A Feasibility Study for the Semantification of Cyclic Compliance Knowledge Transfer between Multinational Organizations

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Abstract
In a variety of scenarios the transfer of knowledge between different organizations is aspired. There exist theoretical concepts that describe cyclic processes of knowledge management and knowledge transfer. In this work a conceptual symbiosis of both is presented. A semantic description of the knowledge transfer process is suggested extending accepted standards. A strategic concept of identifying characteristics to assess the chances of a successful knowledge exchange is presented. Theoretical concepts are undermined by a case study about the transfer of compliance knowledge between two international organizations for the safe and compliant handling of employees dogs at the workplace with the intention of improving the overall working atmosphere.

Keywords
Knowledge Management, Knowledge Transfer, Semantics, Compliance, Strategic Organizational Analysis, Ontologies

1. Introduction

In this work a strategy for the semantification of a cyclic compliance knowledge exchange between organizations is presented. This strategy aims to create a semantic model that organizations interested in knowledge exchange can use to optimize this task. Naturally, it is important to respect the knowledge management culture of all organizations taking part in the exchange relationship. For this reason, the strategy is oriented at the knowledge management cycle of the participants. The process of knowledge exchange is cyclic because most often this is not a matter of one single exchange task but a relationship is built with ongoing mutual exchange. Figure 1 shows two organizations A and B that both have an own knowledge management culture represented by the two individual knowledge management cycles. The contribution of this work is to assess whether it is possible to unite them into a semantic model that helps to structure the process of a cyclic knowledge transfer and optimizing it by identifying chances and conflicts in the workflow.

After a research of examining the available literature connected to this work a theoretical concept was developed that unites the theory of the *knowledge management cycle* [1] with the theory of the *knowledge transfer cycle* [2]. Out of this unification a meta knowledge classification

tool was created that helps to identify barriers and opportunities of a knowledge transfer relationship. The tool gives a basic classification of knowledge about the exchange of knowledge.
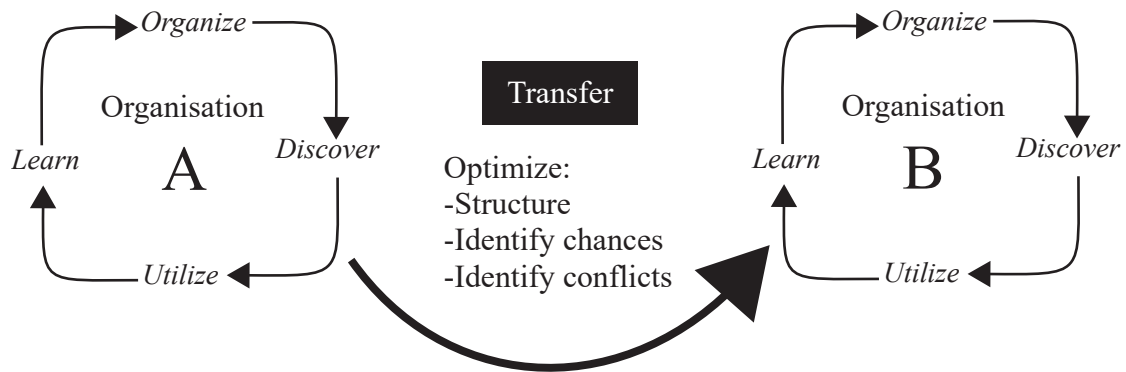
Figure 1: Two organizations A and B with their individual knowledge management cycle have the goal of transferring knowledge from organization A to organization B. In-between this process, chances and conflicts are likely to occur.

The rest of this paper is organized as follows: in section two the theoretical concept of the cyclic knowledge transfer assessment matrix is presented. We explain the model with the help and its connection to the two different knowledge cycle models. In section three we describe the domain of workplace compliance of animals and its expected quality for evaluation purposes. We present an example of the application of the semantic model in this context. Section four presents a concluding review with a selection of related and ground laying work to this one, finished by future work.

2. An Approach for Cyclic Knowledge Transfer

Important characteristics that hold as a fundamental guideline for knowledge transfer processes are the elements of the knowledge management and the knowledge transfer cycle. We use these elements to construct a matrix structure to identify similarities and contradictions for a specific *transfer task*.

2.1. The Knowledge Transfer Matrix

In Figure 2 the single transfer of knowledge from organization A to organization B is replaced by a cyclic process dividing the transfer into different steps. In this manner the cycle is passed through and with every passage the relationship between the two organizations has the chance of improvement.

The overall goal of the efforts is to find (tacit) generic patterns that aid to facilitate the transfer of knowledge. Therefore, we assume that the synergies and conflicts of a known transfer task are also likely to occur in other similar transfer tasks. This makes it interesting to gather information about past knowledge transfer processes. We thereby have the intention to find

synergies that made the overall knowledge transfer successful and strategies that helped to solve conflicts.
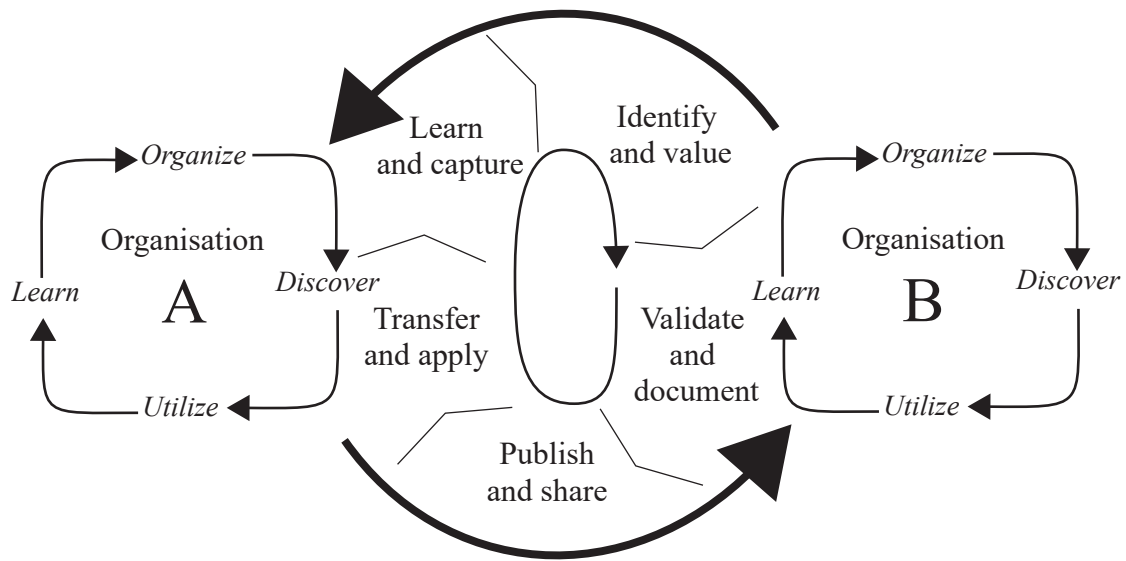

Figure 2: The combination of the knowledge management cycle after Nonaka [1] and the knowledge transfer cycle after Piktialis [2].

The matrix depicted in Table 1 matches knowledge management and knowledge transfer elements of both organizations for a specific transfer task. Synergies are marked with "+" and conflicts are marked with "-". In this manner the characteristics of the transfer task are captured in a systematic way.

Table 1
The knowledge management transfer matrix points out conflicts (-) and synergies (+) between the two organizations A and B for a specific transfer task.

Organization A				
	Organize	**Discover**	**Utilize**	**Learn**
Identify and value	-			
Validate and document	-			
Publish and share	-	+		
Transfer and apply				+
Learn and capture	+			
	Organize	**Discover**	**Utilize**	**Learn**
Organization B				

2.2. Cyclic Semantic Model of Knowledge Transfer

The approach we suggest for the semantification for the before described scenario is depicted by Figure 3. Transfer tasks (3) are marked with a property that describes the state of the task. For instance, the transfer task of *legal knowledge sharing* is in the state *conflict* (4). If an entity has done its part of solving the conflicts it passes the transfer task to the adverse entity B and vice versa (5). In this manner all of the conflicts are solved or the transfer process rests in the state with the least conflicts possible.

Conflicts are characterized by offended compliance rules. A knowledge transfer process consists of many transfer tasks. To manage these transfer tasks they are hierarchically organized into sub-tasks. Organizational entities (2) and compliance rules (1) are handled analogously. At this point other semantic models can be integrated that are capable to express this internal structure.
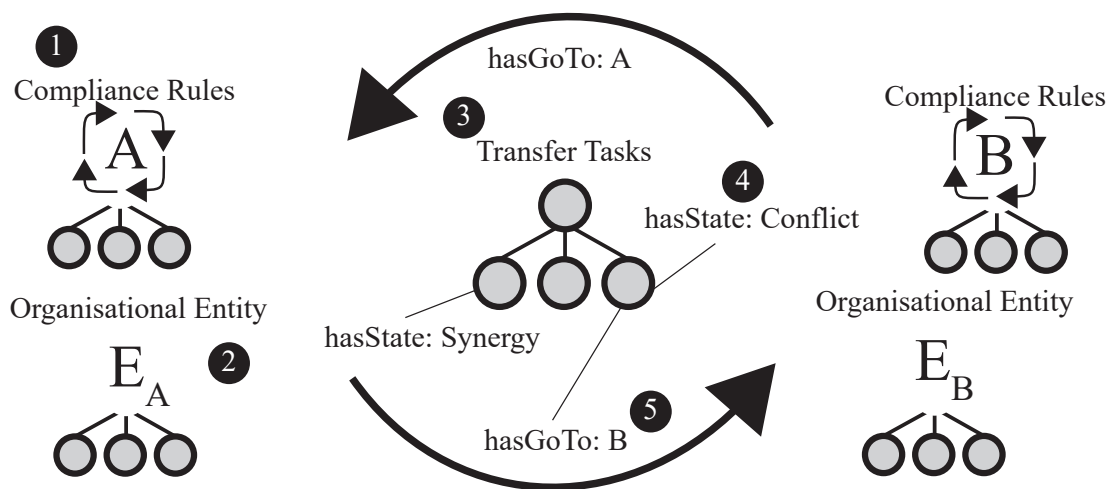

Figure 3: A conceptual view of influencing semantic elements for a generic structuring and assessment of knowledge transfer tasks.

3. Case Study - Transferring Compliance Knowledge about Dogs at the Workplace

The spark for this work was the question: What needs to be done to establish the possibility for corporate employees to take their dog with them to the workplace? Dogs are of great benefit for the well being of people. In this regard it is assumed that dogs can contribute to a good working atmosphere, also for employees that do not own dogs. Additionally, the life of employees who own dogs is facilitated because they do not need to arrange dog sitters on a regularly basis. Thus, big companies like Amazon and Google started to allow employees to bring their dogs to the working place. What might not be worth a discussion in a small company turned out to

be a topic containing deeper impact than obvious at the first glance when it comes to medium sized and big companies.

In larger organizations compliance rules are necessary to guarantee a safe and convenient working together of animal and human. After all, what made this topic interesting for the research in the field of knowledge management are the following characteristics.

- **Diversity**: We observed that the topic is handled very differently even in the same organization. Dogs are for instance allowed at Amazon in the United States but not at Amazon Germany. Whereas other major companies do not allow animals at the workplace at all.
- **Public Knowledge**: A lot of the knowledge concerning animal safety is available because institutions publish compliance documents on their websites. Additionally, there is a public interest in this topic. Especially in Northern America and Europe hundreds of millions of dogs are owned, for which reason, media and social discussions pick up the subject.
- **Understandable Knowledge**: At first sight the topic seems shallow in terms of content but we state that this makes it easy to observe on a simple subject how knowledge transfer can happen and later apply it to more complex domains. Similarly like to observe nerve functions in very simple animals like worms and use this knowledge to understand the functioning of more complex animals.

Figure 4 shows a graph describing different instances in the workplace animal domain with basic exemplary definitions of states. The instances were derived from an assessment matrix evaluating the scenario on the base of an internet research on the topic as described in previous sections. Therefore, different compliance documents, media articles, and social media discussions were analyzed.
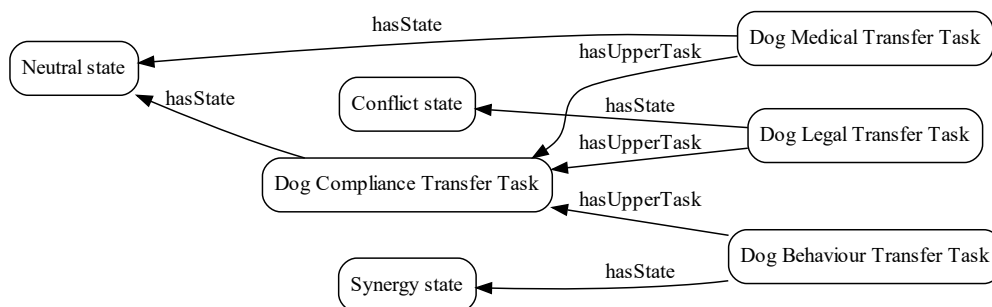

Figure 4: The graph shows an exemplary semantification of dog compliance knowledge transfer tasks together with their current state.

4. Conclusions

This work presented a feasibility study to estimate how cyclic knowledge transfer processes between organizations can be subject of semantification. A concept was presented to assess barriers and opportuinites for knowledge transfer via a matrix scheme derived from a combination of cyclic knowledge management and knowledge transfer models.

4.1. Related Work

To get insight to available works relevant for this study we searched for accepted and proven fundamental theorys of knowledge management and knowledge transfer. Additionally, we investigated what up to date approaches require as characteristics of a knowledge domain to make the approach work. A cyclic approach to systematize knowledge transfer processes between factory workers and management is presented by Riege and Zulpo [3]. The aspects of using a cyclic model for transdisciplinary learning was published by Bochenina et al. [4]. An ontology model to transfer knowledge between universities was presented by Bazarova et al. [5]. An interesting aspect of the approach is that the hierarchical ontology model is used to assess the learning outcome of the knowledge transfer process. The work of Stasewitsch et al. [6] picks up the concept of modeling organizational structures as networks to gain insight into to knowledge transfer processes which aids to build a bridge between the transfer cycle and the knowledge graph structure proposed in this paper. The important influence of the corporate culture on the process of knowledge transfer is analyzed by Wilkesmann et al. [7]. Which factors affect knowledge transfer was elaborated by Srisuksa et al. [8]. A systematic approach to design knowledge transfer practices was presented by Sannicolas et al. [9]. Minbaeva [10] gives a deep insight into the structure of knowledge transfer processes that occur in multinational corporations. Pinto et al. [11] discuss the opportunities of transfer learning for smart buildings. This paper was very helpful regarding the structured aspects of data that can occur in such a setting of transfer learning and which chances and problems come with certain data quality. The aspects of knowledge sharing via story telling were discussed by Swap et al. [12]. Ojha et al. [13] discuss the complex environment describing the knowledge processes of two large organizations have to be distilled into simple models usable by employees. To train a guide dog is a resource intense task. The work of Cleghern et al. [14] presents a decision tree model of how to estimate whether a dog will be a good candidate for a guidance training. This is useful in our context to find out which features could have an influence on compliance in a working environment.

4.2. Future Work

The first view on the presented domain is promising. Thus, we will extend the so far developed concepts and evaluate them more deeply by populating the developed ontology with instances extracted from the domain of knowledge transfer concerning animal work place compliance.

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