Sociable Technologies for Enterprising Sociality

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Welcome!

Remote Collaboration, Interaction and Telepresence

August 4-5

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Topics

• Problem and opportunity environment
• Enterprising sociality
  – Enterprises as autopoietic systems
  – Architectural viewpoints
• Sociable technology
  – Sociable affordances
  – Virtual worlds
• Structural coupling
Thanks to …

Gary

Jennifer

David

Jezra
Whatever you say a thing is, it is not.

Alfred Korzybski
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Key factors and trends are converging to emphasize the social nature of enterprise

- Proliferation of human and ecological problems - local to global
- Increasingly globalized economy
- Systematically undercapitalized and underestimated potential of people – treated as factors of cost, not value-creators
- Enterprises are increasingly fragmented, and reintegrating in the form of ecosystems of specialized firms
  - widespread outsourcing
  - global supply chain networks
- Financialization of the global monetary production economy
- On-line marketplaces, like EBAY, for previously undervalued assets.
- Mash-up world of Internet technologies make global markets commonplace
- Ubiquitous communication networks and continuous connectivity
- Projection of self in everyday life
It’s a good time to be focusing on social enterprise

The Industrial Revolution
- 1771
- Panic 1797
- 32 Years
- 1829

Age of Steam and Railways
- 1829
- Panic 1847
- 26 Years
- 1873

Age of Steel, Electricity and Heavy Engineering
- 1875
- Depression 1893
- 27 Years
- 1920

Age of Oil, Automobiles and Mass Production
- 1908
- Crash 1929
- 45 Years
- 1974

Age of Information and Telecommunications
- 1971
- Dot.com Collapse
- Current period of Institutional Adjustment

Source: “Technological Revolutions and Financial Capital, Carlota Perez, 2002

“The turning point has to do with the balance between individual and social interests within capitalism. It is the swing of the pendulum from the extreme individualism of Frenzy to giving greater attention to collective well-being.”
We are in an era of services dominance

- Evolving to new dominant logic – services-centered
  - Away from goods exchange
  - Toward exchange of intangibles
    - Skills (S) specialization
    - Knowledge (K)
    - Processes
  - Customers buy offerings rendering services that create value

- Service: “[the] application of specialized competences (S & K) through deeds, processes, and performances for benefit of another entity or the entity itself […]”

Some might say it has always been the era of services

“The great economic law is this: Services are exchanged for services…. It is trivial, very commonplace; it is, nonetheless, the beginning, the middle, and the end of economic science.”

Frederic Bastiat, 1860
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Businesses are systems

“There is a fundamental insight underlying all management sciences. It is that the business enterprise is a system of the highest order: a system whose parts are human beings, contributing voluntarily of their knowledge, skill and dedication to a joint venture.”

Drucker, 2004
Enterprise

• At the heart of enterprise is human desire

• The purpose of enterprise is to foster well-being

• Enterprise is: “a purposeful or industrious undertaking”*

* http://www.onelook.com
Autopoiesis

• Interplay of closures and openness

• Ongoing co-creation between the parts and the whole, within self-created boundaries

• It’s not necessarily “life” as we know it
  – Biological
  – Social
  – Technological
Characteristics of living systems

- Erwin Schrödinger
- Robert Rosen
- Ludwig von Bertalanffy
- Lynn Margulis
- James Grier Miller
- Humberto Maturana and Francisco Varela
- Stafford Beer
- Niklas Luhmann

- Identity maintained over time
- Boundary of the system and system embedded in an environment
- Closed systems within open systems
- A level of stability maintained within a flux of material, energy, and information.
- Independence and interdependence
- Cooperation and competition
- Parts inter-relating to form the whole
- Life cycle (emerge, sustain, disintegrate)
- Sustainment requires the abilities to:
  - spontaneously emerge from a codified design
  - self-regulate
  - manage variety
  - self-regenerate
  - maintain relationship among elements
  - grow
  - metabolize
  - adapt
  - respond to stimuli
  - learn
  - form a purpose
  - decide
  - communicate
  - produce
  - reproduce
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Architecture

• We use the term architecture in a similar way to Maturana’s term “dynamic architecture”* – with a social reference

• This meaning goes beyond representation, and includes the dynamic structure of the phenomenon itself

* http://www.isss.org/maturana.htm
There are many socially-focused dimensions of business architecture

- Organization structures
- Processes and procedures
- Practices
- Social networks
- Roles and accountabilities
- Institutional architecture
- Brand architecture
- Cultures
- Decision architecture
- Social bonds
- Meaning
- Communities and boundary objects
Process and procedural models
A simple example shows various types of boundary objects that span business language communities.

From: Cherbakov and McDavid, Boundary Objects to Bridge the Gap, PLTE, 2005 (RBV080)
A semantic architecture disambiguates meaning between business terminology and IT manifestations.
Ontologies create a semantic bridge between business communities.
A high-level view of a semantic architecture

In an architecture of architectures a focus on intangibles, such as branding and messaging can be very important to understanding business intent.

A well-known macro-architecture framework is Stafford Beer’s Viable Systems Model.

From: Rudolf Kulhavy, From Banks to Banking: Architecting Business Performance Transformation, 2005
A view of the semi-conductor industry ecosystem

Created by Denis Mathias, BCS partner.
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SmallBlue
understanding your social network, locating expertise

- Mechanisms to locate skills and affinity groups across IBM
- Capture tacit knowledge without requiring user to proactively enter data in a separate repository
- Bring transparent and secure information sharing to Notes and Sametime
Bee Hive
virtual office walls and desks

- Shared pictures of company events, families and friends, and “What I did on my vacation”
- Jokes, philosophies, experience reports
- Ad hoc events convened electronically
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Virtual World Games

- Planeshift
- Virtual Laguna Beach
- Stagecoach Island
- EVE Online
- Multiverse
- Club Penguin
- World of Warcraft
- TocTown Online
- There
Virtual World Technologies

Collaboration, Training, Distance Learning, Marketing

Defense, Medical, Corporate, Entertainment

Social Networking

Open Source Software Development
Logical architecture for an important new business platform

Create
- World Editing
- Scripting
- Composing
- Animation
- 3D models
- Video
- Text
- Image
- Audio
- Animation
- Coding

Manage
- Content Management/Source Control
- Digital Rights System
- Business Rights System
- Multi-repository Search Middleware
- Asset Conversion Pipeline/Build
- Rendering
- State Replication
- Physics
- AI
- Infrastructure Services
- Persistence
- Storage
- Common Services
- Clustering
- Managed Hosting
- World State
- Lobby Services
- Proxy/Edge server
- World Aggregation
- Streaming Media Server
- Application Integration Middleware
- World State
- Rendering
- State Replication
- Physics
- AI
- Infrastructure Services
- Managed Hosting
- World State

Distribute & Transact
- Set-Top Box
- Other Devices
- PC
- Console
- World State
- Rendering
- State Replication
- Physics
- AI
- Infrastructure Services
- Managed Hosting
- World State

Application Integration Middleware

Business Support Systems, Operational Support Systems

Rich Media
Creation
Asset Management
Protection
Infrastructure
Delivery
Devices
Open for business – virtual world taxonomy of usage

• **Manner of use**
  – **Artifacts**
    • Utilitarian or aesthetic
    • Past, present or future
    • Real world renderings or fanciful creations
  – **Activities**
    • Performance
    • Simulation
    • Collaboration
      – Simple meetings
      – Conferences
      – Joint development of intellectual content

• **Focus of use**
  – **Mode of engagement**
    • *Uses* -- VW is used in conjunction with other activities
    • *Within* -- VW is the place to conduct business
    • *About* -- Virtual space is the business opportunity
  – **Issues addressed**
    • Long list, started on the next slide
Open for business – virtual world opportunity areas

- Technology – Hardware, software, and hosting for VW
- Physical world simulations – Power plants, refineries, etc.
- Marketing
  - Branding statements – static displays, interactive events
  - Market research
- Product sales – Channel for real-world products
- Services
  - Social services – Public services by jurisdictions, non-profit, NGOs
  - Business services – Accounting, law, consulting,
  - Personal services – Medical, fashion, personal shopping
  - Education – Academic institutions and corporate education
- Travel-cost offset – Commuting, long-distance travel
Molecule
rezzers
IT-oriented simulations
Grand Slam tennis
IBM Innovation Jam results:

Funding for ‘3D Internet’
IBM’s entry into the virtual world was aided immensely by the New Media Consortium

- The NMC complex of islands is growing rapidly
- The original campus was the model for IBM’s Almaden Island

http://www.nmc.org/
Rehearsal Services
You know you’ve ended a successful meeting when a party breaks out, complete with dance floor & disco ball.

VUC weekly meeting adjourns outside Jacob Hall to salute Ada Alfa’s impending nuptials!
I chose to live in a place that has interesting neighbors!

Features of this location in the Yurim sim
- Near Jnana software
- Art
- Orientation trail
- Meeting space
- Professor from GWU
- SL Herald managing editor
- Space for the pirate ship …
The info island complex of libraries, museums and education facilities is leading the way to serious use of virtual worlds.

- The complex includes Info Islands I and II, Healthinfo Island, Commonwealth Island, EdulIsland, and Cybrary City
- The complex is organized by the Alliance Library System in Peoria, IL

http://infoisland.org/
The virtual world converged with the real world in the form of a visit to Almaden Research Lab by a well-known RL and SL artist.
IBM has a presence on the Artropolis Island artist colony.

- Artropolis Island is one of over 400 art galleries in Second Life
- IBM is represented by a sponsor hut mini-gallery on a mountain top
- Doug Mandelbrot holds forth at Mandel’ Brats and Brews
The first time this presentation was given in 3D – on Info Island
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Enterprise architectures are structurally coupled to ICT architectures

- We are operating from these definitions:
  - “Structural coupling is the term for structure-determined (and structure-determining) engagement of a given unity with either its environment or another unity. The process of engagement which effects a ...history or recurrent interactions leading to the structural congruence between two (or more) systems”. (Maturana, 1987)
  - It is “...a historical process leading to the spatio-temporal coincidence between the changes of state” (Maturana, 1975) in the participants. As such, structural coupling has connotations of both coordination and co-evolution. (Thellefsen, on-line)
  - Niklas Luhmann has repurposed Maturana’s concept specifically for social systems theory. Luhmann described structurally coupled systems as being in a state of mutual irritation and resonance. “Structural coupling is a state in which two systems shape the environment of the other in such a way that both depend on the other for continuing their autopoiesis and increasing their structural complexity.” (Moeller, 2006)

- Enterprises and technologies are rapidly co-evolving, enabled by such technologies as Web 2.0 and virtual worlds.
- The generation coming into the workforce expects to find such technical affordances in the workplace.
- Technology is not an inert enabler, but through an ecosystem of technological specialists is itself composed of an accountable set of human enterprises.
- Sociable technologies are coupled to the functions of enterprise that project the self of individuals and organizations into a globally open market of services and collaboration.
The question is how best to use architectural constructs to explore structural coupling

- For the era of sociality, we need to look beyond the org chart and operational procedures to achieve effective design and technology introduction.
- Close attention to cultural and power architectures is necessary to perform interventions that result in healthy viability of organizations, and achievement of the desires that people seek from enterprise.
- Examples abound.
  - The challenge of the U.S. intelligence services, before and after the creation of the Department of Homeland Security can be seen as a cultural challenge as much as a technical information access problem.
  - The uneasy marriage known as Daimler-Chrysler was a clash of cultures that is not uncommon in mergers and acquisitions of business enterprises.
  - The aftermath of the IBM acquisition of PriceWaterhouseCoopers Consulting is a classic example of “right vs. right” (Moulton-Reger, 2007) ways of addressing enterprise efforts.
- Disparate ways of working (practices and cultural factors) often jeopardize the most well intended of joint projects, even when each competing set of cultural practices has proven successful (right) within its own realm.
- Based on the coevolutionary nature of structural coupling, we can predict with confidence that technological “irritation” will generally whet the appetite for more fully functional affordances.
- On the other hand, there is always the chance that some irritation (in the form of ICT) will strike a countercultural nerve, and be rejected by the community of potential users.
Example 1 (1)

- **Description**
  - TeleTechie Support Team (TTST), can be seen as a high-function technical help desk, where knowledge of problems and their remedies is at a premium. It provides after market technical support for some complex electronic products.

- **Salient Business Architecture**
  - Organization structures are central to TTST. Technicians are organized around product support areas, and there is a hierarchical, command and control management structure.
  - The idea of communities of practice is a recent insight for this company.
  - A limited form of decision-making architecture is included in TTST’s problem and fix database, which helps direct problems to the appropriate technician.
  - The institutional architecture is fairly simple for TTST. It is a privately held corporation that provides transactional services on a pay per use basis.
  - The company is opening up the evaluation arena to peer review and reputation management to supplement simple call volume metrics.
  - In these early stages of deliberate enterprise sociality TTST does not have a strong focus on cultural aspects of their business architecture.
  - TTST is starting to understand the importance of community boundaries and boundary objects, so this architectural viewpoint is just beginning to emerge.
  - Direct support for individual and group branding is also beginning to emerge, but only informally.
Example 1 (2)

- **Salient Sociable Technology Architecture**
  - Persistence support, in the form of database storage and retrieval for the problem and fix history.
  - Search and limited tagging are provided, but not ontologies, or advanced text analytics.
  - Limited graphical capability in the form of still images is provided as part of the new profile application.
  - Versioning is also important for problem history and threaded comments on fix records.
  - Some form of reputation management capability based on the supporting functions of opinion, rating, ranking, and rewards may be required.
  - The TTST ICT architecture has some openness to integration, but the application suite is homegrown and not standards-based.
  - No use of virtual worlds (VW) technology.

- **Structural Coupling**
  - TTST has a well-developed database of problems and known fixes.
  - They decided to introduce a simple social application of ICT to supplement the problem database.
  - Product unit bulletin boards and a photo and comment profile page.
  - Links to a basic instant messaging (IM) system.
  - Debate about partitioning of IM access by group.
  - Near disaster based on overlooking the rough-hewn, locker room aspect of the culture. Comments that became public on profiles and bulletin boards caused offense to some employees. Management considered scrapping the system but belated cultural redesign focused on a culture of technical excellence and reputation, supported by standards against workplace discrimination and harassment.
Example 2 (1)

• **Description**
  – Community-based Problem-Solving Services Network (CPSSN) is based on the idea that people, through their knowledge and their relationships, constitute an intrinsic form of value that is often not fully recognized or appropriately rewarded.
  – The stated purpose of CPSSN is to make social relationships and capabilities manifest in a way that captures and monetizes them.
  – CPSSN harnesses social networks in support of any kind of problem-solving mission.
  – The communities may be contained within existing organizations (project teams within corporations, or collaborative learning design and practice within a consortium of higher education institutions).
  – Value-recognizing structure of simple contracts that creates a motivational and monetizing environment for services practitioners.
  – Problems can range from a large effort to remediate an environmental problem to the creative performance of a technologically saturated artistic event.

• **Salient Business Architecture**
  – Corporate functions are mostly outsourced, inside or outside the community network.
  – There are procedures for induction of members and managing assets, and the core competency of sweeping and calculating community value.
  – The architectural viewpoint of “practices” is the focal point for CPSSN.
  – Networks within networks comprise the basic structure of the communities of practice, so there is a need for strong support of social networks and role and accountability structures.
  – Many property issues come into play (title, equity, investment).
  – CPSSN creates a market and supports transactions and payments. All forms of evaluation (ratings, peer review, reputation) are integral to CPSSN’s business architecture.
  – Practice analytics form a necessary set of research protocols. And there is a strong emphasis on aesthetics in branding and creation of collaborative working environments. Brand architecture is key, since success of individuals and communities within the network consists of projecting self and the ability to form relationships within and across networks.
Example 2 (2)

• **Salient Sociable Technology Architecture**
  - Database storage and retrieval, as well as file service and document sharing.
  - All types of content need to be supported, including textual, graphical, and audio, and behavioral as well as still images.
  - Search, tagging, ontologies, and text analytics.
  - Access control in support of groups and individuals. Those groups provide significant linkage to their members and associates. Possible peer-to-peer, and/or grid processing,
  - Advertising and purchases, enabled by more basic functions like hits, click-throughs and cookies.
  - Basic business functions, such as calendaring and project management are provided to communities from 3rd-party suppliers via app sharing.
  - Support for both real-time and asynchronous threaded collaboration,
  - Reputation management capability that repurposes vendor reputation systems like eBay’s for a service network of individuals working through communities. Opinion, rating, ranking, and rewards.
  - Serious use of virtual worlds (VW) technology.
  - Openness to integration with affordances provided by 3rd parties in a mashup mode.

• **Structural Coupling**
  - Emerging businesses based on enterprising sociality can push the envelope on integrating supporting technologies
  - Societally relevant problem solving is being served, as well as a desire for new wealth-creating opportunities for communities of service providers. New forms of ICT are being created as a result of this community desire.
  - Communities are adopting the new ICT and creating innovative new social practices as a result. These in turn spawn new technical innovations, in a virtuous cycle of coevolution.
Conclusions & References

We have covered a lot of territory here, from global socio-economic forces shaping the nature of enterprise, to architectural views of the social nature of enterprise and socially supportive ICT, to a brief and limited discussion of how these architectural views can be used to understand and design socio-technical systems that have desired properties and successful adaptations to the marketplace.

We have tried to convey a sense of the dynamic nature of the ongoing coevolution of social enterprise and technology. We can also observe the impact on enterprising social structures through the introduction of technologies. This clearly highlights the complex accountability assumed by the inventor, the designer, the creator, the acquirer, the installer the maintainer, and the user of the ICT components of the enterprise. This calls forth a need to assume responsibility for those results as they impact the individuals and organizations involved in enterprise.

We see that trends of complex global problems, the Synergy phase of it ICT long wave economic cycle, and an increased emphasis on the services paradigm for enterprise are converging, and that the importance and complexity of this domain will lead to significant opportunities for innovative employment arrangements and wealth creation.
Fun links

Funny office

Recursion

http://slurl.com/secondlife/Yurim/63/98/31