IT-supported work processes for contact services in Swedish municipalities – the initial design steps.

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Abstract

A contact service in a municipality is a place where the citizens can apply for processing of their claims concerning municipal jurisdiction. Examples could be application for a place at pre-school, planning permission or change of dustbin etc. The clerks at the contact centre should be able to provide immediate service in most of the matters. This requires the work-process for each matter to be known. Before starting of a contact service this knowledge existed in the administration for the actual claim. In many cases it was tacit and not described.

This paper discusses the problem of making this knowledge explicit and described in order to be used at the contact service. Issues concerning work organisation, personnel and job satisfaction are recognised, but not in focus. Instead our focus lies on the work content, processing of the claims, which the clerks are dealing with. It is a qualitative study, based upon three existing contact services and one, which is in the design phase.

We start with a brief discussion of different types of knowledge, related to classical epistemologies within the organisation area (Nonaka & Takeuchi, Brown & Duguid, Cook & Brown, Polyani, etc). Based upon empirical material from the cases we identify some typical knowledge categories. It might be general knowledge about rules, procedures and such things; it might be experience-based knowledge from previous claims, typical claims and work praxis developed over time. It might also be knowledge about the specific citizen and about the specific application. But it can also be totally new categories. Two categories we are pretty sure to identify are matter-oriented knowledge, concerning the actual matter and procedural knowledge, concerning the processing of the matter-oriented knowledge. In our previous research about work-flow four levels have been identified and we suspect the same basic reasoning might apply here.

Keywords: tacit knowledge, ontologies, contact service, municipalities

1 Introduction

Today the citizens demand a good service from their municipality. Most often they want to call the municipality, get the right person in the phone, present their claim and then get it treated. But there is a catch: The clerk which can answer the question is not there, she can be out in the field, she can be in a meeting or she can simply lift off the phone in order to get some work time. We have seen investigations indicating that only 20% of the calls to the municipality is answered. A common solution to that problem is introducing a contact centre (or customer centre), here shortcut CC, which is the first instance where the citizens should call in order to get their matters treated.

In a project called Innoveta and financed by VINNOVA (Swedish Governmental Agency for Innovation Systems), a State authority that aims to promote growth and prosperity throughout Sweden, we have studied some implemented CC:s in Sweden. In many cases the claims are dealt with according to predefined checklists, stating exactly what to be done in a specific case. We have also noted that citizens sometimes find this procedure bureaucratic and tedious. The clerks using checklists might also be more replaceable since all the knowledge they need, is basically in the list. However, we have the well-known issue about tacit knowledge (Polyani M 1968; Nonaka and Takeuchi 1995; Cook and Brown 1999), which indicates this is not possible to formalise *all* knowledge concerning a specific claim. This is a well-known issue and as indicated many authors have written a lot about it.

In this paper we will point at another issue, according to our knowledge not much discussed and that deals with the ethical dimension of knowledge. Usually information coming from an information system is used for some kind of decision making. In business systems these decisions are mostly supposed to be rational and follow logical rules to a great extend. Transactions in a such system are business transactions (Williamson and Masten 1995) which are characterised by being extremely precise and exact. When you buy a thing you know exactly what you buy, the prise of it, delivery conditions etc. But transactions in a public system, treating specific matters, are by no means always business transactions. They involve a lot of interpretation, judging and decisions, which even might be lethal if they are wrong. Hence, the decision-making, based upon the supplied information has a strong ethical dimension and it could be fruitful to approach the use of the information from an ethical perspective.

The subject of this paper is thus an investigation of the ethical dimension within three epistemologies, and a discussion applied to a common example: application for a day nursery. We will see how different epistemologies results in different decisions and how different world-views might collide. It is a purely conceptual paper, using an empirical case as example. The result will be an awareness of different epistemologies effect in public organisations.

2 Scenario: Application for a day nursery

The scenario is familiar, for almost all Swedish families have children. After being paid by the government for a period of maximum a year, the parents want to go back to work and then they need a place in a day nursery. They might have other children also in day nursery and of course they want the new child to be placed in the same. Also a child nursery should not be very far away from home and it should have a good reputation. In some cases, there might be specific demands according to disabilities etc. The fee the parents have to pay is also calculated according to certain rules, depending on income, number of children in day nursery etc. So let us assume the municipality has a form where they collect needed information about the child and then process the claim and place the child in the waiting list for the wanted day nursery or suggest some other day nursery where places are available.

When receiving the application the claim is allocated to a specific clerk. She has to follow certain rules concerning the size of the groups, the distance to the day nursery, the possibilities for eventual disabilities, etc. These rules are simple and easy to apply. If there is no place, which there normally is not, the child is put on the waiting list. This is not a simple FIFO-list; it is prioritised according to certain rules. Single parents are taken before pairs for example, single parents with low income are usually prioritised higher, people having jobs have higher priority etc. The rules are described in a document that should be available for the citizens. However, as in every organisation, rules can't cover anything and work praxis is established.

Nevertheless, there might also be some cases where the rules can be overruled. For instance, specific Important Citizens might be prioritised. If a big industry, giving lots of working opportunities is dependent on a specific person having her child at day nursery, it might be put in before the other in the waiting list. This can also be applied to the public sector, for instance a headmaster with high merits, might demand a place for her child on a specific day nursery. There are also more intrinsic judgements. For instance, we can suppose that the municipality is low on budget and have to both decrease the costs and increase the income. We can assume that the clerk processing the claim is close to the sack list. Will there not be a temptation to find a family with high income, paying a high fee, instead of a low-income family with so many children that additional fee is not possible? In all this cases a judgement is made by the clerk, based upon her interpretation of the information on the application form and the perceived work praxis. In any case, an experienced clerk is more inclined to process the claims in a more free way, taking other circumstances also into account, not covered in the rule collection. We shall discuss this scenario in connection with the different epistemologies below.

3 Classical epistemologies

We start with a brief discussion of different types of knowledge, related to three classical epistemologies: Aristotelian epistemology, the logical empiricism (based upon Russell) and the phenomenology (based upon Husserl).

3.1 Aristotle

In Greece about 350 BC a man called Aristotle wrote a book that was called the Nicomean Ethics (Aristotle 350 BC) in honour to his son Nicodemus. In this book he described different aspects of knowledge. Here we will use the words of W. D. Ross, who's translation is available on the internet. Aristotle introduces ethical considerations from the very beginning (Book I:1)

> "EVERY art and every inquiry, and similarly every action and pursuit, is thought to aim at some good; and for this reason the good has rightly been declared to be that at which all things aim."

Up to about 1870 there was always an ethical dimension in knowledge. It was not until the positivism and especially the logical empirism the moral dimension disappeared as being metaphysical. But in governmental applications, we have a strong moralistic dimension; the decisions made should follow the laws and they have great influence on the life of the citizens. In Table 1 we have summarised the six knowledge categories of Aristotles (Flensburg 2001).

Scientific knowledge	Stable, general knowledge about things that not change, the requirements specification in systems development
Art	Skill ability to make something, design is included
Practical wisdom	Ability to act in such a way that it is beneficial for the actor in the long run, manage the project well
Philosophical wisdom	Ability to act in such a way that it is beneficial for the mankind in the long run, take other tings into account than only the requirements specification
Understanding (explanation)	Judgement of what is object for practical wisdom, exploring the use situation and take users into account
Learning	Use of scientific knowledge, applying a development method

Table 1 Explanation of Aristotle's six knowledge categories

We see that "knowledge" already 2350 years ago was something very differentiated. We also note that Aristotle talks about different kinds of knowledge and do not discuss their eventual truth or correctness. He is not interested in the conditions for obtaining knowledge or how to ensure the knowledge is correct. Instead he discusses the right (i.e. the moral aspects) knowledge.

Applying the Aristotelian epistemology to the day nursery case, we see that almost every aspect is covered. *Scientific knowledge* include things like: Rules, general principles, calculation of the fees. *Art* is not so obvious, but there is a skill involved when seeing if a matter can be treated in a simple way or if it is more complex. There is also a practical skill in handling the physical form, in writing the correct motivation etc. Close connected to the skill is *practical wisdom*: Knowing the rules applicable, the praxis established and being able to interpret it in a favourable way. The *understanding* deals with the judgement process and includes taking all relevant issues into account. *Learning* means changing the rules or work praxis according to what have been learned in applying the present ones. Learning is an individual activity for Aristotle, but can of course also be a collective effort. Finally, the *philosophical wisdom* is prevalent in the mere goal of the process: Allow most people making best use of available resources for day nursery.

Scientific knowledge is on a meta-level compared to the application form. It has no explicit ethical dimension, but Aristotle assume that the rules that are to be followed are good rules, formulated according to either practical or philosophical wisdom. Art has a an aesthetic dimension of being "nice" according to Aristotle and we can here identify it as making a "good" decision, applying the "right" rules in order to get the "desired" result. In fact, all six categories have a strong ethical dimension.

3.2 The logical empiricism

Bertrand Russell (1912) clearly distinguishes between "the real thing" and our knowledge about it. He introduces an important distinction between sensations and sense-data:

> Let us give the name of 'sense-data' to the things that are immediately known in sensation: such things as colours, sounds, smells, hardnesses, roughnesses, and so on.

We shall give the name 'sensation' to the experience of being immediately aware of these things. Thus, whenever we see a colour, we have a sensation of the colour, but the colour itself is a sense-datum, not a sensation. The colour is that of which we are immediately aware, and the awareness itself is the sensation.

We see a dichotomy between the neuro-signals from our eyes and the brain's interpretation of them as the colour green. But if we see a green apple, can we conclude that there is an apple independent of our observing it? Or if a customer calls the contact centre and claims a specific street lamp is out of order, does this necessary corresponds to reality? An element of trust or mistrust is identified here.

Russell (1912) seems to agree with Kant (1781) insofar as there are certain primitive categories (colour, form, sound etc.), called *a priori knowledge*, from which we obtain immediate knowledge, a special sort of primitive knowledge used as building blocks in more complicated knowledge systems. We can in fact compare with knowledge in a database, where the a priori knowledge is defined as object classes and attributes in the database. The structure of the object class "customer" defines what is immediately possible to know about the customer such as name, address, latest order etc. Thus in fact a computerised information system defines what is possible to talk about, it defines an a priori knowledge about the world. Human beings might however have other supplementary a priori systems and thereby a possible contradiction is introduced. In general: A data system provides sentences about reality but it is not reality. Using such a system, can in the long run produce this belief, thus the stubbornness of many clerks not to accept the reality, but only what is written on the screen.

Wittgenstein argued in Tractatus (1921) that everything could be explained in elementary sentences. He tries to investigate how we can express reality with help of our language, based on an implicit assumption that language and reality are logical in their nature. He writes:

4 A thought is a proposition with a sense

4. 01 A proposition is a picture of reality. A proposition is a model of reality as we imagine it …

4.06 A proposition can be true or false only in virtue of being a picture of reality

Wittgenstein argues thus, that based on elementary propositions we can describe the whole world and gain all knowledge that is possible. We should immediately start finding those elementary propositions, but there is at least one problem: Nobody has ever been able to give any example of an elementary proposition! But still, I argue that those elementary propositions points at factual statements, telling something about reality, something everybody can agree upon if they understand what is meant. The last "if" is important, it requires some sort of common a priori knowledge, which is developed in a social interaction among people (Berger and Luckmann 1968). This lead us into phenomenology, but first let us summarise Russell and Wittgenstein (Table 2):

Sensations	Interpretation of the sense-data captured by our senses.
Propositions, Facts	Statements about the state of affairs, about what actually "is" such as "My computer is a Macintosh".

Table 2 Knowledge categories of the logical empirism

If we apply this type of knowledge to the day nursery case, we collect a set of facts that are to be processed according to certain rules. The facts are unambiguous and true and they are expressed in statements. There is no room for judgement, specific interpretation or taking other facts into consideration. The system is defined according to the information in the form and that is the state of the affairs. If anything, not described in the rules happens, it is impossible and hence it does not exist! I have myself seen clerks denying what has actually happened, despite they have evidence in black and white, just because it was not possible according to the rules.

3.3 Phenomenology

Husserl (1859-1938) gave birth to another approach, the phenomenology. He means there is an objective world out there; but since we are experiencing subjects we define that objective world. Truth lies, (Husserl 1917) neither in the mind, nor in the real objects, but in the interaction between the two. As soon as we encounter the world, we, as conscious subjects, start to give it meaning. When the

clerks at an office enter their job, they give it a meaning according to the computerised systems they use. A solid foundation for knowledge can only be secured by a rigorous method that returns us to the immediate experience of consciousness – the phenomena. This is not the actual object; it is the impression of the object, which passes through the mind.

Husserl (1917) distinguish between two types of experience:

> To the objects which are obviously correlated to each other, of these contrasted sciences there correspond two fundamentally different types of experience and of intuition generally: immanent experience and Objective experience, also called "external" or transcendent experience. Immanent experience consists in the mere viewing that takes place in reflection by which consciousness and that of which there is consciousness are grasped.

Crucial for phenomenology are the agreements, the work praxis. The experiences can thus be translated into knowledge aspects, such as in Table 3:

Objective knowledge	The facts provided in the form
Immanent knowledge	The clerk's interpretation of the form, according to the work praxis

Table 3 Knowledge categories according to phenomenology

Phenomenology applied to the example reveals some interesting aspects. For a clerk, really engaged in her work, feeling the responsibility and being aware of all the consequences a decision has, it is not only an ordinary job, it is some sort of devotion, it is not just ordinary processing, it is Processing, with a lot of judgements, considerations, fairness etc. Having this attitude the clerk put more emphasise on the immanent experiences. I have noticed this type of behaviour in admission bureaus at Swedish universities. The clerks there are possessed of fair admission and that no student should have any "free" passage to the courses, due to a recommendation of the teacher. There might be some other out there being more worthy.

3.4 Some modern ideas

Within the area of information systems we have some research, especially in Scandinavia, dealing with epistemological aspects. Bo Göranzon has during a long period written about tacit knowledge and skill (cf. Aristotle "art"), Hammarén (1999) has written her PhD thesis about judgement and learning, Godlkuhl and Lyytinnen have also during a long period written about speech act and even arranged an annual conference within the area, etc. Here I will just point at some maybe less known approaches.

Ruth et al (1999) gives a good review of current knowledge management literature seen in the perspective of university teaching in KM. They write: "*Depending upon the setting or context, a course could emphasize an historical framework beginning with Plato and Aristotle and migrate … to a point where some of the basic concepts, such as tacit and explicit knowledge, become the natural results of a system of thought that has spanned over two millennia.*"

This essay clearly belongs to this category. Hoffman et al (1999) argues that KM software must be embedded in processes of knowledge workers' everyday practice. Participation of the knowledge owners and future users is an important factor for success of knowledge management systems. They suggest a design process, which includes ethnographic surveys, user participation in cyclic improvement and scenario based design, in fact they base the approach on Aristotle's practical wisdom, in the same sense as tacit knowledge. Dubitzky et al (1999) refers to Eastman (1989) and Motro (1987) who distinguish between two kinds of requests for data: specific requests and goal requests. As an example of the first kind they provide "What is the income of John?". It is a precise, rigid question and most databases are builds with that kind of questions in mind. A goal request, on the other hand, describes a target that is concerned with data that is close or similar to that query. For example, "List high cholesterol patients that have a low coronary heart disease risk". The kinds of knowledge provided in the two cases are different: In the first case a fact was provided, in the other case something close to judgement. Dubitzky et al (1999) propose a concept-oriented database approach based upon goal requests. Storey et al (1997) propose an interesting idea of creating methodology for acquiring and using general world knowledge about business for database design. They introduce an ontology, according to Gruber (1991), and some formalisms for determine the "distance" between concepts.

We can conclude that researchers today are well aware of tacit knowledge and its importance for the work in the organisations. This insight can be traced back to Vico (1744) and Husserl (1970), introducing the subjective side of knowledge. Even in data base design, where the traditions from Russell and Tractatus are kept alive, other ways, as seen in Dubitzky et al (1999), are being introduced. The traditional query establishes a rigid qualification, such a query is concerned only with data that matches it precisely. Typical goal queries contain intrinsically imprecise predicates, involving judgements also. Despite this, Dubitzky et al (1999), propose a formal, concept-based database model. But the moral side of knowledge, so emphasised by Aristotle seems to be missing in contemporary discussion of knowledge management. Except for the case of personal integrity, we very seldom see discussions about the moral right to collect information about certain phenomenon.

Also a focus on the forms for gathering or disseminating knowledge can be seen, probably as a consequence of the formalistic approach we usually have to information systems and their development. Aristotle was very focused on the content of knowledge. This is today only mentioned as "tacit knowledge". We argue that in taking the moral dimension into account we also focus on content and the use of information. This will inevitably lead to increased focus on user participation and even user control in systems development and change.

4   Introducing a contact centre

Suppose we introduce a contact centre in the municipality and let us also assume that application for day nursery are to be processed within this contact centre. However, in all CC:s we have visited, the clerks only answer questions, they do not make decisions, at least not complex decisions. So in the case of a special circumstance the claim is likely to be moved to the back office where a skilled clerk, dealing only with special circumstances will take care of it. What will then happened with the knowledge? The rules are the same, the information gathered are the same, but maybe not supplied by the citizen, instead it is fetched from different databases in the municipality. The clerks in the CC are generalists and they are supposed to follow a checklist, describing in detail what to do. Now, let's assume that the system suggests a decision, based upon the rules and information provided, if it seems to be a standard case. The CC-clerk then has to either accept or reject the decision. If rejection, the case is likely to be removed to the back office.

Seen in the perspective of the epistemologies described above, the CC-clerk deals with the scientific knowledge, the propositions and the objective facts only, while the back-office clerk deals with the wisdom and the immanent knowledge. Assuming that the knowledge have some influence on our world view, we might conclude that CC-clerks will develop a more formal world view with very little ethical aspects, while the back-office clerks will develop a more immanent world view, with a strong ethical component. It might create a gap between the two categories and it might be a source of conflict between them. We have no definite proof of this in our material, but we have found some small indications or at least experiences that can be interpreted this way. An example is what the clerks call "downpipe-thinking", meaning a strict adherence to the process and all the steps into it. When CC was introduced a customer oriented world view was introduced, where the citizens and their needs were in the first place. Seen in the epistemologies described earlier, the "downpipe-clerks" practised a phenomenological approach, while the citizen-oriented clerks applied a more understanding epistemology in the Aristotelian way.

We have in the public sector for many years seen a tendency towards the "New Public Government" (NPG) introduced by Margret Thatcher in the 80's. Introducing a contact centre taking care of about 70% of the cases in a swift and fast way, based upon clear rules, is in accordance with this trend. Also the municipalities will save a lot of money, in doing a more efficient processing. It can be foreseen that the back-office clerks will be reduced. We have also noticed in our studies that the checklists are continuously updated in close collaboration between CC and the back-office. There is a strive for developing more and better rules, thus reducing the importance of the back-office. The consequences in the long run, might be a more inhuman processing in our municipalities.

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