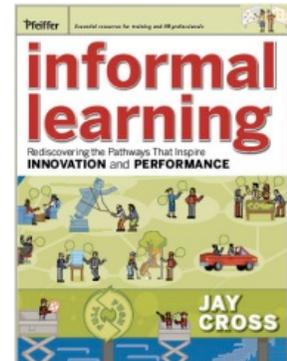


Chapter 4 of *Informal Learning: Rediscovering the Natural Pathways that Inspire Innovation and Performance*, by Jay Cross



EMERGENCE

TRAINING BECOMES LEARNING

Five years ago, the words *training* and *learning* were interchangeable, but these days learning is honored and training is disdained. What's the difference? Training is something that's pushed on you; someone else is in charge. Learning is something you choose to do, whether you're being trained or not; you're in charge.

Many a knowledge worker will tell you, "I love to learn but I hate to be trained." Learning is in keeping with the democratization of the workplace spawned by the network revolution. Decision-making is passing from the manager to the worker, and part of the deal is learning crowding out training.

Traditional	Emergent
Training	Learning
Management in charge	Worker in charge
Often formal	Often informal

Emergence is the key characteristic of complex systems. It is the process by which simple entities self-organize to form something more complex. As training converges with bottom-up self-organizing systems, network effects, and the empowerment of individuals, it morphs into emergent learning.

PUSH TO PULL

John Hagel and John Seely Brown persuasively argue that the business world is shifting from push to pull. Push and pull were originally marketing terms. The telemarketer who calls you at dinnertime is push (and maybe pushy, too.) The store with the great window display pulls you in (perhaps with a pulley?)

PUSH	PULL
Assumes you can predict demand	Assumes world is unpredictable
Anticipate	Respond
Rigid, static	Flexible, dynamic
Conform, core	Innovate, edge
Monoliths, components glued together	Small pieces, loosely joined
Program	Learnscape

Business goes from push to pull.

In a nutshell, the Johns tell us that a complex, interconnected world is unpredictable; you don't know what to expect. Planning in such a world is folly; it's wiser to be as responsive as possible when the future arrives. Gone are the days of tweaking systems to get the last ounce of performance out of them. The fast response time we need comes from keeping your options open and creating an organization sufficiently flexible to roll with the waves.

Business used to concentrate on executing core processes well. Future businesses will focus on being sufficiently innovative to swap in new core processes for old in response to changes in the environment.

Empowering the worker changes how we look at training and development. If you're going to be able to turn on a dime, the six-month course development cycles of the past aren't going to cut it. Not that lengthy courses fit today's go-go business environment anyway. Take someone away from cell phone and email cold turkey to attend a class, and you'll see without agony associated with heroine junkies. Pluck sales people out of the field, no matter how green and lousy they may be, and the sales vice president will say you're the reason she didn't make quota.

PUSH	PULL
Training	Learning
Curriculum	Discovery
Courses	Performance support
Training program	Collaboration platform
Mandated	Self-service
Just in case	Just in time

Learning emerges in new form

People who already know the lay of the land don't want a curriculum. That's someone else's opinion of what they need to know. It undoubtedly

contains lots of things they either already know or have no interest in finding out. They prefer to cherry-pick what they need in the easiest way available to them.

”Learning something at the moment of need, however, couples learning and application and that has more lasting effects.”

Courses are dead. Who’s got the time? Courses are almost always separate from work. That goes against the trend of integrating learning and work. Hence, learning from performance support fits better with today’s workplace.

.....Training program? This is the same as courses, except often more time robbed from work. Since most learning is social, wouldn’t it be more effective to put workers in touch with others, so they can learn from one another?

.....A busy person detests being told to make time for something to convenience someone else. Self-service learning is more convenient and more economical. I don’t go to the bank during banking hours much any more. It’s more convenient to bank in the evening. The ATM doesn’t mind what I’m wearing or whether I say hello.

.....Learning things in advance, “just in case,” is a losing game. Until the case arrives, the worker suspects the subject matter won’t be relevant. And when the case does come along, the knowledge acquired in advance is probably long gone. Knowledge, like muscle tissue, deteriorates when it’s not used. Learning something at the moment of need, however, couples learning and application and that has more lasting effects.

.....When you cannot predict the future, and emergence is unpredictable, you can’t build training programs in advance because you don’t know what you’ll need.

.....Those who are charged with developing an organization’s talent must rise above the level of training programs. Static programs do not fare well in a dynamic world. Instead, we should focus on setting the right conditions for learning. Sometimes there will be a course thrown in, other times a loose collective exercise will prompt learning, and often we’ll just get out of the way and let learning happen on its own.

FROM TRAINING PROGRAMS TO LEARNSCAPES

Formal learning takes place in classrooms; informal learning happens in *learnsapes*.

.....A learnscape is a learning ecology. As the *environment* of learning, a learnscape includes the workplace. In fact, a learnscape has no boundaries. No two learnsapes are alike. Your landscape may include

being coached on giving effective presentations, calling the help desk for an explanation, and researching an industry on the net. My learnscape could include participating in a community of field technicians, looking things up on Google, and living in France for three months.

.....How would you build a learnscape for emergent learning?

.....People who say that “Content is king” would probably start there, with lessons to be learned. Others would point out that content out of context is meaningless, so they would start by putting some sort of infrastructure in place.

.....Truth is, content and context are inseparable. They are like inside and outside. You can't have one without the other. You have to have faith that if you add a mixture of content and context into your organization, good results will emerge. The whole is more than the sum of the parts. You have to begin with a vision.

.....XPLANE is an information design firm that develops visual maps and stories to make complex business issues easier to understand. They created the nifty images you find throughout this book. Envisioning a learning platform begins with a sketch. I'm working with XPLANE on just such a sketch of a learnscape as I write these words; I'll tell you what I see thus far.

.....The primary image is an immense learnscape, floating atop a stormy sea of time acceleration, blur, business process automation, information overload, Earth is Flat, outsourcing, globalization, web 2.0, broadband, Web services, interoperability, and internet time. A great wave of network tangle is crashing over the back of the platform. At the front are business results, talented people, and continuous improvement of each.

.....Nodes are born when needed, visuals speed up understanding, and workers learn from one another. These nodes and other activities are all connected; if we were creating a time-lapse film, we'd show the network continually connecting to new nodes, becoming more tightly interwoven, with work flowing through it ever faster.

.....This is but a mental model. An organization is comprised of thousands of nodes with immeasurably complex connections. Now only that, but the connections reach out to suppliers, customers, and partners as well as our own workers.

.....The old way of learning was made of workshops, training programs, role-plays, lectures, readings, tests, practice assignments, group discussion, homework, self-study, computer-mediated lessons, job rotation, assessments, and on job training.

.....The emergent way of learning is more likely to involve community, storytelling, simulation, dynamic learning portals, social network analysis, expertise location, presence awareness, workflow integration, search technology, help desks, spontaneity, personal knowledge management, mobile learning, and co-creation.

Time and Space

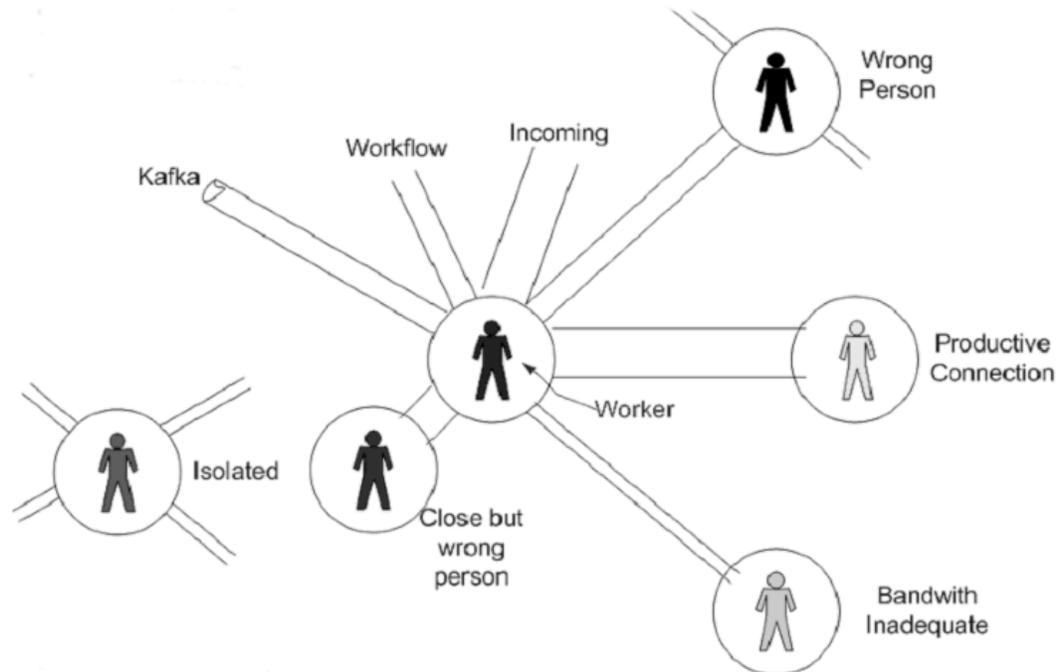
We aim to create a learnscape where workers can easily find the people and information they need, learning is fluid and new ideas flow freely, corporate citizens live and work by the organization's values, people know the best way to get things done, workers spend more time creating value than handling exceptions, and everyone finds their work challenging and fulfilling.

"Knowledge lives in people's heads, not in mere words. You can no more capture true knowledge in a repository than you can trap lightning in a box."

The typical starting learnscape hosts noxious weeds. Workers spend more time searching for the right information and the right people than creating value. Poor workspace hampers effective learning. Bad architecture stifles innovation. Corporations give lip service to values but have no place to celebrate them.

.....Companies never work as depicted on their organization charts. A shadow organization really runs the show. Unless x-rays of the underground organization in the form of an Organizational Network Analysis are available, people will be unaware of what's how to get things done productively.

.....Most of the network diagrams I've seen show every node connected, and all connections of the same quality. Most of the organizations I've analyzed look more like this:



Let's look at some connections, going clockwise around this picture. Our hypothetical worker is at the center of the network from this perspective.

- To the right is a productive connection, just what we're looking for. I have a person at the end-node, but it could just as well be an intranet or the internet cloud.
- The next node is linked by a thin connector; not much information or emotion is going back and forth here. This could be because the worker inhabits a different silo, or the other person does not have a broadband connection, or maybe they work in different time zones or don't speak the same language.
- At seven o'clock is someone with high bandwidth, because they're in the next cubicle. Neighbors are the first people most workers turn to when they are seeking the answer to a question; unfortunately, they are rarely the best person to ask.
- The isolated person is not a member of our worker's network. They're unaware that a connection would be beneficial.
- The connector to Kafka stands for entering the labyrinth of links which lead to nowhere. Perhaps it's a Google search gone wrong, where one link leads to another useless link and so on ad infinitum. Or when you're looking for a person in another organization, and

you can't figure out their phone tree, much less where the function you're looking for might reside.

- The connection to workflow is vital, for without it the worker doesn't know what's going on.
- The node marked incoming is the fat pipe delivering email cc's, Spam, memos you don't want to read, junk mail, junk faxes, junk letters, and junk phone calls.
- Finally, the wrong person node is the individual you finally reach after 15 tries, only to find out they are not the person you're looking for. You've got to talk with Sally instead.

An in-house yellow pages, expertise location, instant messenger, presence awareness, and an informal, in-house knowledge repository will go a long way toward making this network functional again.

MAKE SPACE FOR LEARNING

A group of training managers at Hewlett Packard told me they felt helpless to influence things outside the bounds of authorized training programs. "What can we do?" they asked. Every bit of floor space except narrow hallways was chock-a-block with cubicles designed to fence off individual workspaces. This was in HP World Headquarters, not 100' from the Carly's office. There was no space for people to get together. Most of the cubicles were empty, for people found it more comfortable to work from home and meet at restaurants.

.....What could HP do? I suggested replacing a quarter of the cubicles with sofas and pool tables. Put in espresso machines and a few white boards. Encourage people to work together. Let nature take its course. Productivity and morale will go up. That's inevitable.

.....At a Microsoft conference, the stark glass buildings offered no space for informal get-togethers. A visiting group pointed out that Microsoft was not getting its money's worth by relying entirely on PowerPoints delivered by VPs with 10-minute breakouts to engage the visitors. In the evening, the group went to a restaurant with the developers. Conversation flowed. The Microsoft developers said they got more ideas than at any previous meeting.

This reminds me of the story of John Akers, in the days when the IBM ship was sinking, chastising a group of engineers huddled around the water cooler, telling them to get back to work -- failing to realize that talk around the cooler was the work.

.....Form is supposed to follow function, but you'd never guess it by looking at most corporate workspaces. Tom Davenport, heir to the title of best

knowledge work guru now that Peter Drucker is no longer with us, says “The workspace improves or hinders performance. Workspace design must take into account:

- Knowledge workers prefer closed offices, but seem to communicate better in open ones.
- Knowledge workers congregate in particular geographical areas.
- Knowledge workers move around in the course of their work.
- Knowledge workers collaborate.
- Knowledge workers concentrate.
- Knowledge workers work in the office.
- Knowledge workers communicate with people who are close by.
- Knowledge workers don't care about facilities gewgaws.”

(Davenport, 2005)

Creating Learning Spaces at MIT

Buildings at MIT must support learning communities. Social space (cafeterias, nooks, atriums, and other public spaces) are much in demand. In fact, demand is high and getting higher for informal, multi-purpose spaces. Demand for private offices and cubicles is dropping.

.....An effective learning space combines push and pull. The push is to create fringe spaces where disciplines overlap; this is a prerequisite of innovation. The pull is the portability that goes with a wi-fi connection. You used to meet in an office surrounded by your books, your files, and your phone. That's no longer necessary.

.....Now this seems like a no-brainer, but it's hard to do. For one thing, you must fight obsolete metrics. A traditional measure is the “net-to-gross ratio,” the proportion of the building that's productive. The problem is that social space is defined as unproductive. That's crazy. The most unproductive space you can find is an empty office, where nothing is going on.

.....Another vestigial metric is the “surface to volume ratio.” Less is more, unless you care about people, who want windows, corners, nooks, and other things that create more surface, not less.

.....Many have compared MIT's old Building 20 to the Media Lab. Building 20 was totally informal, the ultimate in flexibility. By contrast, the Media Lab is quite formal, in a way that deters collaboration. Bill Mitchell, Chief Architect at MIT, notes that people forget that Building 20 was also cold, rat-infested, falling apart, and loaded with asbestos.

.....An open plan floor space is flexible. It physically breaks down the walls and barriers, replacing them with undefined boundaries. You can see what others are up to; their work becomes transparent, enabling people to interact. Not everyone likes the idea. As Tom Davenport said, they want their privacy. They see open plan architecture as social engineering, and

they have a point. Most find that they like openness once they become accustomed to it. It takes courage to fight for the new, but the results are worth it. In the new data center, robots are running around, you see things going on, it's an exciting space.

.....You need to build support from the bottom up. Frank Gehry's approach to building MIT's Ray and Maria Stata Center was exemplary. The Center is home to engineering and computer science faculty. Gehry began by engaging the community. They interacted. He'd put a model on the table. No, that wasn't it. He created another prototype. This was important to gain commitment; he put physical things out there. This fostered more discussion and more mutual understanding. He didn't fear the tension; he welcomed it as a means of making progress.

.....Of course, highly charged atmospheres can create misunderstandings. Gehry challenged the faculty to rethink their conception of the relationship of offices and workspace. He suggested they think of a village of orangutans. At night they sleep apart, way up in the trees. In daylight, they form a community on the ground. Maybe the new MIT building should work like an orangutan village. The faculty complained to Bill Mitchell, "He called us orangutans."

Knowledge workers need spaces for:

- Thinking/conceiving
- Designing
- Presentation
- Collaborating
- Debating/negotiating
- Implementing
- Practicing
- Sensing
- Operating

Two mindsets are required when we set about constructing new learnscapes:

- *Realizing* that learning is about situated action, collaboration, coaching, and reflection, not study and reading
- *Thinking* buildings as the beginning of an evolutionary process in a state of permanent flux and iterative change

(Educause Review, July/August 2005)

John Seely Brown is married to an architect, so he's seen many architecture studios. Picture the drawing boards side by side in a big, well-lit, airy room. You can peruse one another's work. You see how projects take shape. You eavesdrop, you lurk, and you learn what's going on. It

makes one wonder why business isn't more transparent. You can learn a lot by looking over someone's shoulder.

iWork at Sun Microsystems

Location matters. The design of the workplace is an important component of productivity, yet all too many businesses are blind to its impact. Architects are creating corporate buildings today with hierarchical floor plans and grid layouts from a previous era. Corporate efforts to reduce one-time costs and maximize usable space backfire because they hamper the work of the building's inhabitants for as long as it stands.

.....In the past four years, the iWork program at Sun Microsystems has improved employee satisfaction, cut turnover, and saved the company a quarter-billion dollars in real estate costs by designing workspaces that suit the work. "The iWork program has revolutionized the way people work," says Eric Richert, vice president of Sun's iWork Solutions Group.

.....Originally the Space Planning & Design Group, the team designs Sun offices to optimize what future occupants needed to do to accomplish their core deliverables, the 8 to 12 essential service factors on which their performance was measured. After surveying the workgroup's culture and management practices, the team would investigate three aspects of their work in great detail. One person designed the IT architecture, another examined human factors, and the third worked on the space.

.....Following confirmation through a series of focus groups, the iWork team used a software model to develop four or five scenarios to present to the workgroup. Not mere drawings, each scenario included predictions of the workgroup's performance, cost estimates to build out the scenario, and the individual impact of the IT, human, and space considerations.

.....When the team designed the layout of a new sales and service center in Atlanta, they found that many employees spent significant time on the road. Sixty-percent of the facility was dedicated to shared space. An itinerant employee would check in at a front desk (as if in a hotel) and be assigned a workspace according to his needs. Since office time was filled with debriefings and coordination meetings, the team designed four-person and two-person spaces as well as individual workstations and meeting rooms. To accommodate work styles, tables in the cafeteria were fully wired for net connections.

.....The work situation at Sun's offices in Detroit was much the opposite. Sun's major client was Ford Motor Company, and they were right next door. People used their offices to quickly check email and prepare reports before returning to the client's site. In Detroit, the workgroups wanted individual cubicles to work in.

.....Sun's hardware design group had entirely different requirements. Overhearing conversations was an important component of their work. The team designed an office space that resembled the lounge of a country club, with carpet and lots of sofas and easy chairs. Whiteboards on

wheels could be rolled in to support impromptu conversation.

.....The iWork Solutions Group pioneered flexible working hours and telecommuting. Nearly all Sun employees have the option of working from home or using flexible workspaces. The flexibility helps workers balance life and work. Sun set up drop-in centers that save the average commuter 90 minutes a day in drive time. Sun research finds that about 60 of those 90 minutes go into additional work for the company.

.....An employee might work at home during the morning, drop the kids at soccer practice, stop by the drop-in center, and finish up at home in the evening. As a side benefit, work-at-home and drop-in centers eliminated the need for 7,700 cubicles and workstations. A facility in the U.K. implemented a flextime plan that expanded the capacity of the building from 130 to 250 employees with no loss of productivity or morale.

.....Sun lives up to its credo that "The network is the computer." Four out of five employees log into servers instead of standalone PCs. They insert a smartcard (a "Sun Ray"), and their custom environment appears on screen no matter where they log in from.

.....Since 1994, the iWork Solutions Group has studied best practices for getting people together over long distances without having to travel. A virtual team may have members spread literally all around the world. As anyone who's been on the wrong end of a misconstrued email can attest, seeing gestures and expressions adds a lot of meaning to a conversation, so collaboration and video conferencing tools are a standard part of the iWork package.

Monitoring Productivity

Many people at Microsoft's Redmond campus have two or three monitors on their desks, one for their immediate project, another for the web, and perhaps another for mail and news. Did this improve performance?

The Internet Time Group Command Center



Volunteers were placed in front of 15" monitors; researchers clocked their performance in a variety of challenging tasks. Then they replaced the 15" monitors with immense 42" plasma screens. On average, productivity increased 10%. Some people were as much as 44% more productive. People begged to take the large screens home with them. (Thompson, 2005)

You do the math. Take a \$100,000/year knowledge worker who costs the company \$150,000 when you add benefits. This individual better be turning out \$300,000/year in value or they wouldn't have a job in Redmond. A 42" plasma monitor costs about three thousand dollars. The monitor pays for itself in less than one quarter, and that doesn't count the smile on workers' faces or the buzz that brings new talent to such a forward-looking company.

The Knowledge Campus at Novartis

Swiss pharmaceutical giant Novartis is converting a manufacturing neighborhood on the Rhine in Basel into a \$27 billion knowledge campus. Its goal is to stimulate creativity and innovation among disciplines. Forty or fifty industrial buildings are being converted into a environment designed to foster interaction. To promote openness, communication and aesthetics the first project completed was a walled garden and meeting place. Campus planners are keen to avoid "desktop isolation."

The Knowledge Campus will be open, to encourage interaction with visitors from Basel's array of universities and research centers. Inviting plazas, walkways, and technology-rich collaboration spaces are planned, as are auditoriums and social networking spaces.

An initial milestone in the transformation of the Novartis St. Johann site from an industrial complex to a place of innovation, knowledge and encounter has been achieved: the completion in June 2003 of a courtyard garden at Building 200, after nine months of construction. It is a natural, green space that is meant to be both pretty and practical, with symbolic as well as social value.

"The garden consists of three parts, explains landscape architect Peter Walker, whose California-based firm led the design effort that started two years ago. To the north is a birch grove, to the south is a circular lawn rimmed by Hornbeam trees, and in-between is a reflecting pool that connects the two. Illumination comes mainly from the sun or from the neighboring building, but there also are lights at ground level. Modeled after Mexican luminarias - decorative candles in sacks - these can be shone in any color and at varying intensity to create different moods."

The layout is meant to be attractive to observers in offices above, but also inviting to people at ground level. Chairs and tables are spread about, ready to host a quiet coffee or an informal business meeting. A large bench serves as both a waiting and a meeting point for people getting together. "The garden is meant to be used," Walker notes, "not just looked at. The circular lawn - which can accommodate up to about 50 people - may be used more formally, for parties, award ceremonies and small meetings. This is a natural way of giving such events more light and air, when weather permits."

At a more subtle level, the garden also presents a symbolic narrative. A cross formed by white-marble footpaths and the birch trees are emblematic of Switzerland. The trees, the water and again the cross are representative of pharmacy, medicine and restoration in general. And the geometric forms suggest the precision of science. (Novartis web site)

Novartis would like to recreate the ancient Agora on the banks of the Rhine. Internationally renowned architects are planning aesthetically pleasing buildings and plants to go hand in hand with their innovative functionality. Art is on display to encourage innovative thinking.
Corporate values on display

When I meet with out-of-towners to discuss business, we generally end up at the San Francisco Museum of Modern Art. It's a more inspiring place to chat than any office.

.....Mike Spock has been designing museum spaces for half a century.
.....Young Mike compensated for a reading disability by learning from radio & movies, and simply roaming around. Most museums were free at the time. Taking a break from roller-skating in Central Park to drop by the

Egyptian antiquities section of the Met was a routine. The ancient mummies and tombs lead a boy to think about the meaning of death and other weighty matters. Later on, Mike's time at Antioch College reinforced the validity of learning by venturing out into the real world.

.....His unconventional learning style shaped Mike's work at the Children's Museum and the Field Museum of Chicago. Museums offer an invitation to experiment. The visitor learns by interacting with the exhibits, mentally or physically. The dialog between visitor and object is the essence of the experience.

.....The Monterey Bay Aquarium is a marvelous experience because it was designed from the start as an experience, not a series of exhibits. The labels on the exhibits tell you just what you want to know, as if a friend were excitedly describing the scene. Look! Notice! See that! The visitor becomes a participant.

.....The Exploratorium begs you to get involved. You have to play, and the interaction of visitor and exhibit is co-created. You collide with neat, challenging bits of science and walk away understanding science rather than memorizing it.

.....The Oakland Museum of California is beautifully orchestrated. The space draws you in. The dioramas in the natural history section are lifelike; the chirping of birds or whisper of the wind lull you into feeling you're really in nature. The art section walks you from idealist paintings that introduced the rest of the world to the beauty of the American West to the rebellious, free-spirited art that represents the California of today. The history section is pure magic, as you can see in the faces of children mesmerized by the gleaming (all original) fire wagon, the snazzy custom motorcycles, a real Wells Fargo gold assay office, and a 1940 kitchen.

.....You can't go to one of these museums without learning. If you need guidance, a docent will show you around, pointing to important lessons along the way. Want to take it solo? Many exhibitions offer a recorded Acoustiguide program. Museums accommodate all sorts of visitors: adventurers (who like to explore), strategic browsers (who study floor plans so as to miss nothing worth talking about) and people who visit once a generation.

.....All of which makes me wonder why corporations do not have in-house museums to celebrate their heritage, their strengths, their accomplishments, and their famous failures.

.....Twenty years ago, *In Search of Excellence* highlighted the importance of corporate culture. (Peters, 1982) If culture is so important, isn't it curious that corporations have few cultural institutions? Wouldn't creating a cultural center perpetuate the organization's values?

.....When I visit the headquarters of powerful, public companies, I frequently see a glass display case. Old-timey companies display bowling trophies; hipsters showcase award plaques from suppliers and industry associations. Pure financial operations show the little Lucite blocks investment bankers hand out when a deal is consummated. I think to

myself, "Is this the best you can do?"

.....I'm not proposing a museum with static displays. Museums that do not change don't draw repeat visitors. They gather dust. Rather, I envision a vibrant conversation space. Nooks, crannies, leather sofas, indirect lighting, some small tables, a few shelves of interesting books, and a fridge with assorted waters and soft drinks. A few rooms will suffice.

.....Perhaps a timeline of the organization and its industry lines one wall. An ever-changing array of notes, memos, and mementos are posted to another wall with magnets. A wall of blank whiteboard encourages participation.

.....Google has two 30' whiteboards for cartoons, jokes, and "corporate graffiti." Google's workforce doubles in size once a year. The firm's director of communications says that "when new hires see the boards they get a quick, comprehensive snapshot of our personality."

.....The in-house museum is for employees, not the general public. While preserving echoes of the past, it encourages conversation that creates the future. It would beat trying to envision a grand future in a cubicle.

.....People learn more from mistakes than from things that go right. A room in the in-house museum might be the Hall of Mistakes We Do Not Want to Repeat. This would include stories and artifacts of the dozen greatest mistakes in the company's history, and what it will take to insure they never happen again.

Pain and play

"It is the child in the man (woman) that is the source of his (her) uniqueness and creativity, and the playground is the optimal milieu for the unfolding of his (her) capacities and talents." —Eric Hopper

"Serious play is not an oxymoron; it is the essence of innovation." —
Michael Schrage

In *Engaging Learning*, Clark Quinn writes, "Learning can, and should, be *hard fun*. It's fun, in the sense that you're engaged, there is a story that you care about, and you have the power to act; it's hard in that it's not trivial--there is sufficient challenge to keep you on your toes. Here, *engagement* is the word used to describe the situation when learners are captured, heart and mind, in learning--or to use formal terms, are cognitively and affectively connected to the learning experience." (Quinn, 2005)

America's grouches do not agree. They feel that work should just be hard. No fun. It's like the worst-tasting medicine being good for you. This is a vestige of the dour Puritan fathers and of the strict oversight of manual jobs. Here's sociologist Max Weber giving the Calvinist viewpoint on work:

Waste of time is thus the first and in principle the deadliest of sins. The span of human life is infinitely short and precious to make sure of one's

own election. Loss of time through sociability, idle talk, luxury, even more sleep than is necessary for health. . . .is worthy of absolute moral condemnation. . . .[Time] is infinitely valuable because every hour lost is lost to labor for the glory of God. Thus inactive contemplation is also valueless, or even directly reprehensible if it is at the expense of one's daily work. For it is less pleasing to God than the active performance of His will in a calling. (Weber, 1904)

This is a heavy legacy to shuck off. Douglas Ruskoff notes that “Establishing a playful career or company isn't as easy as it looks. It doesn't require expensive consultants, trips to the woods, or the reinvention of a company's culture based on some abstract ideal. But it does mean going against much of what we've been taught about competition and survival - not just in business school, but for the past five centuries!” (Rushkoff, 2005)

The times demand that free-range learners work playfully, for play is the source of innovation. Play permits one to push at the boundaries of convention. In *Serious Play*, Michael Schrage (2000) argues that fresh ideas arise from prototypes. For Schrage, a prototype can be either physical or mental so long as it's placed in a shared space for discussion and comment, to be criticized without criticism of its originator. The more prototypes, the more innovation.

The Institute for Play (Institute, 2000) reports that:

The components of play—curiosity, discovery, novelty, risk-taking, trial and error, pretense, games, social etiquette and other ever more complex adaptive activities— are the same as the components of learning. Humans are designed by nature to play, and have played throughout their evolution.

What do most Nobel Laureates, innovative entrepreneurs, artists and performers, well-adjusted children, happy couples and families, and the most successfully adapted mammals have in common? They play enthusiastically throughout their lives. What common denominator is shared by mass murderers, abused children, burnt-out employees, depressed mothers, caged animals, and chronically worried students?

Play is rarely or never a part of their lives.

In the world of ideas, playful creativity has a palpable return.

- The Wall Street Journal reported that a two year in-house creativity course at General Electric resulted in a 60% increase in patentable concepts.
- Participants in Pittsburgh Plate Glass creativity training showed a 300% increase in viable ideas compared with those who elected not to take the course.
- At Sylvania, several thousand employees took a 40 hour course in creative problem solving. ROI: \$20 for every \$1 spent. (Naiman, 2000)
-

The world labor market is facing a talent shortage of immense proportions. Free-range workers are choosing their employers instead of vice-versa. Do you think they'll choose a workplace where people have fun or a sweatshop?

A Fun Place to Work

Engineers there get one day a week to prototype whatever they feel like. It's hard to dislike a company with a corporate philosophy that says, "You can make money without doing evil. You can be serious without a suit. Great just isn't good enough. Always deliver more than expected. Google does not accept being the best as an endpoint, but a starting point. Through innovation and iteration, Google takes something that works well and improves upon it in unexpected ways."

One day I joined some Googlers (as employees are known) at the Googleplex (headquarters) in Mountain View for lunch. Most people were sitting outside, noshing on barbecue and listening to live music. Here are some items from the company's official description of the Googleplex:

- *Lobby Décor* - Piano, lava lamps, and live projection of current search queries from around the world.
- *Hallway Décor* - Bicycles and large rubber exercise balls on the floors, press clippings from around the world posted on bulletin boards everywhere. Many Googlers standing around discussing arcane IP addressing issues and how to build a better spam filter.
- *Googler Offices* - Googlers work in high density clusters remarkably reflective of our server setup, with three or four staffers sharing spaces with couches and dogs. This improves information flow and saves on heating bills.
- *Equipment* - Most Googlers have high powered Linux OS workstations on their desktops. In Google's earliest days, desks were wooden doors mounted on two sawhorses. Some of these are still in use within the engineering group.
- *Recreation Facilities* - Workout room with weights and rowing machine, locker rooms, washers and dryers, massage room, assorted video games, Foosball, baby grand piano, pool table, ping pong, roller hockey twice a week in the parking lot.
- *Google Café* - Healthy lunches and dinners for all staff. Stations include "Charlie's Grill," "Back to Albuquerque," "East Meets West" and "Vegheads." Outdoor seating for sunshine daydreaming.
- *Snack Rooms* - Bins packed with various cereals, gummi bears, M&Ms, toffee, licorice, cashew nuts, yogurt, carrots, fresh fruit and other snacks. Dozens of different drinks including fresh juice, soda and make-your-own cappuccino.
- *Coollest stop on the tour* - A three-dimensional rotating image of the

world on permanent display on a large flat panel monitor in the office of the engineer who created it. What makes it special is the toggle switch that allows you to view points of light representing real time searches rising from the surface of the globe toward space, color coded by language. Toggle and you can see traffic patterns for the entire Internet. Worth a trip to the second floor.

Digital Natives

The 2004 eLearn International Conference in Edinburgh was a conference with a difference: the delegates focused on four potential scenarios for the future of learning ten years out.

.....To connect past and future, our first speaker was a professor of moral philosophy whose chair dated back more than five hundred years. Unwittingly, he exemplified why the academic model is dying. In a haughty tone, he asked if anyone really expected to receive a quality learning experience via computer. After all, his own attempts to put his material into a learning management system had failed. Did we appreciate that learning is more than serving up content? This erudite fellow was talking through his hat, so wedded to the way things were done on campus that he could only see eLearning as an inferior version of his real stuff that had stood the test of time.

.....Don Clark, founder of the largest eLearning firm in the U.K., followed with a common-sense, crystal-clear description of the future of learning. If we lived in a world with no schools, what would we build in their place? Would we rebuild remote medieval colleges?

.....Don showed photographs of his twin boys learning. These *digital natives* are autonomous learners. They learn from the internet. With frameworks obtained from computer games, they ask their father about military strategy. Imagine, ten-year olds talking strategy. The twins do not have the patience to abide with the stand-and-talk model of teaching.

.....What is a university, anyway? The internet offers more information resources than any university library. The faculty comes and goes. The students are booted out where their time is up. What remains? In this age of digital abundance, the university is no more than a brand.

.....Learning has been a form of punishment, and it's time to end schooling's two thousand years of slavery. Huzzah! That gave us plenty to talk about amongst ourselves during the ensuing coffee break. Most people went easier on the professor than I. No one who disagreed with Don.

.....Is there hope for those of us who did not grow up amid computers and networks? Yes, but we'll have to rip our blinders off and develop our skills.

.....A group of teenagers who had spent months exploring eLearning and the future of the school gave the penultimate presentation at eLearn International.

.....Ten of them took the stage and acted out their messages, something

no “grown-up” had even considered. Instead of showing a PowerPoint slide about learning styles, they asked everyone to complete a personal Learning Styles Inventory.

.....In a truly lovely moment, a female student gripped the podium and put on a schoolmarm’s critical gaze. Someone in the audience snickered. “You there, what’s so funny?” she growled. That drew laughter. She shushed us with a penetrating frown of disapproval. Learning through intimidation. Remember it? There *is* a better way.

.....Eighteen months later, a presentation by Professor Wim Veen at Online Educa in Berlin further helped me appreciate what’s going on with the generation now entering adolescence. This goes well beyond the tired observations about “how kids do their homework.” Yes, it’s true that what I used to spend hours trying to get through with paper and pencil alone at my desk is now a community experience involving multiple instant messaging windows, listening to music, and phone calls. It’s not that they’ve found some new concentration technique; rather, they’ve become adept at synthesizing discontinuous thoughts.

.....Youth have grown up amid networks. When I was growing up, Europe, Asia, and Africa were concepts, more places where history happened than real geographic locations. Not so for the kid who plays War in the World with pals in Brazil, Morocco, and Finland. What was abstract to me is the home of Paolo, Ali, or Eero for my son.

.....“It’s all so superficial,” chide the skeptics. On the other hand, wouldn’t you enjoy having the ability to run twenty projects simultaneously in your head? Such is life as an active node.

.....Several years ago I interviewed my son Austin. What if he had landed a job as head of a game design team at Electronic Arts? Instead of taking the two-week new-hire orientation, he would be able to take the brand new two-hour eLearning version? What do you say to that? “Sucks,” he said. “I don’t want anyone telling me what to do.”

.....Veen brought a student rap band to the stage. The message was in your face and clear. We’re not taking any of your stuff. It’s my way or the highway. Another professor wondered how this generation will get along with the establishment when it exerts its control over them. My answer is that we’re entering an age of talent scarcity. Reading the manual, working alone, and not being plugged in will be anachronisms. We will change to meet their needs, not vice-versa.

.....Veen is writing a book about Homo Zappiens, the generation for whom learning is playing. Veen projected a Calvin & Hobbes cartoon on the big screen. What game do they want to play? Anything but an organized sport. How about Calvinball? “No sport is less organized than Calvinball,” says Hobbes. Calvin replies, “New rule! New rule! If you don’t touch the thirty-yard base wicker with the flag, you have to jump on one foot!” Calvinball is going to be everybody’s favorite game.

WORKFLOW LEARNING

In the 1970s at Aetna Insurance, a trainer saw workers struggling with arcane, data-centric mainframe systems. The default solution to their frustration was training. Training Band-Aids generally camouflaged bad interface design. Ironically, the training often cost a lot more than designing the application for performance in the first place. The trainer saw the folly in this and said “We must give up the idea that competence must exist within the person and expand our view that whenever possible it should be built into the situation.” (Cross and O’Driscoll, 2005)

.....Thus began the notion of performance-centered design and the consulting career of Gloria Gery. In her 1991 book, *Electronic Performance Support Systems* (Gery), she wrote, “Learning must be reconceived to influence the primary purpose of organization: to perform effectively and efficiently.” The goal is “To enable people who don’t know what they are doing to function it as if they did.”

.....These views are common wisdom now, but fifteen years ago, it was as if Gloria were screaming that the emperor had no clothes. She told us to give up the idea that competence must exist within the person and expand our view that whenever possible it should be built into the situation. The question is, “How do we get people what they need at the moment of need and what form should it be in?”

.....“A fusion of learning and doing is on the way,” Gloria told participants at the Online Learning Conference in Anaheim in 1999. “Training will either be strategic or it will be marginalized.” Combining work and learning is the foundation of performance-centered design and workflow learning.

.....At the Online Learning Conference in San Francisco six years later, Gloria and I gave a joint keynote on the debut of *workflow learning*. We defined workflow learning as real-time performance support connecting the worker and the current state of the work. Gloria said “workflow learning is performance support on steroids, magnified, with a much higher impact. The workflow is the context, the magic filter through which we will be able to filter content, against which we have to compare default tactics.”

.....The logo I designed for the presentation in San Francisco shows a zipper. On the open end, the two sides are labeled *work* and *learning*; on the closed end, the mesh is labeled *workflow learning*. The concept is no different from what Gloria came up with at Aetna; what’s new is that we have to software and systems to carry out her vision.

.....Smart software is capable of monitoring workflow in real time, alerting the worker to a suboptimal condition, perhaps an emergency situation. When the worker does not know what to do, smart prompts or mini-simulations show how to accomplish the task. If the worker still lacks the know-how to proceed, she is referred to someone currently available who is likely to have the answer.

.....Is this informal learning? It is not scheduled; rarely is the training department involved in its implementation. Or is it formal learning,

because many of the interventions are canned? I sense that workflow learning is teetering at the middle of the continuum from formal to informal.

A Shared Space

Creative relationships are more important for invention and innovation than creative individuals. (Schrage, 2000). Marcia Conner interviewed Michael Schrage about his notion that the key to creative relationships is a shared space.

Conner: What is the learning that takes place? How is that different from, for instance, one person just telling someone something, as opposed to two people working through it together?

Schrage: I address this in the prologue of *Serious Play*. Consider a conversation. In a diagram, the conversation is represented by a dotted line going back and forth between the sender and receiver. The interaction changes dramatically when you add a shared space. Most of us have had the experience of getting into a friendly discussion over lunch with a friend or colleague, when you pull out a pen and begin writing on a napkin or a piece of paper, and the other person says, "No, no, that's not what I mean." Then they take the pen and paper from you and mark it up to modify what you were saying, and you begin conversing around the images on the paper. If a waiter were to come by and remove that paper, the conversation would go away. You are no longer talking to or with that other person. You are talking with the other person through a medium, a reference point or shared space that becomes like a little capture device, a little reflector of the conversation. It changes the point of reference for what is going on. The shared space fundamentally transforms the dynamics, not just of the representations, but also of the interaction between people. It changes the ecology of the interaction.

Conner: It's not simply that the people have this shared space. It's that the shared space becomes the medium through which they are working.

Schrage: Exactly. If you don't have a shared space, you're not collaborating. You can put out a table, cutlery, and fine china, but if you're not serving food, you don't have a meal. (Conner, 2001)

An organization that seeks more innovation should encourage its people to build shared spaces in which to prototype ideas. This concept of a shared space is both physical and behavioral. This chapter has focused on physical architecture. Now we will turn to people, mapping their relationships and social networks.

Jay Cross is a champion of informal learning, web 2.0, and systems thinking. He puts breakthrough business results ahead of business as usual. His calling is to change the world by helping 11 people improve their performance on the job and satisfaction in life. He has challenged conventional wisdom about how adults learn since designing the first business degree program offered by the University of Phoenix three decades ago.

Now in its tenth year, Internet Time Group LLC has provided advice and guidance to Cisco, IBM, Sun, Genentech, Merck, Novartis, HP, the CIA, the World Bank, the World Cafe, and numerous others. It is currently researching and refining informal/web 2.0 learning approaches to foster collaboration and accelerate performance.

Jay served as CEO of eLearning Forum for its first five years, was the first to use the term eLearning on the web, and has keynoted major conferences in the U.S. and Europe. He is a graduate of Princeton University and Harvard Business School. He and his wife Uta live with two miniature longhaired dachshunds in the hills of Berkeley, California.

For more information on Informal Learning: <http://informl.com>



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Contact Jay at jaycross@internettime.com to explore engaging him to charge up your team and add a dose of innovation to your organization. On the web at jaycross.com