy to see how this is aligned with the goals of traditional BPM technology. The very idea of a cycle of centralized improvement of process models is a Newtonian concept.

They show some of the negative side of push organizations:

- "Because of the work required to specify, monitor, and enforce detailed activities, push programs tend to be restricted in terms of the number and diversity of participants."
- "The tight coupling of the procedures in these programs tends to make companies rigid and inflexible."
- "Push programs tend to treat all relevant resources as fixed and scarce quantities. …[their purpose is] to ensure that scarce resources are deployed to the highest priority needs."

The end result is the inability to effectively make use of the creativity of most of the workers. "As companies boil their business operations into routinized practices, they suppress many of the creative instincts of their workers, who become standardized parts of a predictable machine."

You can identify traditional bureaucracies embodying these concepts:
- There is not enough to go around—scarcity is a driving motivation, all action is oriented to do more with less, and maximally conserve resources.
- Elites do the deciding—another way to say this is that the "brains are separated from the brawn"; the idea here is that centralized control is better than decentralized control.
- Organizations must be hierarchical—and those who design organizations this way often think of reporting lines as communication lines: boss to employee and back is the only officially recognized path.
- People must be molded—and managers know best how to mold workers.
- Bigger is better—industrial age economics relies upon the mass production reducing the cost of each unit in exchange for not having exactly the right unit for all situations.
- Demand can be forecast—like a machine, you should be able to measure initial conditions, and then predict how the machine will play out.
- Resources can be allocated centrally—because the machine is externally observable, and because the rules guiding behavior is basically simple, the decisions can be centralized.
- Demand can be met—which is true only if you were able to measure and predict the course of things, a very Newtonian view.

The authors talk about the "Big Shift" which is occurring in the business world to using a pull based approach: "As the Big Shift takes hold, companies are no longer places that exist to drive down costs by getting increasingly bigger. They're places that support and organize talented individuals to get better faster by working with others. The rationale of the firm shifts from scalable efficiency to scalable learning—the ability to improve performance more rapidly and learn faster by effectively integrating more and more participants distributed across traditional institutional boundaries."
- "Pull platforms tend to be much more modular in design. … for the convenience of the participants in the platform … designed to be loosely coupled."
- "Pull platforms are designed from the outset to handle exceptions, while push programs treat exceptions as indications of failure. Most companies in fact spend considerable effort trying to eliminate exceptions."
- "[Pull platforms] enhance the potential for productive friction as people with different perspectives, skills, and experience come together to try to find a solution for a specific problem."

- "Pull platforms are emerging as a response to growing uncertainty… They seek to expand the opportunity for creativity by local participants dealing with immediate needs."
- "Rather than seeking to constrain the resources available to people, pull platforms strive to continually expand the choices available while at the same time helping people to find the resources that are most relevant to them. Rather than dictating the actions that people must take, pull platforms provide people with the tools and resources (including connections to other people) required for them to take initiative and creatively address opportunities as they arise."
- "The changes playing out over the past couple of decades have been so fundamental that they have challenged even our most basic assumptions, the assumptions that enabled CEOs and other executives to build their institutions in the first place."
- "It is time to put off what needs to be done: The only way out of this stressful situation is to step back and reassess the very rational for the firm."

OTHER INDICATIONS THAT THE NEWTONIAN VIEWPOINT IS WANING

Hagel et. al. have made a clear and powerful statement that there is change afoot, but they are many other indications that the Big Shift is happening.

The important thing to know about knowledge workers is that they are fundamentally intelligent units. They are not mindless cogs that do a simple task precisely as they are told. They are like quantum particles where the internal state cannot be known, and which interact with other particles in way that may not be externally understandable on a case by case basis.

Peter Drucker was talking about the potential of knowledge workers all through the 1980s and 1990s: "SIX major factors determine knowledge-worker productivity

1. Knowledge worker productivity demands that we ask the question: "What is the task?"
2. It demands that we impose the responsibility for their productivity on the individual knowledge workers themselves. Knowledge workers have to manage themselves. They have to have autonomy.
3. Continuing innovation has to be part of the work, the task, and the responsibility of knowledge workers.
4. Knowledge work requires continuous learning on the part of the knowledge worker, but equally continuous teaching on the part of the knowledge worker.
5. Productivity of the knowledge worker is not—at least not primarily—a matter of the quantity of output. Quality is at least as important.
6. Finally, knowledge-worker productivity requires that the knowledge worker is both seen and treated as an "asset" rather than a "cost." It requires that knowledge workers want to work for the organization in preference to all other opportunities."

With traditional BPM, we like to think of the office as a big machine, where people have task lists delivered to them: "Peter Drucker observed that an effective executive manages their time, not their task list. In other words, they decide at the beginning of each day how best to use the time they have available in the interests

of their organizations, rather than starting with the list of tasks they have been assigned and working through them in order."

The idea of pull may in fact have started with Taichi Ohno, the Japanese inventor of the Toyota Production System (TPS) also known as a "Lean" approach to manufacturing. The genius in TPS was how it leveraged the intelligence inside the organization, instead of trying to make a machine that ran without intelligence.

Mary Poppendieck was involved in the conversion of a 3M plant from a push approach to a pull approach. Before the shift, there was a huge effort in logistics on a big computer to calculate each day's production. Knowing what was to be produced, one could work backward to find out what parts had to be made at what time. One also had to consider the raw materials that were on hand, and use that to determine what could be produced. And then schedule the whole operation. Theoretically, it seems one should be able to predict the entire day and send out orders to everyone indicating exactly what to do every moment. Such elaborate plans can be created, but they are incredibly brittle: the first minor deviation can throw the entire plan off. Since there is no resiliency built into the system, the only recourse you have is to go back to the computers and calculate a new master plan, and re-distribute it to everyone.

The pull system did not perform any calculations outside of the system, but instead required those within the system to communicate their needs. The system was set to be able to respond to those needs as they occur, and—this is the most important part—to avoid overproduction at any level. Instead of trying to calculate how the system should perform as a big machine commanded from outside, you make the system itself responsive and reactive. In a way, you can imagine the parts of the factory itself doing those calculations on what is needed when, and one of the key advantages is that distributed through the factory you have many intelligent people who know their own domain better than any external logistics program could. You are mining the intelligence within the factory, instead of attempting to abstract the calculation out of the factory.

The change to the Toyota Production System approach has been largely reserved to the manufacturing domain, but now we are seeing social technology bringing the same kinds of benefits to white collar office workers. And indeed, we might see the big shift as mining the intelligence of the front line office workers.

Author Dan Pink in his book "A Whole New Mind" sees the workplace shifting and being dominated by what he calls the "right brained" worker. He says that high-tech is no longer sufficient to compete, and what is needed instead is high-concept and high-touch.

- "High concept involves the capacity to detect patterns and opportunities, to create artistic and emotional beauty, to craft a satisfying narrative, and to combine seemingly unrelated ideas into something new."

- "High touch involves the ability to empathize, to understand the subtleties of human interaction, to find joy in one's self and to elicit it in others, and to stretch beyond the quotidian, in pursuit of purpose and meaning."

Dan Pink associates the mechanistic Newtonian view and its predictable outcomes with the left brain, the part of the brain normally associated with linear analytical reasoning. He sees this as no longer sufficient to compete. Either information technology has automated away all need for people to perform like a machine, or else telecommunications has made it easy to mass-source these jobs to very inexpensive parts of the world. However, information technology has not

replaced the more intuition based right brain capabilities, and those skills will become more and more important. What technology will support these right brained workers who are not simply cogs in a machine, but creative, intelligent, thinking agents who take an active part in direction of the organization? Social technology is not designed around constraining a person to a pre-defined path, and instead around supporting unanticipated interactions, which will be useful to creative right brained thinkers.

Authors Margaret Wheatley and Myron Kellner-Rogers in their book "A Simpler Way" make a direct call to think about organizations differently.

- "We were taught to see the world as a great machine. But then we could find nothing human in it."
- "As we change our images of the world, as we leave behind the machine, we welcome ourselves back. We recover a world that is supportive of human endeavor."

Wheatley and Rogers urge us to view an organization as a living organism, and that stability comes not from enforcing a design from outside, but rather by continual interaction within.

- "A self organizing system reveals itself as structures of relationships, patterns of behaviors, habits of belief, and methods for accomplishing work. These patterns, structures, and methods are visible … But these material forms are deceptions. They entice us to believe that we can change them by replacing one for another."

Much of the point of scientific management has been to focus on the outward effects of the process: input and outputs. The same can be said for traditional BPM. While we perceive the organization as structured, we need to understand that it is really based on relationships, and for an organization to be self-structuring, one needs to support relationships. Perhaps there is a significant role for social technology in taking this support for relationships to a level never before achieved.

Since 1990 there has been a big drive in the software community toward something known as Agile development. While there are many forms of Agile development, these approaches are collectively compared to another approach known as the "Waterfall Model". The waterfall approach is a standard Newtonian view of how software projects should be developed, particularly in how the project is expected to be predicted as a large machine, and how there is such a focus on measurement and statistics. The Agile approach offers a radical change to this that traditional managers find uncomfortable: while the satisfaction of the customer remains clearly the target of the work, there is no attempt to predict exactly how that will be accomplished. Instead, work is completed and reviewed by representatives of the customer, and that feedback drives more development directly.

The idea of Agile development is now spreading beyond software and beyond product development. The ideas of "outside in" process design, and direct customer satisfaction, are areas where Agile concepts are making the way into non-software organizations.

Finally, of course, how can anyone who works in a bureaucracy not find humor in Scott Adam's comic strip Dilbert, which regularly lampoons the situations that people find themselves in as they are treated as cogs by an organization designed by Newtonians. If it was not widely recognized as a dysfunctional form of organization, the comics would not be amusing, and could never be nearly as popular. We see ample evidence that it is time for a change to a new style of organization.

HOW CAN ORGANIZATIONS BEST TRANSFORM THEMSELVES?

Francois Gosseaux and Ed Moran call this potential new organization type, a Hyper-Social Organization. In their book with that name, they outline how a Hyper-Social Organization can engage the marketplace much more efficiently and more effectively than was possible before.

The book starts with a simple explanation: "Human 1.0" is the way that people have interacted and worked together for thousands of years. Only recently (the last few decades) information technology has forced people into working in much more constrained ways. Mass media brought the rise of companies that communicated with the masses through a corporate voice which has had the advantage of telling people what they want and what they can have.

Social media flips the mode, and brings us back to communicating one-on-one. This is not a new way of working, it is actually the original way that people worked, it is just that social media allows this to happen on a scale never before contemplated. A Hyper-Social organization is a return to the natural way of interacting, which is why the authors make a compelling argument that it is inevitable.

They point out: "The sales function is one of the most studied, dissected, and carefully managed parts of the corporate machine. … Curiously absent, however, has been a strong focus on how people purchase in groups; for most of recent history, sales has been a one-on-one game."

To get an idea of the magnitude of shift, they recommend the following four changes to fundamental organizing principles:

- **Forget market segments.** These were just constructs to allow corporations to coordinate their approach to the market. Instead, you need to think about tribes and humans. A tribe is a group that identifies in some way with each other, and will be the most important way of influencing purchasing patterns. Identifying tribes is the secret to success.
- **Forget company centricity, and think human centricity.** Hyper-social organization can be more personal at all levels, and engage customers to focus on and satisfy their needs directly.
- **Forget information channels, and think about knowledge networks.** Companies could prepare mass market messages to push through well known channels such as media and events. This communication was the only option that the consumer had, and corporations could control what the public knows. But in a social world the customer already has contacts to other members of the tribe, already is finding out accurate information about your products from others online. Pushing a company line will not work. Instead, share knowledge well, and work to gain trust.
- **Forget processes and hierarchies, and embrace social messiness.** They recommend something they call SEAMS: sensing, engaging, activating, measuring, and storytelling. The processes will be less and less predefined, but embrace that, and allow people in the organization to interact as humans.

Gosseaux and Moran propose dramatic changes that highlight how the old view of organizations were based on Newtonian ideals: The market is supposed to be externally observable and measurable. The market is smooth: individuals can be placed into groups, and their individual behavior will approximate that of the group. The rules that guide purchasing behavior are fundamentally simple and can be abstracted away from the individual. And finally, the course of events can

be predicted; programs can be put into place that if perfected in their design can be expected to follow a predictable course.

They suggest that new technology, Social Media in particular, can free the organization from the need to reply on these outdated ideas. The people in a Hyper-Social Organization are not cogs in a machine, but intelligent actors with complex and unobservable inner states. There will be constant turbulence, and the aggregate measures may not even approximate what is going on at the detail level. With the right motivation, these intelligent workers can accomplish projects quickly and effectively, coordinated across teams of people on the spot, which would never have been possible in the centrally controlled, centrally designed, programs of the past. It is an important vision of the quantum organization.

Charlene Li and Josh Bernoff recommend a very similar approach in their book "Groundswell." The culture of sharing and the culture of participation are yielding new business models that are more effective at capturing business by leveraging social technology. They make it clear that this requires a new type of organization: "The secret to thriving is culture. This is not about technology implementation but about managing and changing the way that organizations work, a change that needs the blessing—or, even better, the active participation—of top echelons of management."

In her new book "Open Leadership" Charlene Li urges managers to open up. She defines open leadership as "having the confidence and humility to give up the need to be in control while inspiring commitment from people to accomplish goals." She quoted Michael Slaby, the CTO of the Obama campaign saying: "If you do a good job of teaching your values and mission to the people at the bottom of your organization, then once you give them control, they will do the right things with it."

WHAT ARE THE BARRIERS

How then does a leader lead, if they are not dictating exactly what to do when? This is a real quandary for the leaders today.

Hagel says that "Executives are often unaware of the unstated and unexamined assumptions underlying their approaches." This is not uncommon in a time of paradigm shift. Having gained 30 years of experience with a system that works one way, it is hard to see that some aspects of what you know to be true are no longer true. It is not as if someone sat down and came up with a set of reasons for structuring an organization the way it is. Organizations grow through a process known as autopoesis, and the underlying rationale for the specific structure might never be explicitly known. What is not known cannot be questioned.

This inability to be aware of the changes makes this social revolution a disruptive change: new organizations will tend to adopt the new approaches faster and more effectively, and the traditional leaders will fall behind and eventually be replaced.

Feeling that you are in control of the situation can be comforting, and giving up control of the details of how things get done can be intimidating. However, organizations that do this, will find that the people on the front line, who are engaging with the customer, will be able to respond in ways that would not be possible in a centrally controlled organization.

This has always been true, but today we have social technology to make those workers on the tips of the branches more capable than before. The centralized structure and control was necessary in an industrial age, but in an information

age, edge workers can self organize, discover other relevant people in the organization, and effectively deliver on the organization's promise.

Many organizations will not be able to handle the transition to a "pull organization." New organizations will appear, and eat the lunch of those who are unable to transform. That is the way of disruptive change.

REFLECTIONS

If the reader will indulge me, I will expand on some purely speculative projections of what one might expect to see and where this all might be going.

The aim of this book is to cover Social BPM, and there are many other chapters in specific aspects of this. As you read the other chapters, it is important to keep in mind that Social BPM may not have any particular effect on the Newtonian organizations that we are all used to. You must project forward to imagine a quantum organization, and the effect that these new approaches will have in that context.

It is not completely clear whether a quantum organization will need what is known today as traditional BPM at all. The stated goal of traditional BPM is to create increasingly better processes, but inherent in that goal is a Newtonian view that all interaction can be isolated away from the situation. An organization designed around enabling highly creative knowledge workers may have no need for standardized processes, at least in the way we envision those processes. I am not, by any measure, predicting the imminent demise of traditional BPM. The shift to quantum organizations will be a trend over many decades, and some Newtonian organizations will never disappear entirely.

We have seen dramatic change in the world in the past few years, and there is no doubt that there is a connection to the powerful collaborative capabilities of social technology. In 2008, we witnessed the first political campaigns that made widespread use of such technology to directly engage people in the program. The ability to work in a decentralized manner without a large bureaucracy is best demonstrated by the wave of political change that we now see in the Middle East, which at the time of writing included three fallen regimes, and several more teetering. There is no doubt that social technology is today having an effect on some of the strongest adherents to Newtonian view: government organizations. If governments can be changed, surely the change in competitive organizations will be more profound.

Fundamentally, the shift to Social BPM, or other social technologies in general, is not simply a change to a new information platform, it is a change to support a whole new kind of organization. This organization will be far more decentralized than was possible before, even under the most liberal of theory Y managers, and yet the workers will be better coordinated than ever before. They will have the information to know what others in their organization are doing that might fit with their current goals, they will be able to find others who can help them, and they will be empowered to make things happen in ways that the Newtonian designers of Industrial Age organizations could never have dreamed of.

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