

707.009
Foundations of Knowledge Management
„Knowledge Transfer“

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Administrative Issues

- Week 12 class will be held in week 11,
- right after our regular class
- *Are there any time conflicts?*

That means

- **Week 11:** 10.1.2008 13:00-14:30 **and 14:30-16:00**
(we will have 10mins break in between)
- **Week 12:** 17.1. 2008 no class

Overview

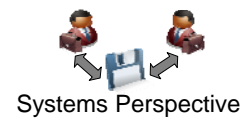
What do we serve today?

- Selected **Theories** of Knowledge Transfer
- Plus examples

Overview

Last Lectures:

- Knowledge Organization
- Broad Knowledge Bases
- Knowledge Acquisition



Today:

- **Knowledge Transfer**



Schools of KM [Earl 2001]

Table 1. Schools of Knowledge Management

SCHOOL	← TECHNOCRATIC →			ECONOMIC	← BEHAVIORAL →		
	SYSTEMS	CARTOGRAPHIC	ENGINEERING	COMMERCIAL	ORGANIZATIONAL	SPATIAL	STRATEGIC
FOCUS		Maps	Processes	Income		Space	Mindset
AIM		Knowledge Directories	Knowledge Flows	Knowledge Assets		Knowledge Exchange	Knowledge Capabilities
UNIT		Enterprise	Activity	Know-how		Place	Business
EXAMPLE		Bain & Co AT&T	HP Frito-Lay	Dow Chemical IBM		Skandia British Airways	Skandia Unilever
CRITICAL SUCCESS FACTORS		Culture/Incentives to share Knowledge Networks to connect People	Knowledge Learning and Information Unrestricted Distribution	Specialist Teams Institutionalized Process		Design for Purpose Encouragement	Rhetoric Artifacts
PRINCIPAL CONTRIBUTION		Profiles and Directories on Internets	Shared Databases	Intellectual Asset Register and Processing System		Access and Representational Tools	Eclectic
"PHILOSOPHY"		Connectivity	Capability	Commercialization		Contactivity	Consciousness

Knowledge Transfer

Knowledge Transfer: Effective sharing of ideas, knowledge, or experience between units of a company or from a company to its customers. The knowledge can be either tangible or intangible.

(MIT, Definitions for Inventing the Organization)

What are instruments that can facilitate knowledge transfer?

Overview

- Knowledge Transfer through Organizational Knowledge Repositories or Memories
 - A different type of knowledge base
 - Many of the concepts from knowledge organization still hold (categorization, taxonomies, etc)
 - But embedded in an organizational context
 - Designed to facilitate knowledge transfer/retention in organizations
 - Often critical to organizations, less critical to employees

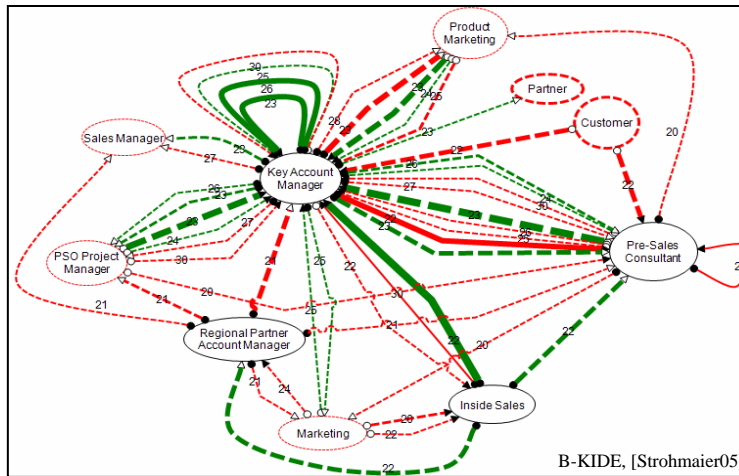
Knowledge Transfer Background and State of the Art

Research on Knowledge Transfer focuses on

- **Theories**
 - Focus on the Nature of Knowledge Transfer
 - Example: Knowledge Flow Theory
- **Modeling Languages**
 - Identification, Visualization and Analysis of Knowledge Transfer Situations
 - Examples: B-KIDE, KODA, KMDL
- **Instruments**
 - Improve and Facilitate Knowledge Transfer
 - Examples: Wikis, mentoring, experience factory



Example



B-KIDE, [Strohmaier05]

Knowledge Flow Theory [Nissen 2004]

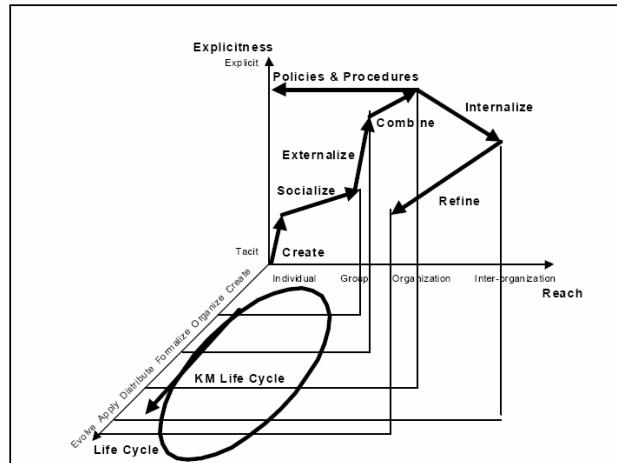
Classification of different types of knowledge flows along 3 dimensions

- Explicitness
 - Tacit / Explicit
- Reach
 - Individual, Group, Organization, Interorganization
- Life Cycle
 - Evolve, Apply, Distribute, Formalize, Organize, Create, ...

Formalization:

$$a = a_1e + a_2r + a_3l$$

Knowledge Flow Theory [Nissen 2004]



Knowledge Flow Theory [Nissen 2004]

Exercise:

Describe the following knowledge management instruments and techniques with Knowledge Flow Theory in a formal way:

- Folksonomies
- Ontology Engineering
- ConceptNet
- Games with a Purpose

Formalization:

$$a = a_1e + a_2r + a_3l$$

- **Explicitness**
 - Tacit / Explicit
- **Reach**
 - Individual, Group, Organization, Interorganization
- **Life Cycle**
 - Evolve, Apply, Distribute, Formalize, Organize, Create, ...

Modes of Knowledge Creation [Nonaka 1994]

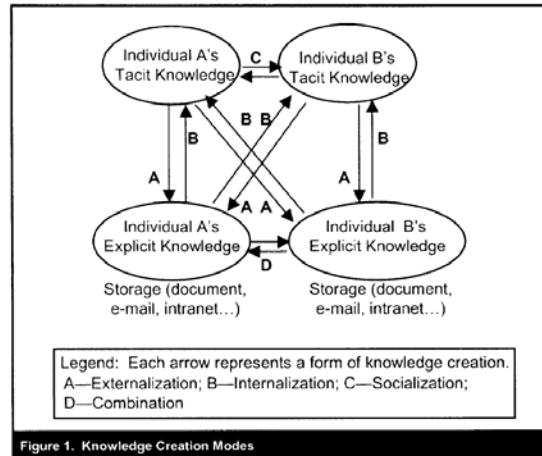


Figure 1. Knowledge Creation Modes

Knowledge Transfer [Alavi & Leidner 2001]

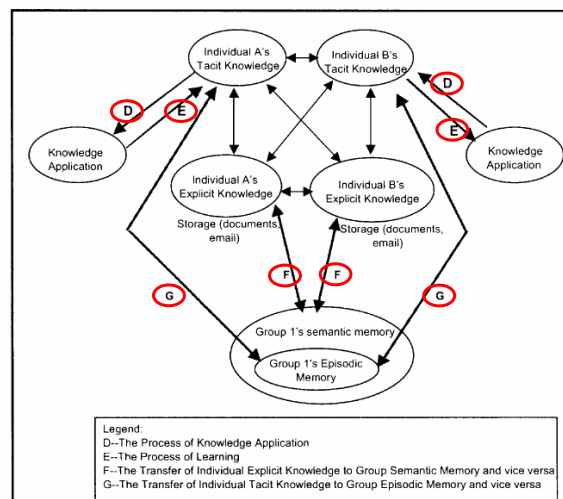


Figure 2. Knowledge Transfer among Individuals in a Group

Overview

- Discretionary Databases

A shared database is discretionary if users contribute to the database voluntarily.

What are other examples of discretionary databases?



Types of Knowledge Reuse Situations [Markus 2001]

Four distinct types:

- **Shared work producers**
 - who produce knowledge they later reuse
- **Shared work practitioners**
 - who reuse each other's knowledge contributions
- **Expertise-seeking novices**
 - who seek advise from experts
- **Secondary knowledge miners**
 - who seek to answer new questions or develop new knowledge

Types of Knowledge Reuse Situations [Markus 2001]

Table 1. Types of Knowledge Reuse Situations

	Shared Work Producers	Shared Work Practitioners	Expertise-Seeking Novices	Secondary Knowledge Miners
Description	People working together on a team, either homogeneous or cross-functional; producers of knowledge for their own later reuse	People doing similar work in different settings; producers of knowledge for each other's use	People with an occasional need for expert knowledge that they do not possess and do not need to acquire themselves because they need it rarely	People who seek to answer new questions or develop new knowledge through analysis of records produced by other people for different purposes
Purpose of Knowledge Reuse	<ul style="list-style-type: none"> Keep track of current status and things needing attention Recall reasons for decisions when decisions need to be revisited or when there is turnover among team members Learn how the team can perform better on the next project 	<ul style="list-style-type: none"> Acquire new knowledge that others have generated (e.g., how to handle a particular type of problem) Get advice about how to handle a particularly challenging or unusual situation that is new to the team Gain access to observations that spur innovations 	<ul style="list-style-type: none"> Answer an arcane question or solve an ad hoc problem Approximate the performance of experts Minimize the need for experts 	<ul style="list-style-type: none"> Seek answers to new questions or create new knowledge

Types of Knowledge Reuse Situations [Markus 2001]

Shared work producers:

- People working together in a team
 - e.g. a team of software developers
- Shared work producers create and document the knowledge they later reuse *themselves*
- Ideally, this makes it easier to reuse knowledge

Challenges:

- *Filing, organizing and searching for knowledge might still pose challenges*

- Example: Software Development

(What did I want to achieve with this specific piece of code? What do my comments mean?)

Can you give other examples?

Types of Knowledge Reuse Situations [Markus 2001]

Shared work practitioners:

- People doing similar work in different settings, a *Community of Practice*
 - e.g. a group of software consultants
- Shared work practitioners produce and create knowledge for each other's use

Challenges:

- *quality of resources, up-to-dateness*

- Example: Professional Services

(What did my colleague consultant wanted to achieve with this specific piece of code? What do his/her comments mean?)

Can you give
other examples?

Types of Knowledge Reuse Situations [Markus 2001]

Expertise-seeking novices:

- People with an occasional need for expert knowledge
 - e.g. Secretary
- Knowledge producers differ significantly in their knowledge background from the knowledge consumers
- Expertise-Seeking Novices do not possess the required knowledge and do not need to acquire it themselves because they rarely need it

Challenges:

- *Jargon, don't know right questions, easy access, etc*

- Example: Secretary in need of PC administration knowledge

(How can I configure my computer to print on the network printer?)

Can you give
other examples?

Types of Knowledge Reuse Situations [Markus 2001]

Secondary knowledge miners:

- People who seek to answer new questions or develop new knowledge through analysis
 - E.g. Website Analyst
- Shared work producers analyze records produced by other people for different purposes

Challenges:

- *Induction*

Can you give other examples?

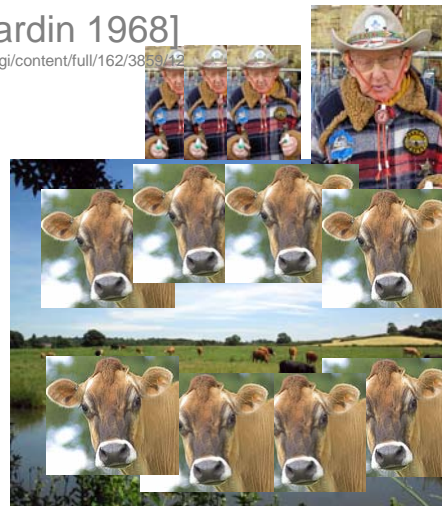
- Example: Analyzing User Access Logs for Website Optimization
(What do users search for on our company website?)

The Tragedy of the Commons [Garrett Hardin 1968]

<http://www.sciencemag.org/cgi/content/full/162/3859/42>

Picture a pasture open to all, limited in space and food supply.

- Each herdsman will try to keep as many cattle as possible on the commons
- He will ask himself: **What is the utility to me of adding one more animal to my herd?**
- The **positive component**: increment of 1 more animal to sell
- The **negative component**: overgrazing – equally shared by all the herdsmen. Corresponds to only a **fraction of -1**
- **Conclusion**: add as much animals as possible
- **Therein lies the tragedy of the commons.**
Each herdsman is locked into a system that compels him to increase his herd without limit – in a world that is limited.



Can you give examples of the Tragedy of the commons in today's world?

<http://www.flickr.com/photos/79554104@N00/>
<http://www.flickr.com/photos/chrisbrookes/>
<http://www.flickr.com/photos/ollyfarrell/>

The Tragedy of the Commons [Garrett Hardin 1968]

<http://www.sciencemag.org/cgi/content/full/162/3859/1243>

Examples of the Tragedy of the Commons

- Depletion of fish stock in international waters
- Traffic congestion on urban highways
- Pollution
- Global Warming / Climate Change
- Can you find others?

Is knowledge as a form of a public good prone to the tragedy of the commons problem? If so, how?

Example: Online Forum

The screenshot shows the Forum-Software.org website. The main content area displays a forum listing table. A red box highlights the 'Topics Posts Last post' columns of the table.

Forum	Topics	Posts	Last post
General discussion This is the place where everyone can ask any questions about Forum-Software.org or anything he would like to know.	1	2	1 year 15 weeks ago by lastrico
Problems and Bugs in demonstration websites A forum software demo does not work ? Post your messages here to help admins maintain them and find where is the problem.	1	1	1 year 15 weeks ago by shepherdcrane
About Forum-Software.org Post your questions about Forum-Software.org here. Webmasters will answer you as soon as possible.	3	6	24 weeks 23 hours ago by tsinus1
Demonstrations update requests Post a message here if you want to ask Forum-Software.org webmaster to update one of the forum software demonstrations. Please specify the name and the version you would like to test.	0	0	n/a
PHP / MySQL: Forum Software Troubleshooting Please post your problem and solution in this category, to let the community answer and probably fulfill your request.	0	0	n/a
Beehive Forum The forum dedicated to Beehive Forum software.	0	0	n/a
FUDForum The forum dedicated to FUDForum software.	0	0	n/a
IceBB	0	0	n/a

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Message Board in an Organizational Intranet

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Knowledge sharing and social dilemmas [Cabrera2002]

Social dilemmas describe paradoxical situations in which **individual rationality** – simply trying to maximize individual payoff – **leads to collective irrationality**.

-> The tragedy of the commons

The Free-riding / Defecting Problem:
to enjoy a resource (e.g. pasture, an information resource) without contributing to its provision

The Ramp up Problem:
Without users providing resources, no additional users will be attracted

In **Knowledge Sharing** contexts (as opposed to classic public goods), the cost of the contribution of knowledge **does not lie in the contribution itself**. The cost has to do with the **process of making that idea available**. [page 9]

How could we tackle this problem?

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Three Potential Solutions [Cabrera2002]

1. Restructuring the payoff function
2. Increasing perceived efficacy of individual contributions
3. Establishing group identity and promoting personal responsibility

Restructuring the Pay-Off Function [Cabrera2002]

= Reducing the perceived costs or increasing the perceived benefits of contributing.

If the cost of contributing to a discretionary database is lower, the benefits associated with defecting are also lower

For a humorous example, see <http://www.soledadpenades.com/2007/03/11/the-next-captcha-generation-for-myspace-forms/>



Home Contact About RSS

Signing in to leave a comment? February 5, 2007

Earlier, I was reading a recent post on the [Consumerist](#) blog about whether to [cancel/move cable service](#) when moving. Since I recently moved, I thought I'd post my experience, as it was contrary to many of the other commenters.

To my disappointment, when I go to enter in my comment, I saw that I need to register with the site and sign in to leave a comment. Boo. As if I really want to register with yet another username and password on yet another site. I don't want to give out my email address again only to open it up to more spam. Seriously, username/password combos suck. All too often, yours is already taken, or you chose a username of some lame nickname that years later you no longer use and are stuck with, or you then forget you'd previously registered and can then no longer remember the password etc etc etc.

Honestly, if I just want to leave a comment on a blog, I do not want to have to register and add another username/password to my collection. It isn't worth it.

Hopefully Cardspace can fill the void, but until it gets adoption, just not going to leave comments on those sites.

Posted 3:19 PM [add a comment](#) [read more](#)
Filed under: [Cardspace](#)

Restructuring the Pay-Off Function [Cabrera2002]

Two principle ways to increase individual payoffs:

- **Cooperation-contingent transformation**
 - A **selective incentive** or **reward is offered** which is contingent on an individual's behavior
 - such as **social recognition**, can be extremely powerful incentives so long as they are public, infrequent, credible, and culturally meaningful
- **Public good transformation**
 - The perceived **value of the collective gain is increased**. If the value of the collective gain is greater for the individual than the cost, the incentive to cooperate will increase. (no direct rewards)
 - One way to increase the value of the collective gain is to combine a knowledge exchange program with a **gain-sharing** or **profit sharing plan** in which every individual receives a bonus based on the success of the knowledge-sharing program.



Can you give examples?

Examples:

- Make it easier for people to share information
- Information about the existence and rationale of systems
- Availability of training opportunities
- Assure that employees have the time and resources necessary

Restructuring the Pay-Off Function [Cabrera2002]

Table 1
Examples of interventions aimed at restructuring the payoff function

Intervention	Objective
Advanced information technology	♦ Reduce cost of contributing
Rewards or selective incentives	♦ Increase benefit of contributing
Gain-sharing programs	♦ Increase perceived value of collective gain
Align human resource policies with participation	♦ Increase benefit of contributing
	♦ Send clear message about importance of knowledge exchange and creation for the organization

Increasing efficacy [Cabrera2002]

Information self-efficacy

- An employee's belief that the information he or she has would be helpful to co-workers were they to receive it.

Connective efficacy

- is the belief that others will actually receive and use information if it is contributed.

Examples:

- Provide feedback whenever others use their contributions

Re: Why Buy A 360? (Score: 4, Funny)

by UbuntuDupe (970646) * on Friday July 06, @08:48
(Last Journal: Sunday October 22 2006, @10:27PM)

Yeah, good point, Zonk. I just *hate* when people do that kind of thing from happening.

Parent

163 diggs

digg it

Increasing efficacy [Cabrera2002]

Table 2

Examples of interventions aimed at increasing the efficacy of contributions

Intervention	Objective
Provide feedback to contributors	<ul style="list-style-type: none"> ◆ Increase information efficacy ◆ Increase connective efficacy ◆ Create further opportunities for knowledge combination and creation through deeper processing of others' contributions
Ensure a critical mass of participants	<ul style="list-style-type: none"> ◆ Make potential value of shared knowledge greater than individual cost
Advanced technology	<ul style="list-style-type: none"> ◆ Increase information efficacy by reducing redundancies ◆ Increase connective efficacy by reducing search difficulties
Training	<ul style="list-style-type: none"> ◆ Increase information efficacy ◆ Increase connective efficacy

Promoting group identity and personal responsibility [Cabrera2002]

A sense of group identity **influences contributions to a public good**, i.e. individuals share more information when common group identity was made salient [page 18].

Axelrod: the probability of cooperation increases when

- Interactions among participants are frequent and durable
- Participants are easily identifiable
- There is sufficient information available about each individuals actions

Promoting group identity and personal responsibility [Cabrera2002]

Table 3

Examples of interventions aimed at increasing group identity and personal responsibility

Intervention	Objective
Encourage communication	♦ Increase sense of group identity
	♦ Increase commitment
	♦ Increase frequency of interactions
	♦ Increase identifiability
	♦ Increase expectations of others' participation
Create knowledge sharing communities or communities of practice	♦ Increase sense of group identity
	♦ Increase frequency of interactions
	♦ Increase identifiability
Publicize information about employees' contributions	♦ Increase identifiability

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Exam

Re: I need some advice/help/insight #652123 - 11/20/07 10:22 PM

Re: I need some advice/help/insight #652149 - Yesterday at 12:09 AM

Re: I need some advice/help/insight #652192 - Yesterday at 07:53 AM
[Re: ethereal angel]

Stacysmom
Just want to send you hugs and say to think only pos here I know its hard but the unknowing can stress us out and in the end its all fine .
I am preying your baby is good and healthy as i am sure he/she will be

Registered: 05/18/07
Posts: 908
Loc: Toronto, Ontario

My CFM is 1 year, 7 months & 5 days old
koby-gaga.com

Libpic.com I am a baby

36 weeks & 4 days treatment. Only 10 days to go

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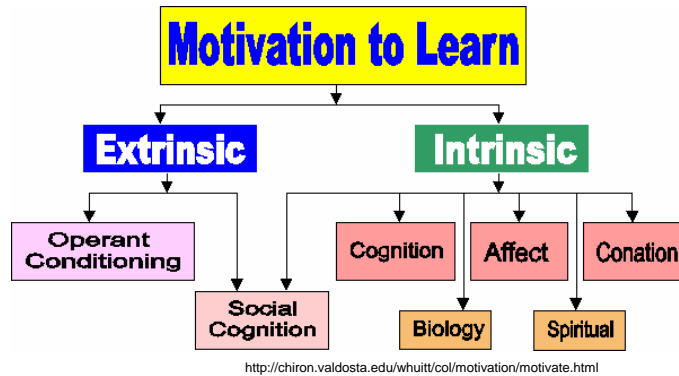
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Determinants of Knowledge Transfer [Gupta 2000]

Figure 1. Determinants of intra-corporate knowledge outflows from and inflows to foreign subsidiaries: An overarching theoretical framework

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Motivation



<http://chiron.valdosta.edu/whuitt/col/motivation/motivate.html>

Example

MedHelp

Welcome to the Heart Support Forum!

Sort By: Last Post | Date Started

Date	Title (From)	Replies	Last Post
11/20/07	Heart Palpitations - 16 yr old Athlete sportsmom4191	1	11/20/07 maggiemag
11/19/07	Dilated Cardiomyopathy angelnote	3	11/19/07 maggiemag 11/19/07 arenalli 11/20/07 maggiemag
11/17/07	Low HDL and LDL Dominic70	13	11/19/07 traderob 11/19/07 Javein 11/20/07 traderob 11/20/07 Javein
11/20/07	Chest pain Mozkip		
11/20/07	losing weight 011372		
11/20/07	Anticardiolipin antibodies Andy0525	2	11/20/07 Jack54 11/20/07 Andy0525
11/20/07	my medication Dolly1923		
11/20/07	worried cumisiovale		
11/20/07	in a lot of pain/help cryslynn	2	11/20/07 Jack54 11/20/07 Jack54
11/20/07	Gulf after by pass? rozsch		
11/19/07	Low ef Pat_Crouch	3	11/19/07 maggiemag 11/20/07 Pat_Crouch 11/20/07 vienna13
11/20/07	Heart is too weak	1	11/20/07 vienna13

Example

The screenshot shows a forum page for 'BULLYING'. A red box highlights the following posts:

- why wont it stop?** Posted: 18/11/2007 00:06:22, 6 views. Posted by: black_butterfly
- A guy sitting next to me is bullying me...** Posted: 17/11/2007 22:22:21, 11 views. Posted by: Rose1
- the ruler of the school** Posted: 17/11/2007 13:50:16, 25 views. Posted by: singletear
- need help** Posted: 16/11/2007 23:21:06, 19 views. Posted by: me_ms
- How can i get people to grow up, and leave me alone?** Posted: 16/11/2007 20:44:15, 14 views. Posted by: SmisJohanna
- questions about bullying...** Posted: 16/11/2007 19:30:11, No views. Posted by: kosome
- there's this girl** Posted: 16/11/2007 13:36:52, 27 views. Posted by: jojo101
- I HATE THEM** Posted: 15/11/2007 21:56:08, 16 views. Posted by: weerdboy
- tired of this** Posted by: [unintelligible]

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<http://chiron.valdosta.edu/whuitt/col/motivation/motivate.html>

Sources of Motivational Needs	
Behavioral/ external	<ul style="list-style-type: none"> elicited by stimulus associated/connected to innately connected stimulus obtain desired, pleasant consequences (rewards) or escape/avoid undesired, unpleasant consequences
social	<ul style="list-style-type: none"> imitate positive models be a part of a group or a valued member
biological	<ul style="list-style-type: none"> increase/decrease stimulation (arousal) activate senses (taste, touch, smell, etc. decrease hunger, thirst, discomfort, etc. maintain homeostasis, balance
cognitive	<ul style="list-style-type: none"> maintain attention to something interesting or threatening develop meaning or understanding increase/decrease cognitive disequilibrium; uncertainty solve a problem or make a decision figure something out eliminate threat or risk
affective	<ul style="list-style-type: none"> increase/decrease affective dissonance increase feeling good decrease feeling bad increase security of or decrease threats to self-esteem maintain levels of optimism and enthusiasm
conative	<ul style="list-style-type: none"> meet individually developed/selected goal obtain personal dream develop or maintain self-efficacy take control of one's life eliminate threats to meeting goal, obtaining dream reduce others' control of one's life
spiritual	<ul style="list-style-type: none"> understand purpose of one's life connect self to ultimate unknowns

Ma

Any questions?

See you next week!