

# The Knowledge Creating Company

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- Organisational Knowledge Creation = the ability to create new knowledge in products, services and systems
- Essential is a willingness to change what has been successful previously
- Knowledge has become THE resource for competitive advantage
- The Value of most products and services depends on how "knowledge-based intangibles" are developed.

These are:

- technological know how
- Product design
- Marketing Presentation
- Understanding the Customer
- Personal Creativity

## Explicit and Tacit Knowledge

|                           |   |
|---------------------------|---|
| <b>Explicit Knowledge</b> | Knowledge that can be expressed in words, numbers and easily communicated.<br><br><u>Examples are:</u> <ul style="list-style-type: none"><li>• Hard Data</li><li>• Scientific Formulae</li><li>• Codified Procedures</li><li>• Universal Principles</li></ul> |
| <b>Tacit Knowledge</b>    | Knowledge that is personal and hard to formulate. It is intuitive knowledge learned by experience.<br><br><u>Examples are:</u> <ul style="list-style-type: none"><li>• Subjective Insights</li><li>• Intuitions</li><li>• Hunches</li></ul>                   |

## Making Information Explicit

- Using a slogan like "let's gamble" can give a team a clear sense of direction.
- Generally figurative language, metaphors and symbolism help making concepts and ideas more explicit.

### Metaphors and Analogy:

Metaphors help express, what you know, but cannot express, yet.

Analogy highlights how two ideas are alike or not alike. It is an intermediate step between imagination and logical thinking.  
E.g. "If a car were an organism, how should it evolve?"

## Personal and Organisational Knowledge

- Knowledge always starts with an individual
- It then has to be transferred into organisational knowledge
- The transfer between individual and organisational knowledge takes place through:
  - Dialogue
  - Group Discussion
  - Shared Experience
  - Observation

- Disagreement and conflict are also part of the process

### Ambiguity and Redundancy:

Ambiguity is a source of alternate meanings and breeds fresh ways of thinking.

Redundancy encourages frequent dialogue. It facilitates tacit knowledge and helps spread knowledge.

### Redundant Product Development:

Several teams with different skills are tasked with the same project.  
they develop different approaches to the solution and discuss their proposals to find the best way.

### Key Players of Knowledge Creation:

Knowledge is always interpreted through the perspective of the person receiving it.  
Therefore, it loses meaning when diffused in an organisation.

Managers have to direct this confusion towards knowledge creation.

Senior and middle managers provide employees with frameworks to make sense of their experiences.

## Knowledge Management

Definitions:

|                         |  |
|-------------------------|--|
| <b>Epistemology:</b>    | inquiry of knowledge   |
| <b>Cartesian Split:</b> | The concept of differentiating between the knower and the known.             |
| <b>Knowledge:</b>       | Justified true belief  |
| <b>Rationalism:</b>     | The concept of knowledge being created deductively by reasoning.             |
| <b>Empiricism:</b>      | The concept of knowledge being attained inductively from sensory experience. |

### Simon's Information-Processing Paradigm:

An organisation should design itself in a way to minimize need for information distribution among its units, in order to reduce information load.

### Humanistic Approach to Management:

Incorporation of shared values and a "corporate culture" inside an organisation.

Shared experiences lead to a shared view. This view has to be internalised enough to be taken for granted.

These human factors shall not be neglected. Emphasis is put on:

- Values
- Meanings
- Commitments
- Symbols
- Beliefs

- The Knowledge Society:

In the current times, knowledge is the basic economic resource. This will transform organisations to knowledge creators and mark the coming age.

Building systematic practices for managing self-transformation will be most important for companies.

They have to create new things through:

1. Continuous improvement of every activity
2. Development of new applications of previous success
3. Continuous innovation as an organised process

- Organisational Learning:

Types of organisational learning

|  |   |
|--|---|
| <b>Learning I</b><br>single-loop learning  | Obtaining know-how to solve problems, based on existing premises.             |
| <b>Learning II</b><br>double-loop learning | Establishing new premises and mental models in order to update existing ones. |

Double-loop learning should be a daily activity inside a company.

Steps to build a learning organisation:

1. Adopt "systems thinking"
2. Encourage personal mastery in employees
3. Bring up prevailing mental models and challenge them
4. Build a shared vision
5. Facilitate team learning

- Resource-Based Approach to Strategy:

In a rapid changing market, quick adaption is key.

Strategy is the dynamics of a companies behaviour instead of the products and markets.

The focus of strategy has to be on the ability to learn, adapt, change and renew as fast as possible.

This involves the search, finding and solving of problems on an organisational level.

## Theory of Organisational Knowledge Creation

The difference between knowledge and information:

| Knowledge   | Information  |
|---|--|
| <ul style="list-style-type: none"> <li>• about belief and commitment</li> <li>• A function of a stance, perspective or intention</li> <li>• Justified belief</li> </ul> | <ul style="list-style-type: none"> <li>• About meaning</li> <li>• Affects knowledge by adding to it</li> </ul> |

Two Dimensions of knowledge Creation:

| Epistemological  | Ontological  |
|--|--|
| = how explicit the knowledge is presented. From tacit to explicit. | = how far the knowledge is spread. Starting from the individual, through the organisation and inter-organisationally |

Four Modes of Knowledge Conversion:

|  |  |
|--|--|
| <b>Socialisation</b><br>= Conversion From Tacit to Tacit<br><br>How to:<br><ul style="list-style-type: none"> <li>• Brainstorming Camps: Meetings or discussion groups with clear problems to discuss.</li> <li>• Engage with tacit knowledge through observation, imitation and practice.</li> </ul> Benefits:<br><ul style="list-style-type: none"> <li>• Shared experiences and enhancing trust between participants.</li> <li>• Reorients individuals to the same direction.</li> </ul> Example:<br><ul style="list-style-type: none"> <li>• A group tasked, with developing a bread baking machine engaged with learning baking in a bakery.</li> </ul> Tips:<br><ul style="list-style-type: none"> <li>• Don't: Criticise without constructive suggestions.</li> </ul> | <b>Externalisation</b><br>= Conversion From Tacit to Explicit<br><br>How to:<br><ul style="list-style-type: none"> <li>• Articulating tacit knowledge to explicit concepts</li> <li>• Using Shapes, Metaphores, Analogies, Concepts, Hypotheses and Models</li> </ul> Benefits:<br><ul style="list-style-type: none"> <li>• It sparks creativity</li> <li>• It gives common understanding while leaving leeway for interpretation</li> <li>• Helps creating concepts</li> </ul> Example:<br><ul style="list-style-type: none"> <li>• Hiroyo Wantanabe from Honda used the slogan "Automobile Evolution" to direct the development of their cars.</li> <li>They asked "If the automobile was an organism, what would it evolve into?"</li> </ul> Tips:<br><ul style="list-style-type: none"> <li>• Formulate corporate slogans like "man maximum, machine minimum" to create common direction and communicate complex visions.</li> </ul> |
| <b>Internalisation</b><br>= Conversion from Explicit to Tacit<br><br>How to:<br><ul style="list-style-type: none"> <li>• Documentation of concepts in diagrams, documents and manuals for people to "re-experience"</li> </ul> Benefits:<br><ul style="list-style-type: none"> <li>• Enables people to "re-experience" of others</li> </ul> Example:<br><ul style="list-style-type: none"> <li>• GE files every customer complaint in a database and makes it available for all employees to revisit and learn from</li> </ul> Tips:<br><ul style="list-style-type: none"> <li>• Documentation is the key part of internalisation</li> </ul>   | <b>Combination</b><br>= Conversion from Explicit to Explicit<br><br>How to:<br><ul style="list-style-type: none"> <li>• Revisit existing explicit knowledge like documents, notes and other saved media</li> <li>• Create new knowledge through sorting, adding, combining and categorising.</li> </ul> Benefits:<br><ul style="list-style-type: none"> <li>• Creation of new concepts without need to gather more information</li> </ul> Example:<br><ul style="list-style-type: none"> <li>• Categorising Customer information into groups to further personalise a service</li> </ul> Tips:<br><ul style="list-style-type: none"> <li>• Naturally gather information in advance and prepare for revival</li> </ul>  |

- Knowledge is created in a spiral process, iterating through the different types of knowledge conversion. It is visualised in the knowledge-spiral
- Combined with the two dimensions of ontological and epistemological Knowledge, you can display the process like this:

## Five Conditions for Knowledge Creation

| Intention  | Autonomy      | Fluctuation and creative chaos | Redundancy | Requisite Variety |       |               |  |   |   |   |
|--|---------------|--------------------------------|------------|-------------------|-------|---------------|--|---|---|---|
| <p>= An organisation's aspiration to its goals</p> <p>Why:</p> <ul style="list-style-type: none"><li>• It gives a measure to judging the truthfulness of knowledge</li><li>• It fosters the commitment of employees</li></ul> <p>How:</p> <ul style="list-style-type: none"><li>• Formulating the intention of the organisation and communicating it to the employees</li></ul><br><ul style="list-style-type: none"><li>• Conceptualize a <b>vision</b> about what kind of knowledge should be developed and putting it into a system for implementation</li></ul><br><ul style="list-style-type: none"><li>• Examples for good corporate Visions:</li></ul> <table border="1"><tr><td>Name</td><td>Vision</td></tr><tr><td>GE</td><td>No.1 or No. 2</td></tr><tr><td>Sharp</td><td>Don't imitate</td></tr></table> | Name          | Vision                         | GE         | No.1 or No. 2     | Sharp | Don't imitate | <p>= giving all members of the organisation as much autonomy as the circumstances allow</p> <p>Why:</p> <ul style="list-style-type: none"><li>• It motivates the employees to create new knowledge</li><li>• Making it more likely to maintain greater flexibility in acquiring, interpreting, and relating information.</li></ul> <p>How:</p> <ul style="list-style-type: none"><li>• Minimum Critical Specification Principle:<br/>Specifying the minimum amount for the work to be executed according to standard while giving as much autonomy as possible</li></ul><br><ul style="list-style-type: none"><li>• Autopoietic System:<br/>A System, where each part controls its changes for itself. Like cells in an organism.</li></ul><br><ul style="list-style-type: none"><li>• Creating Self-organising teams with members with different backgrounds</li></ul><br><ul style="list-style-type: none"><li>• SED Systems:<br/>Teams with people reflecting Sales, Engineering and Development skills</li></ul><br><ul style="list-style-type: none"><li>• Rugby Approach:<br/>Every member of a team is included from start to finish. The common goal is reached as a united team</li></ul> | <p>= Focussing on the interaction between an organisation and the external environment</p> <p>Why:</p> <ul style="list-style-type: none"><li>• Fostering creativity and ambition</li><li>• Creating new concepts and ideas</li><li>• Improving on existing concepts</li><li>• Identifying outdated concepts</li></ul> <p>How:</p> <ul style="list-style-type: none"><li>• Break down routines, habits and cognitive frameworks</li><li>• Questioning the validity of the possessed knowledge</li><li>• Evoke a sense of crisis by proposing challenging goals</li><li>• Establish slogans like: "Let's change the flow"</li></ul> | <p>= Intentional overlapping of information about the business</p> <p>Why:</p> <ul style="list-style-type: none"><li>• It helps with distributing information and learning by repetition</li></ul> <p>How:</p> <ul style="list-style-type: none"><li>• Letting different functional departments work together</li><li>• Dividing a product development team into different competing groups and letting them discuss the different approaches</li><li>• Rotating personnel to different departments</li><li>• Regular and irregular meetings</li><li>• Making clear where the information is located</li></ul> <p>Tips:</p> <ul style="list-style-type: none"><li>• Redundancy can lead to information overload and needs to be regulated</li></ul> | <p>= An organisation must match the variety of the environment internally</p> <p>Why:</p> <ul style="list-style-type: none"><li>• Being able to adapt to external changes</li></ul> <p>How:</p> <ul style="list-style-type: none"><li>• Creating a centralised knowledgebase and a way to reduce steps to get to specific information</li><li>• Giving everyone equal access to information</li><li>• Changing the organisational structure regularly</li></ul> |
| Name   | Vision        |                                |            |                   |       |               |  |   |   |   |
| GE   | No.1 or No. 2 |                                |            |                   |       |               |  |   |   |   |
| Sharp  | Don't imitate |                                |            |                   |       |               |  |   |   |   |

## The 5 Phase Model of Knowledge Creation

| Sharing Tacit Knowledge   | Creating Concepts  | Justifying Concepts   | Building an archetype  | Cross-Leveling Knowledge   |
|---|--|---|--|--|
| <ul style="list-style-type: none"> <li>Sharing of emotions and mental models</li> </ul> | <ul style="list-style-type: none"> <li>Formulating Concepts with figurative language in diverse teams</li> </ul> | <p>= Deciding, if a concept is worth further effort</p> <ul style="list-style-type: none"> <li>Justification of these concepts against the vision of the company</li> <li>Justification against criteria like cost and profit margin</li> </ul> | <p>= Building of a prototype of the concept in form of a product</p> | <p>Further testing through communication with different sources, like other departments, affiliate companies, customers or suppliers</p> |

- To Create a corporate Vision, Matsushita asked 200 employees in their 20s and 30s to formulate a vision for the company in the 21st century.

## Enhancing/Enabling Knowledge Creation

- Free Sharing of information between different groups
- Exchange of mental models and feelings about the future
- High autonomy of individuals
- Extremely challenging goals

## Middle-up-down Management

## Different Management Models in Comparison

- In most organisations the creation of knowledge is random and impossible to predict
- Traditional models are not good for knowledge conversion

| Top-Down  | Bottom-Up   | Middle-up-down   |
|---|---|--|
| <ul style="list-style-type: none"> <li>Basic hierarchical model with pyramid structure</li> <li>Selected Information is passed to the executives to create plans and delegate them to the lower levels</li> <li>Plans are passed to middle management, who decide how to realise them</li> <li>Only top management creates knowledge</li> <li>No ambiguity or equivocality</li> <li>Good for dealing with explicit knowledge</li> </ul> | <ul style="list-style-type: none"> <li>Flat horizontal structure</li> <li>Top managers are the sponsors of the front-line employees and do not interfere</li> <li>All employees act autonomously and create all knowledge</li> <li>Good for Dealing with tacit knowledge</li> <li>Pace of the knowledge creation is dependent on the individuals skill</li> </ul> | <ul style="list-style-type: none"> <li>A concept with emphasis on middle managers as connection between the vision created by top management and autonomously lead front-line employees</li> <li>A combination of the other two models</li> <li>Senior Managers act as a mentor, coach and sponsor to the rest of the organisation</li> <li>Middle Managers create knowledge <ul style="list-style-type: none"> <li>They lead teams or task forces and enable the spiral conversion of knowledge</li> <li>They take the visions of management and bring them together with the knowledge created at the front line</li> </ul> </li> <li>A radically open mind to new ideas: Implement new ideas radically. Shift the burden of proof, that an idea might be bad to the one saying it is bad.</li> <li>11th Commandment: You shall not kill ideas for new products</li> </ul> |

|      |                             | Top-down  | Bottom-up   | Middle-up-down  |
|------|-----------------------------|---|---|---|
| Who  | Agent of knowledge creation | Top management  | Entrepreneurial individual                                  | Team (with middle managers as knowledge engineers)    |
|      | Top management role         | Commander   | Sponsor/mentor  | Catalyst  |
|      | Middle management role      | Information processor                                     | Autonomous intrapreneur                                     | Team leader   |
| What | Accumulated knowledge       | Explicit  | Tacit   | Explicit and tacit                                    |
|      | Knowledge conversion        | Partial conversion focused on combination/internalization | Partial conversion focused on socialization/externalization | Spiral conversion of internalization/externalization/ |

|              |                         | combination/internalization       | socialization/externalization                    | internalization/externalization/<br>combination/socialization |
|--------------|-------------------------|-----------------------------------|--|---|
| <b>Where</b> | Knowledge storage       | Computerized database/manuals     | Incarnated in individuals                        | Organizational knowledge base                                 |
| <b>How</b>   | Organization            | Hierarchy                         | Project team and informal network                | Hierarchy and task force (hypertext)                          |
|              | Communication           | Orders/instructions               | Self-organizing principle                        | Dialogue and use of metaphor/analogy                          |
|              | Tolerance for ambiguity | Chaos/fluctuation not allowed     | Chaos/fluctuation premised                       | Create and amplify chaos/fluctuation                          |
|              | Weakness                | High dependency on top management | Time-consuming, cost of coordinating individuals | Human exhaustion, cost of redundancy                          |

## Knowledge Creating Crew

|                                   | Knowledge Practitioners   | Knowledge Engineers   | Knowledge Officers  |
|-----------------------------------|---|---|---|
| Equivalent in traditional Systems | = front line employees  | =middle managers  | =top managers   |
| Function                          | <ul style="list-style-type: none"> <li>Accumulate, generate and update knowledge</li> <li>Staying in touch with the outside world</li> </ul>  | They take the lead for the knowledge conversion process   | <ul style="list-style-type: none"> <li>They manage the knowledge creation process</li> <li>Establishment of a knowledge vision</li> <li>Setting standards for justifying the value of created knowledge</li> </ul>                                |
| Characteristics                   | <ul style="list-style-type: none"> <li>A high intellectual standard</li> <li>Committed to form their surrounding to their standards</li> <li>A wide variety of experiences outside the company</li> <li>A skill and initiative to communicate</li> <li>A skill for candid discussion</li> </ul> | <ul style="list-style-type: none"> <li>Good at project management</li> <li>Good at creating new concepts</li> <li>Able to use the knowledge creation processes</li> <li>Enabling communication between team members</li> <li>Communicating in figurative language</li> <li>Able to generate trust between team members</li> </ul> | <ul style="list-style-type: none"> <li>Articulating a vision</li> <li>Selecting the right leaders</li> <li>Creation of creative chaos</li> <li>Communicating with and motivating team members</li> <li>Managing the knowledge creation</li> </ul> |

## The Hypertext Structure

- A Hypertext Structure is what enables an organisation to create knowledge efficiently and continuously

## Traditional Structures

|               | Bureaucratic Structure   | Task Force   |
|---------------|--|--|
| Properties    | <ul style="list-style-type: none"> <li>Structure in which work is standardised, specialised and centralised</li> </ul>   | <ul style="list-style-type: none"> <li>Group of people drawn from different areas and assigned with a specific goal to enforce</li> </ul>                |
| Disadvantages | <ul style="list-style-type: none"> <li>Works only well in stable conditions</li> <li>Reduces initiative of individuals</li> <li>It enables: intra-organizational resistance, red tape, tension, shirking of responsibility, means becoming objectives, and sectionalism</li> </ul> | <ul style="list-style-type: none"> <li>New knowledge is not easily transferred to other members of the organisation after a task is completed</li> </ul> |

## Properties of Hypertext Organisations

- Hypertext: connection of multiple layers of media in a system to get information from
- Combination of Bureaucracy and Task Force Models
- Nonhierarchical, self-organizing structure combined with a hierarchical formal structure
- It enables to switch between multiple layers of information (GRAPHIC WITH PROGRESSIVE SUMMARISATION)
- Free Access to Information
- Open Floor Allocation: Removing doors and physical boundaries between members
- Fluid personnel change between divisions
- Horizontal Teams of members from different divisions to tackle inter divisional problems

|                        |   |
|------------------------|---|
| <b>Business-System</b> | Normal, routine operations (Bureaucratic Structure)<br>Typical Hierarchy  |
| <b>Project-Team</b>    | Multiple project teams, engaging in knowledge and product development. (Task Force)   |
| <b>Knowledge-Base</b>  | Not physical entity, but a way to make the organisational knowledge, vision and culture available.<br>A centralised Database for everyone to access |

- The ECHO-System:
  - An example for an knowledge base
  - The Company Kao records over 50k Phonecalls a year, notes and customer complaints  
They organise this information in a database for every employee to access and searchable with key terms
- Urgent-Project System:
  - Goal of this system is to conduct important product development in a task force
  - People from different departments are put into teams to work exclusively on a specific project
  - These people are assigned special priorities for using company resources
- Super Excellent Products:
  - Products created by a company while effort in the business-system
  - They must meet the following criteria:
    - Create a new market trend
    - Represent a completely new technology
    - Use of new materials
    - Employ new Manufacturing Methods

## Steps for realising a Knowledge Creating Company

- Creating a Knowledge Vision
- Developing a Knowledge Crew
- Build a Field of Interaction
- Payback on new product-development
- Adopt middle-up-down Management
- Construct a Knowledge Network