

Daniel Diemers

On the Social Dimension of Information Quality and Knowledge

working paper
research institute for sociology sfs
tigerbergstrasse 2 - 9000 st. gallen - switzerland - +41 71 224 28 17

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Daniel Diemers

University of St. Gallen
daniel.diemers@unisg.ch

Abstract

This paper discusses the social dimension of information quality in the context of knowledge management. For that purpose, the main epistemological concepts of Schutz, Berger and Luckmann, as the theoretical founders of a constructivist, interpretative sociology of knowledge, are introduced and operationalized. Within knowledge management theory the transformational process, which produces situated knowledge out of explicit information, is of central importance, and information quality is accordingly the key concept to analyse, measure and evaluate this process. By focusing on social aspects of the transformational process, a new, different approach towards information quality is made, which nevertheless is compatible with previous research and theory in this field. A small model along the dimensions of comprehension, contextualization and valuation is introduced as a starting point for discussion of the transformational process and information quality.

1 Introduction

The discourse on Information quality focuses on the question of how quality information can be identified, produced and maintained. In recent years this approach has also become an issue in the field of knowledge management, where the systemized, IT-based knowledge infrastructures are dependent on a clear understanding of what actually quality information is. But on another level, methodologies of knowledge management also have to answer the complex question of how contextualized information is actually transformed into personalized, situated knowledge. At this level, the idea of information

¹ Working paper at the Research Institute for Sociology Sfs, University of St. Gallen, Switzerland directed towards the IQ 1999 Conference at the MIT. I owe thanks for friendly and fruitful "knowledge flow" to Dr. Achim Brosziewski, Dr. Martin J. Eppler, Prof. Dr. Peter Gross and Prof. Dr. Georg von Krogh.

quality enters a wider academic scope, because most probably the answers will not completely be covered by the field of business administration or information sciences. For a profound epistemological conception of the transformational process, which produces knowledge out of (quality) information, a scientific knowledge transfer from related fields in social sciences is indicated.²

From my sociological background and a certain affinity to the encompassing thoughts of Alfred Schutz and its scholars came the impetus to actually perform such a transfer within my current field of research and practice. In Sociology the study of knowledge – its distribution, its genesis and its function in society – has an old, longstanding tradition. Within this contribution the emphasize will especially be made on the newer sociology of knowledge of Berger and Luckmann, who have introduced not only a new paradigm with methodological relevance for qualitative empirical studies, but also a rich theoretical framework, based on solid epistemological foundations.³

2 The Interpretative Nature of Information and Knowledge

A good starting point for our argumentation is the commonly accepted differentiation of data, information and knowledge. Let us consider ‘data’, derived from the Latin *datum* “that, which is given“, as all kinds of sensorily perceptive phenomena in our social world, e.g. sounds, letters, figures, pictures, body movements...etc. At a certain point, which can be precisely differentiated by its situational setting of place and time, data can suddenly become *meaningful* and thus relevant to an individual. At this stage ‘data’

² See for example Shanks/Darke 1998, who achieve with a different, semiotic approach similar results on information quality; or Berti 1998, who emphasizes the relative dimension of information quality.

³ Classical works within the sociology of knowledge include for example Berger/Luckmann 1966; Schutz/Luckmann 1974, 1983; Knorr-Cetina 1981. - Stark 1991 gives a general, historical overview. Stehr 1994 and McCarthy 1996 deliver a contemporary, fresh view on the sociology of knowledge, while Kertesz 1993, as an example, demonstrates its relevance in other fields, eg. in the discourse around artificial intelligence.

becomes 'information', having the quality to give the information recipient a specific value compared to not receiving the information.⁴ 'Knowledge', finally, seems to be a synthesis of perceived information, its cognitive processing and a certain actionable component, but in many theoretical approaches to information quality and knowledge management it remains vague, what exactly the social dimension of this transformatory process is.

Alfred Schutz' grand merit, then, is his effort to carry out a profound scientific inquiry of the daily life-world of man, being the fundamental premise of any theoretical approach to knowledge. For, knowledge is always rooted in the believed existence of my daily life-world, being the world of directly experienced,⁵ social reality, which thus becomes a paramount reality beyond question. My personal stock of knowledge consists primarily of recipes on how to solve problems in social situations. With my knowledge at hand I am able to reduce or eliminate the problematic dimension of social situations to an extent that I become part of a social community. Schutz differentiates accordingly skills, useful knowledge and knowledge of recipes, depending on the degree of routinization of the respective type of knowledge.⁶ All these are, following Schutz' terminology, constructions of first degree, in the sense that they reflect our natural perception of the daily life-world. Constructions of second degree, then, are all sorts of theoretical knowledge about constructions of first degree, e.g. scientific theories and concepts.

In order to get a clearer picture of Schutz' ontological framework of knowledge, we also have to look into the question of how the transformational process, which lets

⁴ To be more precise: it changes the condition of the information recipient in a positive *or* negative way. We can say - paraphrasing Bateson - that it achieves »differences that make a difference« Bateson 1979: p5. On the same issue see Machlup 1983 for a semantic analysis.

⁵ *Id est* experienced through direct social observation and in face-to-face relationship with my consociates.

⁶ Here we have an analogy – or even an identical construct with a different terminology – to Polanyi's vividly cited distinction between *tacit* (or implicit) and explicit knowledge. The higher the pragmatically oriented routinization of knowledge is, the more its use becomes implicit and "hidden", with the result of skills being almost inexpressibly applied ("Sorry, I can't explain that really, I think I'll have to show you"). See on the subject of *tacit* knowledge: Polanyi 1985; Nonaka/Takeuchi 1995; Muller 1997.

information become knowledge, is actually embedded in the social dimension. Here it is important to notice that my individual knowledge is structured in a system of relevancies and typicalities, based on a subjective configuration of meaning. Schutz made a concise description of how knowledge is permanently valued and revalued according to my projections of acts, with which I am trying to achieve certain goals I have. Thus, *plan*, *act* and *knowledge* go together and this rather pragmatic view on knowledge is central in Schutz' conception of a social epistemology. The transformational process is then the process of acquiring knowledge out of information, which I'm experiencing in my daily life-world.⁷ The more I believe that specific information is a valid recipe for a problematic social situation, and the more a successful outcome of this social situation is important for one or several of my projections of acts, the more likely it is that I will incorporate this information in my stock of knowledge and position it prominently in my system of relevancies.⁸

3 The Social Construction of Common Interpretative Spaces

In the sixties Peter L. Berger and Thomas Luckmann have developed a comprehensive, influential sociological theory which emphasizes the social construction of what we refer to as our external world. Their genuine approach is founded on Edmund Husserl's phenomenology, Max Weber's conception of an interpretative sociology and Alfred Schutz' theory of daily life-world. The cornerstone of Berger/Luckmann's theory is the dialectic relationship between the subjective reality of the individual and the objective reality of society. While language is seen as a self-referential social system of meaning,

⁷ Please notice that this statement leaves the *media*, through which information is experienced in the daily life-world, completely open. There is, however, a strong point in current social research in the field of new media technology, that information, which is perceived in a face-to-face situation, is in general more likely to be internalized than in a mediated setting, eg. a virtual conference.

⁸ Alfred Schutz describes the acquisition of knowledge as »the sedimentation of current experiences in meaning-structures, according to relevance and typicality. These in turn have a role in the determination

through which we are able to internalize and externalize socially relevant objectivations, a universe of discourse is constantly constructing, deconstructing and reconstructing the social realms of reality through interaction and conversation.⁹ Given this, we are experiencing our social world as a factual reality, consisting of objectivations created by the processes of *internalization* and *externalization*, which are constantly reconciling the individual, subjective reality with the objective, reified reality. Objectivations, then, are the “bricks and mortar of knowledge“ out of which our daily life-world is made, and here it is important to investigate the processes of how objectivations are being created and sustained, up to the point where we can speak of an objective social reality.

In social interactions it would be highly inefficient not to establish certain routines, which help us anticipate and structure social situations. Thus, we can observe a process of habituation as soon as an action is repeatedly carried out. In Schutz' terminology we are sedimenting knowledge of recipes, useful knowledge or skills of how to do certain things. Once these habitualized actions are reciprocally objectivated by several actors, we can speak of a specific sequence of interaction having become a social institution. Institutions, thus, are something that has its own reality, a reality that is experienced by us as an external, binding fact,¹⁰ and every institution has a corresponding set of knowledge, which constitute its semantical content. Knowledge, in this sense, is in the centre of the fundamental dialectic of society, in that it defines the guidelines, through which the process of externalization produces an objective reality. But at the same time knowledge is constantly being internalized as valid and true objectivations of the realm of reality.

of current situations and the explication of current experiences. (...) This acquisition, as a sedimentation of experiences, results from situations and is biographically articulated.« Schutz/Luckmann 1974: 119.

⁹ It is important to mention the transcendental nature of language, which is capable of establishing a context beyond the "here and now" of an immediate social situation and thereby construct and open up finite provinces of meaning.

¹⁰ See Berger/Luckmann 1966: 62. Given this conception, it is obvious that our knowledge of these reciprocally institutionalized habituations is confined to a temporal and cultural specification and is

This process of internalization of knowledge is called *socialization* within the terminology of Berger and Luckmann and is basically a twofold process of experiencing the external world as a meaningful and social reality. The primary socialization is responsible for the internalization of typifications and social objectivations, out of which a specific system of relevancies is constructed, while the secondary socialization is providing role-specific knowledge in an ongoing process, which allow the individual to perform a varying set of social roles and to live in institutional finite provinces of meaning, *Subsinnwelten* that is, which are fragmenting the daily life-world. Furthermore, in the course of socialization we are internalizing specific legitimations of our institutional knowledge, in the sense that a secondary objectivation of meaning is taking place. This legitimation – which, in the end, is an epistemologically relevant mode of justifying a belief in the truthfulness of my knowledge – can socially be constituted on different levels, depending on the complexity of the underlying theory.¹¹

4 The Concept of Information Quality revisited

Let us now put this theoretic framework to the use and service of the ongoing discussion on information quality in the context of knowledge management. As there are far enough theoretical concepts and frameworks in this field, we have to operationalize the rich and solid theory of the interpretative social constructivism of Schutz, Berger and Luckmann, which has been sketched roughly in the two previous sections, in order to derive any practical relevance.

especially subject to change. Every knowledge, therefore, has a historic line of institutionalization, which can be traced back accordingly.

¹¹ Berger and Luckmann distinguish here between four different levels of legitimation, from unquestioned common-sense explications, over scientific theories up to symbolic worlds of meaning, which would be the typical case of religion as a legitimator system. Berger/Luckmann 1966: 100.

If we recall from section 2 the briefly introduced differentiation of data, information and knowledge, we can now apply the interpretative perspective and argue that all perceptions in our daily life-world are by definition data, some of which is purely noise, while other is actual information in the current social situation. This information may or may not be sedimented in our cognitive structures, but if it is, we can speak of an *internalization of information*. Also recalling from the previous sections, the chance of successful internalization depends - according to Schutz/Berger/Luckmann's epistemological conception - on how a certain information corresponds to our system of relevancies, i.e. our prioritization and plans within the daily life-world, and to our already internalized typifications and objectivations, i.e. the information's degree of connectivity to other, sedimented epistemic structures. We could even postulate that an internalization of information will only take place if there is a possible and/or intended future action of the internalizing subject related to it. In this theoretical perspective such individually internalized, actionable information is finally what we refer to as knowledge.

From the perspective of knowledge management this transformational process,¹² which derives situated knowledge from explicit information, is obviously very important and should be considered a conceptual cornerstone of any knowledge management theory. In this context, *information quality* is the key concept to analyse, measure and evaluate the transformational process. By introducing the issue of information quality, we are forced to define measurable criteria for information to be successfully internalized by others and become objectivated, social knowledge. In a second step - which is of high relevance for any knowledge management theory and practice - we could ask, what potentially successful strategies and conditions would influence and facilitate this transformational process?

¹² Please note that this process is *not* about making implicit knowledge explicit, a process which is also sometimes described as a "transformational process" in knowledge management literature.

In defining information quality we have to consider both general literature on production process quality, Total Quality Management (TQM) literature, and contemporary approaches to information quality. A good starting point is the holistic definition of »fitness for use«,¹³ which already comprises the pragmatic and social dimension of information quality. As Kahn, Strong and Wang have pointed out in an earlier contribution to this conference, information can be seen - and this is particularly valid and important in the context of knowledge management - as both product and service.¹⁴ Accordingly, two separate perspectives on information quality can be identified: »quality as conformance to specifications« and »quality as meeting or exceeding customer expectations«. In combination with two perspectives that view information either as product or service, Kahn, Strong and Wang developed and refined the Product and Service Performance Model for Information Quality (PSP/IQ).

Taking up the theoretical conception of Schutz/Berger/Luckmann, it is clear that any value of information resides in the subjective configuration of meaning of an individual, which in turn is socially constructed and can thus be experienced as an external, social fact. In other, more familiar terms we can say that information quality is always relative and depends on the individual or group of individuals that are measuring or judging it. With the same line of argumentation we can say that any benchmarking or standardizing of information quality has to correspond to a significantly large group of individuals' systems of relevancies and typifications, and will - according to Berger/Luckmann - need most probably a solid legitimation theory.

The social dimension of information quality, thus, emphasizes the plan-act-knowledge relationship and the corresponding transformational process information-

¹³ Introduced by Juran in 1974. See accordingly Juran/Gryna/Bingham 1974.

¹⁴ Kahn/Strong/Wang 1997: 82 ff. The following discussion of information quality has been inspired significantly by their work. See also Wang/Strong 1996, Strong/Lee/Wang 1997. Kahn/Strong 1998.

knowledge. In the model of Kahn, Strong and Wang the customer expectations' quadrants of *useful* and *useable* information come closest to this view on information quality. Some of the respective information quality dimensions of these quadrants are reflecting this consistency in an obvious way: *relevancy*, *interpretability*, *believability*, and *reputation*.¹⁵ We notice from these elements that the social dimension of information quality is the key to a successful transformational process. Furthermore, I completely agree with the authors that the 4th quadrant of their model - as a highly social conception of information quality - is rarely implemented or even considered in practice.¹⁶

5 Introducing an analytical model of the Transformational Process

Let me introduce now a small model of the transformational process, which establishes the three major criteria of *comprehension*, *contextualization* and *valuation*.

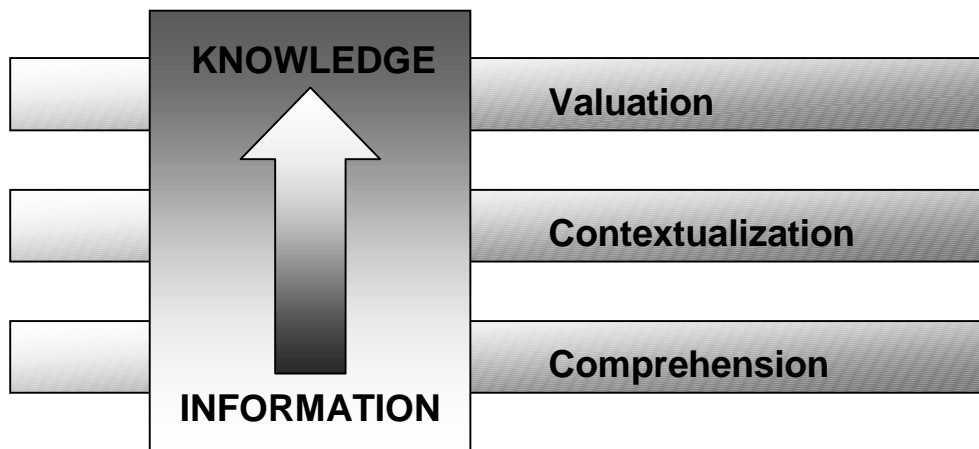


Table 1: A Model of the Transformational Process Information-Knowledge

¹⁵ Kahn/Strong 1998: 106.

¹⁶ This corresponds strongly to my own experiences in this field. The following statement of a practitioner may serve as representative example of such experiences: »Quality [information] to me is not only finding material pertaining to the topic you are looking for, but finding material of the reading level you wish to read at, and in the technical terms you are familiar with (possibly even in the language you prefer to read).« (Found on <http://www.ciolek.com/WWWVLPages/QtlyPages/QtlyDefinitions.html>)

The lowest level is about comprehension and constitutes a common syntactic space as a prerequisite for a successful transformational process. Information is “fit for use“ only if it can be cognitively processed with success. If we don’t comprehend certain information, because, for example, we are not familiar with the language or the syntax, or information seems devoid any logic or far too complicated to us, the transformational process is already stalled at this lowest level.

The middle level, then, is about the process of internalization and constitutes a common interpretative space as a major prerequisite for the transformational process. Information is, as a matter of fact, never “stand-alone“, but always personalized and embedded into a social context and fabric. On this level, thus, the transformational process is contextualized, and its success depends heavily on a commonly established interpretative space with a synchronized semantical interpretation and overlapping typifications.

The highest level is about belief and comprises a space of relevancies, which finally determines our acquisition or non-acquisition of knowledge in the transformational process. Acquiring knowledge includes always *believing* in information to be true or not to be true, and depending on the contextualization we consider persons or labels as experts for certain information, in the sense that they have specifically distributed knowledge about the topic in question. Accordingly, information is also valued on its importance and usefulness for my system of relevancies and my personal plans – here we find the relation *plan-act-knowledge* again – and depending on this valuation the transformational process is finally successful or abandoned.

5 Practical Application of the Transformational Process Model

Now that we have elaborated briefly these three analytical levels, I want to make a strong point on the fact that almost all knowledge management methodologies, which in

most cases have a specific understanding of the transformational process and offer a respective set of facilitating tools, are not systematically including the social dimension of information quality. Especially the model's third level of valuation, which is to a major extent a purely social matter, is almost never considered. Taking into account the theoretical apparatus, which we have derived from the newer sociology of knowledge, it becomes evident that a wider approach could bring significant benefit for both academic and practical approaches to information quality in the context of knowledge management.

This argument shall be supported by a practical application, which has been taken from an ongoing research project on decentralized, server based knowledge repositories. Such institutionalized systems of knowledge transfer can be found within practically all management consulting firms and usually focus on lessons learned, best practice or more general business methodology databases. The question of information quality in this context is, whether or not the stored information can be successfully internalized and later be put into practice by an individual, i.e. whether the transformational process of turning information into knowledge passes all three levels of the model introduced above. As a practical reconfiguration of the model we can ask: how is it possible to facilitate this process through systematic, generally applicable methods?

Starting at the level of comprehension, typically useful strategies are a *formalization* of information, *visualization* by means of symbols and graphs, the use of *analogies* and *metaphors*,¹⁷ which offer alternative, probably better known schemes of comprehension, and thorough *explanation* or *reformulation* of information in the case of several individuals failing to pass this lowest level of the model. On the side of the information recipient *additional training* and *education* can be used to help establish a common syntactic space.

¹⁷ See the section on externalization in Nonaka/Takeuchi 1995: 64

On the second level facilitating methods have to contextualize information in order to establish a common interpretative space. A good starting point is *reciprocal learning* about the other's stock of knowledge, its historical line of acquisition and especially its selfinterpretation by the owner, as past experiences are constantly reinterpreted and modified in order to fit into the currently valid system of relevancies. A possible setting for reciprocal learning could be a *master-apprentice* or *coach-learner* relationship, which allows to openly exchange and *share knowledge* in the course of the transformational process, and thereby establishes a common interpretative space.¹⁸ It is important, however, to notice that an internalization of objectivations is generally more successful if communication takes place in *vis-a-vis* situations. Any form of mediated communication is thus inferior to *face-to-face communication* and in an attempt to synchronize associations and establish a common interpretative space we can make use of these specific dynamics of social interaction.

The third level of the transformational process is about belief and valuation and surely the most decisive – but of course also most difficult – level for facilitating strategies. In the context of supportive knowledge networks it is a typical observation that certain information - which by objective standards would be a clearly identifiable *high quality information* in the specific situation - is completely ignored or neglected. Obviously, there is a problem of belief and valuation at hand. A possible starting point to deal with such inconsistencies in the transformational process is *reciprocal learning* about the other's system of relevancies and especially the projections of plans, goals and the means with which s/he thinks s/he can achieve them. In a second step we can analyse the *prioritization* in the system of relevancies, *legitimatory theories* of social objectivations, which are

¹⁸ This strategy is supported by newer theories about the nature of knowledge, which abandon the traditional view of organizations as confined containers, where different „pieces“ of knowledge reside, and see knowledge within heterogeneous networks of social relationships »that transcend and bypass

currently in use, and possible *power relations* that could affect the transformational process. An especially interesting case here are idiosyncrasies, because they reveal a clash of systems of relevancies and allow an analysis of why and how these systems are contradictory and not overlapping in a specific case.¹⁹ Thus, we could include the *explication and analysis of idiosyncrasies* as a supporting strategy in the course of reciprocal learning.

A second, major strategy, then, is to use social discourses that assign the *attribute of expert* to respective information sources. In the case of knowledge networks we have large amounts of socially distributed knowledge and high degrees of specialization of the knowledge workers. The assessment of information quality in this context is highly dependent on "experts", who can add importance and truthfulness to given information, but who nevertheless benefit from entirely socially constructed attributions. Thus it is an effective method to *monitor and support* the processes of social construction of such attributions, which on a wide scale will influence and facilitate the transformational processes that take place within the system.

After having outlined facilitating methods on all three levels of the transformational process model, we can conclude that the issue of information quality is crucial when it comes to establishing successful transformational processes within information systems. The practical application in this example has been a knowledge repository network of a global consulting firm, but of course other related areas within knowledge management can be an object of analysis as well.

conventionally defined organizational boundaries« Araujo 1998: 331. See on the topic of Common Interpretative Spaces (CIS): Diemers 1998, Diemers 1999.

¹⁹ See Knorr-Cetina 1981: 37. Idiosyncrasies - the psychological expression for very strong aversions against something or somebody - are very reliable indicators for situations, where two completely different interpretative schemes are clashing together and the third transformational level is blocked accordingly. Senge identifies such situations as very harmful in a business context and proposes pro-active »surfacing of mental models« Senge 1990.

6 Conclusions

We have introduced the epistemologically relevant thoughts of the newer constructivist and interpretative sociology of knowledge by Alfred Schutz, Peter L. Berger and Thomas Luckmann. This solid theoretical framework has been used to discuss the issue of information quality in the context of knowledge management. The line of argumentation followed the expectational, service-centred view on information quality, which defines the essence of quality information as *useful and useable information*. We have developed a model that conceptualizes the transformational process, which turns explicit information into individual knowledge, along the three levels of *comprehension*, *contextualization* and *valuation*. For practitioners and academic audience alike, this model – combined with the theoretical foundations of the interpretative paradigm of a newer sociology of knowledge – offers a basic, analytical perspective on information quality and the transformational process, and a rich, innovative source for new approaches and solutions within contemporary knowledge management methodologies.

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About the Author

Mr lic.oec. Daniel Diemers CEMS has an academic background in sociology, economics and business administration, and worked within Deloitte & Touche Consulting Group on a global project in the car manufacturing industry. He is currently writing his Ph.D. thesis on knowledge management with Prof. Dr. P. Gross and Prof. Dr. G. Von Krogh, works on several consulting projects for multi-national companies, and is research assistant at the Research Institute for Sociology at the University of St. Gallen, Switzerland.

For contact e-mail to: daniel.diemers@unisg.ch