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Information Society Services
and the Change of Social Rationality
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Table of Contents

| | |
|---|----|
| Abstract | 2 |
| 1. Second Modernity and Rationality | 3 |
| 2. Global, Risk and History | 4 |
| 3. Meaning, Rationality and Social Action | 6 |
| Meaning and Rationality..... | 6 |
| Social action..... | 7 |
| Rationality and Social | 9 |
| Scientific Knowledge..... | 9 |
| 4. Social Time and Space..... | 11 |
| 5. Economic Action..... | 12 |
| 6. Bureaucracy and Information Society Services | 15 |
| Bureaucracy | 15 |
| Information Society Services | 16 |
| 7. The Change of Rationality | 17 |
| Knowledge Processing, Information Security and Social Relations ... | 17 |
| Rationality in Social Division of Labour | 20 |
| Information Society Rationality | 20 |
| 8. The Social Change..... | 21 |
| References..... | 23 |
| History of Modifications | 26 |

Information Society Services and the Change of Social Rationality

Abstract

The social change described by concepts 'Information Society', 'Network Society' or 'Risk Society' should be analysed as a change in sociality and social action. Human behaviour is 'action' when it is based on subjective meaning. Action is social when it takes account of the behaviour of others and is thereby oriented in its course. Social action is rational when acting individuals take an objective, impersonal attitude toward themselves.

Concepts 'meaning', 'rationality' and 'social action' should be understood by concepts 'knowledge', 'probability' and 'risk'. Their change is based on development of social risk management environments into global. In different social environments knowledge relation, where social interaction is based, creates forms of information as tacit knowledge, conceptual information and network information.

Concepts 'Risk' and 'Global' consider same social relation. Socially global is coincidental event without no risk probability and consequences specified; or social meaning and rational social relations defined. Rational action is based on risk management. In global environment this leads into probability based social and historical formations.

Social action is constituted of dimensions risk and probability which form social dimensions global and history. Social is a continuum of these dimensions on foundation of knowledge relation. Consideration of social based on probability does not consider existence of social relations in a certain moment but their continuity that is attached with their meaning. Their probability degree is varying. This means the change in social rationality.

Instrumental rationality is developed in rational risk management when selections are based on global, risk dimension of action. The change of global risk management, on basis of development of knowledge relation, leads into change in rationality where the relationships of means and ends should be defined on basis of probability distributions.

In rationality change information society service is developed into dominating economic and administrative social relation. It is based on communications networks. Forms of management, information processing and information security developed in organization are transformed on basis of information society rationality. In its core are the social processes of knowledge development concerning all forms of interaction, information security as basis for socially rational information and continuous social relations on probabilistic basis by information security Bindings.

1. Second Modernity and Rationality

The change in industrial society, started at the latter part of the twentieth century, has been characterized by several concepts, as Information Society (first proposed by Tadao Umesao at 1960's, afterwards several theorists), Network Society (Manuel Castells, at 1990's) and Risk Society (Risikogesellschaft, Ulrich Beck, Anthony Giddens, at 1980's and 1990's). For all concepts concerning this change has been presented several, good theoretical and empirical conditions; they are proved to be relevant. It can be supposed that all descriptions, regardless their seeming differences, are valid. It is essential to understand how they can be valid together (Mäkinen, 2007/8¹, Mäkinen, 2008, 1).

Change in question is usually described by increasing use of ICT-systems and information in production and administration. The most recent, interesting, description is the concept 'ubiquitous network' (WSIS, 2003, 2005), communications network stretching out its influence into all forms of social life. It is however impossible to show that these phenomena would represent a change comparable to the transition from traditional society into modern industrial society.

The social change should be analysed through the social action itself. Social action is rational and involves a specific meaning for acting humans. Rationality is developing into continual reflexive rationalization of environments of risks (Beck – Giddens – Lash, 1994, Beck, 1997). This 'reflexive modernization' creates 'second modernity' (Beck). It means a 'rationality reform' (Beck, 1994, 33, Beck, 1997, 124 – 126).

Rationality in this connection is a social form of thinking and "thinking in a social manner is by no means natural" (Zerubavel, 1999, 110). Rationality can have a different form in social formations; or actually the differences between social formations may be based on differences in rationality.

Principal property of second modernity is its developing into global formations and the dissolution of 'society' paradigm based on nation state (Mäkinen, 2007/8, Mäkinen, 2008). This is the main trend of current social change. It is principally connected to the change of rationality.

Modernity is changing. Second modernity is global.

Its connection with knowledge and information and their transference in network is a form of enlargement of social interaction. It is a property of knowledge to be deliverable unlimited, but the modern special characteristics of knowledge are built on global deliverability on network.

As a definition of reflexivity can be used the following: "The reflexivity of modern social life consists in the fact that social practices are constantly examined and reformed in the light of incoming information about those very practices, thus constitutively altering their character... All forms of social life are partly constituted by actors' knowledge of them" (Giddens, 1990, 38).

¹ Documents in yhteiskunnantieto.fi/White Papers series are referenced by year and number in series. These do not correspond to each other; the updated versions of documents keep their original number.

Economic and administrative activity is developing into Information Society Services. This is principally connected with society's dissolution and globalization. These services are so far better known by a special case, a boundary value, as an 'electronic service', eService or eBusiness. Development and function of information society services is principally a social, and only secondarily a technical question. The concept eService is an extension of traditional 'bureaucracy' model of rational organisation, and sufficient only to describe some formal modes of information, processes and networks based on this. It should be replaced by more general concept; informally called also 'kService' or 'kBusiness', where 'k' stands for 'knowledge'. Its rationality is based on global networked knowledge.

2. Global, Risk and History

Risks are experienced by humans; they are not external facts. Risk management separates 'threat' and 'risk' (ISO 27001, ISO 27005). Threat is experienced by a subject. Risk is a threat specified by probability and consequences. Management based on this specification of risk creates the social trust where social relations are based on (Giddens, 1990; Giddens, 1991).

In general case risk is based on coincidental events; coincidental in the sense that they are not socially specified, but must be taken into account in social action. Specified risk is a social incident which has social meaning and can be basis for rational action. The appearance of risk and trust based on it presupposes a historical process which constructs them.

Risk "becomes central in a society which is taking leave of the past, of traditional ways of doing things, and which is opening itself up to a problematic future" (Giddens, 1991, 111). In traditional society exist no concept 'risk' in the sense we use it; it was not needed because tradition, history dominated social relations or even created them. Either it is unnecessary or irrelevant to use this concept when discussing the elementary creation of social meaning, Self and rationality. Their creation can happen in simple social interaction in proximity and in present, or 'near past', where the importance of risk is marginal and embedded into action itself. Concept is needed after social interaction is not simple any more and has no experienced spatiotemporal dimensions but social relations are "disembedding ... from local contexts of interaction and ... restructuring across indefinite spans of time-space" (Giddens, 1990, 21).

The general concept of social interaction requires concept 'risk'. Socialization as development of social forms is connected to the individual selections in interaction. When interaction is considered in social relationships connected with global information transfer in external forms, network information and network connections, the probability basis of selections is essential. General social formations and functions based on trust require risk management as adjustment to environments of action.

Concepts 'risk' and 'global' consider same social relation (Mäkinen, 2007/8, Mäkinen, 2008, 3 - 8). 'Global' can have two meanings: geographical and social. Geographically global can be socially local if it is managed by a common concept, as for example a part of a global service or organization. On the other hand geographically local can be socially global when it appears as a risk to management. This is quite obvious in relation to the modern ubiquitous communications network (WSIS, 2003, 2005) where geographical distance has no

relevance from the point of view of network's connections or interaction. Risk determines the social distance and socially global.

Socially global can be defined as relationship which has a risk probability equal to 1. It is also coincidental event without no risk probability and consequences specified; social meaning or rational, reflexive social relations defined. The problem is, how from socially global are developing the rational social formations.

Knowledge relation² is whatever on knowledge based meaningful relationship where conscious individuals participate. It is a continuum of global and history where global is determined by risk in relation to other individuals and external world and history as continuity of relation depending on probability. Knowledge relation presupposes always both 'spatial' and 'temporal' social dimensions.

Knowledge relation is based on knowledge transferability. That should not to be described as a property of knowledge, but as actual uses of it. The presentation of empirical forms and meaning of knowledge in action determine its content. This may include whatever form it has, and in whatever relation it exists.

Social is constituted of activity mediated by consciousness and according to it constituted individual activities of concrete people. Activity based on knowledge relation, social course of events, forms social relationships.

Knowledge relations, where social is constituted, are global and historical. Global is 'spatiality' of social life. History is a dimension of social based on rational socially probable formations. Global represents 'extension' and 'risk', history 'continuity' and 'certainty'. Global has always existed, even when geographically global is not realized or experienced. It is based on knowledge relation limited only by knowledge transferability.

According to global risks are made risk management selections. They are rational but in relation to global coincidental. This builds global component of risk management. Global is meaningful. History is based on rational selection on basis of developed probability. This builds historical component of risk management. Global is constituted of same events as historical probability, but it has no probability having historical continuity. Global and history are knowledge relations of action on basis of risk and probability.

Although risk management is based on probabilities, it creates social relationships where probability is embedded in social institutions, or latent, as in traditional, or even in (first) modern social rationality and relationships. In modern society, capitalism, probability basis is apparent in economic relationships. In second modernity it is apparent even in administrative and social relationships.

'Global' is mediated by information. Interaction is not limited into a specific environment. Forms of information, as knowledge, actual information or network information, are forms of meaningful relationships of humans into global information and risks involved with it. In conceptualized information probability is embedded in social institutions. The contingency of global, ubiquitous information

² Concept 'Knowledge Relation' ('tietoyhteys', in Finnish) is used first to correspond concept 'communication' (Mead, 1972, 1980). Concept has however larger meaning: it denotes relationship mediating social actions connection to any incident 'in global and history', also relationship to continuum of global and history where social is based on (Mäkinen, 2008, 54 – 80).

is actually realized in knowledge connected with the human activity, when conceptual information is regulated by continual social formations and their risk management functions. Knowledge and information in network are closely connected; both are network information, one in immediate human experience, and other in global network connections.

3. Meaning, Rationality and Social Action

Meaning and Rationality

Concepts 'meaning', 'rationality' and 'social action' should be understood by concepts 'knowledge', 'probability' and 'risk'.

Social interaction is mediated by knowledge; it is based on knowledge relation, in elementary form communication (Mead, 1972, 1980). Knowledge can inversely be understood as mediating social interaction. Knowledge should be understood by the forms of interaction. Its description as a 'property' of human conscience is a same kind of an Aristotelian thought than 'heaviness' as a property of a thing.

In interaction of conscious people on knowledge can be connected properties as meaning. According to it is possible to specify other properties of knowledge as validity. Mediated by knowledge relation is developed social action and social relationships. These relationships do not build on any individual or personal knowledge content but on the flow of knowledge and information possible in communication in the social formation in question. Knowledge relation can mediate information in different forms, utilize external carriers and be based on connections geographically on different wideness. Knowledge relation can be build over the concurrence experienced in activity; it can consist historical information.

In classical social theory 'action' is denoted a "human behaviour when and insofar as the acting individual attaches a subjective meaning to it... Action is social in so far as, by virtue of the subjective meaning attached to it by the acting individual (or individuals), it takes account of the behaviour of others and is thereby oriented in its course" (Weber, 1976, 1; translation Weber, 1947, 80).

'Meaning' is subjective, but it develops socially. Its central feature is orientation of activity to 'others' and in this sense the taking on account the situation of them. This orientation is based on communication. With it is developing something objective in social relationship, first significant symbols, which create language (Mead, 1972, 75 - 82). On its basis develop further the presentation forms of conceptual knowledge (Nonaka – Takeuchi, 1995, 56 – 90), as documents. The structural presentation of conceptual information builds a database of information processing system. Global knowledge in social interaction builds network information, which is concurrently globally usable (without being away anywhere).

Rationality is formed of meaningful social action where acting individual "gets outside himself" and takes "an objective, impersonal attitude toward himself" and thus "becomes an object to himself" (Mead, 1972, 138). She/he ('I') becomes an object ('me') for himself when he takes into account the attitudes of others to himself. This twofold relationship builds a conscious Self which forms social relationships, instead of coincidental 'others' (Mead, 1972, 140, 144 – 164). The first comprehensions where coincidental others must be 'placed' on are space and time. This is the first presupposition of meaning.

Former is a theory of historical development of conscious Self and social relationship. Principally it can be a relationships between two people, social groups, or a general relationship to coincidental 'others'. In general case the relationship involves a risk, which must be managed for meaning and rationality to form a social relationship. In modernity and second modernity this relationships to risk has their particular forms. Change in social rationality can be described as change of risk treatment and its environment.

There is no restriction of interaction's wideness in social realm. It does not depend on the medium either. This has an obvious connection with the change of social formations in information, network or risk society. Essential is the form of social interaction building-up with knowledge forms, interaction based on transferability of information.

Social action

Social action, as meaningful activity oriented to the behavior of others, is classified into types according to mode of orientation (Weber, 1976, 12; Weber, 1947, 104 – 105): 1) rational orientation to a system of discrete individual ends (*zweckrational*, instrumentally rational), 2) rational orientation to an absolute value entirely for its own sake (*wertrational*, value rational), 3) affectual orientation by the specific affects and states of feeling of the actor, 4) traditional orientation, through the long practice. Traditional and affectual orientation can be close, a borderline, to value rationality because a specific, individual end is not aimed at.

Concept 'selection' is central for rationality. When activity is oriented by instrumental rationality the means are selected according to the individual ends. In value rationality certain means can be used for different purposes available to the actor selecting the one end which is considered more valuable. The relation of means and aims is the criterion of the choice and right and wrong decision (Bauman, 1990, 112).

Means and ends are selected in existing knowledge relation which is limited by transferability of knowledge, in whatever form it exists. Also in traditional activity selection is important. Then tradition specifies the knowledge relation of possible means and ends; it is specified by historical probability.

In selection is taken into account two dimensions: behaviour of other people and socialization into a certain continual form of activity, a social relationship. In general environment, taking into account the 'others' is global relationship including risk. Knowledge relation, where it is based on, is not limited by experience of people, but by transferability of knowledge 'in space and time'.

Selection itself is rational. When its environment is global, selection is coincidental in connection to spatiotemporal dimensions; is related to other independent selections of independent actors. In global, by risk determined knowledge relation, is developed connection to coincidental targets of selection. According to it is built a social global dimension, and in that sense coincidental social relationships. According to history selection is a probable and continual social relationship; is related to by probability determined selections of other actors.

Rationality means decision making in interaction on basis of selections by probability evaluation. It has dimensions global and history. The relationship of these dimensions is based on knowledge relation specified by forms of interaction,

selection and rationality. Different forms of rationality mean variation in meaning of action. Social meaning is based on risk management by probability. Social has degrees depending on probability of risks managed. These are dependent only on knowledge relation. When knowledge relation is based on transferability independent of experience, it is global. It however is developed into several forms of rational organizational formations which have local and temporal dimensions.

There is a connection to geographical distance only dependent on knowledge transferability. It is not a property but the actual movement of knowledge in social relationships. When interaction is dependent on immediate experience it is probable that it has a statistical connection to geographical distance. But when interaction is based on ubiquitous communications network and external presentation of knowledge relation - in communications network independently of form of knowledge - the smaller is this probability. This dependency is statistical but statistical relations are important. Also tacit knowledge, and gestures, speech, are possible to transmit in communications network.

Principal property is degree where knowledge relation mediates probability of alternatives. Selections are always principally coincidental and directed to certain object only on foundation of socialization process. If meaning is based on continuous selection on basis of global knowledge relation - instrumental rationality - objects are selected on basis of coincidental alternatives and risk in selection becomes dominating. It may statistically also increase social distance. If meaning is based on knowledge relation based on socialized experience, it is dominated by continuity of values considered certain. Then probability of social relation increases. This may statistically mean proximity and duration.

Instrumentality and value rationality are both always dimensions of action. Instrumentality presupposes that end exists. Instrumentality is dominated by probability assessment, value rationality by trust on continuity in course of action, independently is it based on events known real or pure belief.

Rationality connected with the economic activity is essentially instrumental (Zweckrationalität) and the changes, which should in this connection be described, concern primarily it.

This kind of rationality is first relevant in capitalism, in its economic relations; or these economic relations are formed when instrumental rationality develops. It should although be a characteristics of all economic action in genuine sense of the concept. Capitalism is a historical, as a matter of fact Western, Occidental phenomenon; not a 'natural' phenomenon in any way. It had historical presuppositions, which realized only in Occident. (Weber, 1963, 61; Weber, 1971, 76). The presupposition and result of capitalism is predictability and reliability of activities on basis of rational profit seeking and reliable working-moral. "Capitalism is identical with the pursuit of profit, and forever renewed profit, by means of continuous, rational, capitalistic enterprise" (Weber, 1963, 4; Weber, 1971, 17). This kind of enterprise is functioning in the framework of social division of labour. Working moral is regulated by working time and with abstract, formal rules of productivity.

In global environment rationality is developing further from its instrumental form. The constant relation between means and ends is possible when knowledge relation has local connection for example on basis of limited transferability of production factors and commodities. The single and direct relationship between

them is not possible in connection to global risks. Then both ends and means are probability distributions of several, meaningful means and ends.

Rationality and Social

Rationality is based on probability, or likelihood, calculations of set of subjects considering risks involved in their environments. Rationality itself is a probability, or likelihood, not an empirical certainty. It requires that "we have to 'take changes' and to 'run risks'...of our basic uncertainty to the outcome of our projected interaction" (Schutz, 1962, 33).

The meaningful content of action is a starting point of social relationship, and should be understood by probability; "the social relationship thus *consists* entirely and exclusively in the existence of a *probability* that there will be, in some meaningfully understandable sense, a course of social action" (Weber, 1976, 13; Weber, 1947, 107).

A probable course of social action means that humans involved in activity can trust that action takes place in a way they have assessed. It seems reasonable to state that it is developed through probability calculations towards a specific set of risks in relation to coincidental others.

Rationality is also developed on basis of probability assessments. Selection is rational but it has not as such properties 'instrumental', 'valuerational, or 'traditional action'. Sets of selections are to be considered as global. The properties are attached to global set of of selections and activities on developed, continual, probable social relations. Traditional activity can be both instrumental and value rational; risks involved with it are dominated by continuity. In modernity these properties are equal. In second modernity global dominates.

In a set of selections of ends, possible to reach with certain procedures, there is a 'limited space' where is also limited what selections of procedures are in principle possible. In knowledge relation, where actions are based on, the possible set of selections is limited. The selection of end is dominated by social probability and the set of selections is historically known. In that sense value rationality and traditional action are in a close relation to each other; actually traditional action develops into value rationality.

If otherwise a set of ends are selected, set of means to reach it must be adjusted. But the set of alternatives is not a general, but a socially possible set of meaningful selections. It is limited by management of risks. The end in instrumental rationality is not arbitrary and the means do not adjust unlimited, but they are dominated by accident in relation to value rationality. The foundation of instrumental rationality is global knowledge relation and global set of selections. To be meaningful it is related to risk management's global forms. When global risks management is related to production, instrumental rationality is limited by commodities, raw-materials and means of production available on market.

Scientific Knowledge

Scientific Knowledge³ should be defined relative to risk management environment. Generality of properties in a general space and time is possible to specify only on

³ Here is discussed on social sciences.

presupposition that 'general space and time' are relevant concepts. In social sciences they are not.

Scientific knowledge cannot either be defined according to truth value. Scientific knowledge is true only by probability and based on probability. It cannot be dependent on historical continuity but on approval to take account of external incidents and ability to conceptualize events, change these concepts and presentations of events according to this. Scientific represents 'global' in knowledge. Knowledge is ubiquitous also in this relation; between belief and truth as properties exist no principal difference.

In social sciences this means concepts specified according to meaning in risk management of global incidents. Concepts based on general validity of a property should presuppose an absolute concept of space and time where generality is specified. Meaning should not be understood by a property of action but actual action going on in a risk managed environment. Human activity should be interpreted globally.

Meaning is a social content of action and relationships having a history. It is based on historical incidents having probable consequences. There exist no properties which can be called social but only historical incidents mediated by knowledge relation which form by certain probability a meaningful social relationship.

In classical social theory is specified idealtyp relative to social meaning and on generality based typology⁴. The meaning of social action is presented as a theoretical and rational pure type of action, ideal type (Weber, 1976, 2 – 4). It is based on understanding of social meaning but is used to explain activity. Causality can exist only between historical events. Deviations should be assessed and explained by rational activity presented in ideal type.

Generality type can be founded on pure random variation. Although events are rational and meaningful, as action, they are coincidental in relation to global. They represent however risk management in sense of meaningful action. This may be called global risk management, or global component of risk management and this kind of typology a global type. Then it is possible meaningfully to say that events follow a general law.

The events are unique and historical and their features special. The set of incidents is coherent but they have relation to global and rational, historical risk management. Ideal type is a continuum of global and historical dimensions of action. Then social action ideal type describes has a historically developed continuity which makes it a meaningful social relationship. Only historical events exist socially. Incidents themselves have a global and a historical dimensions, risk and probability.

⁴ Social typological analysis can utilize three types: 1) a historical type, 2) a general or on the average based mass occurrence type and 3) a pure type specified by meaning of social action. Historical type limits meaningful action into specific time and place and usually also into specific society. General type is based on same kind of evidence, but is not limited by space and time or social relation, but presupposes their 'absolute' definition. Ideal type is developed according to relevant aspects of phenomena in consideration (Hekman, 1983, 38 – 43).

Generality type can be compared with the concept 'social species' or 'social type' (Durkheim, 1982, 108 – 118). It is supposed that on them is principally arrived on foundation of empirical generalizations. In social formations this is not possible, because there exist not such a 'set' of social phenomena, whose generalization type could be. 'Generality' does not mean 'all possible worlds', but global dimension where phenomena exist only as risk on probability 1. Generality in social relations is developed only through meaning build on historical risk management. The 'meaning' of ideal type can be described by concept 'managed risk', which governs historical contingency.

Ideal type understood as relationship of global and history is 'real'. Its reality cannot be attached with properties of social events or relations. Historical deviations of it are as incidents 'certain' in relation to experience and time and space specified in it. Ideal type instead is probable in relation to them. It cannot be defined in relation to time and space but by concepts of global and history, risk and probability.

4. Social Time and Space

"...reality exists in a present" (Mead, 1980, 1). Past and future we know by probability, but "higher degrees of probability and added evidence imply that there is or has been some reality which we are bringing to light" (Mead 1980, 6, also 32 - 33).

Experiencing of past or future on foundation of probability, should not be understood according to level, quantity or validity of knowledge that exists on these dimension. These dimensions are attached with experience as real independently of amount knowledge there exists (Kant, 1971). We can outline that "the space that I conceive beyond the horizon is still space, identical to the space I see. The time that passes endlessly is made up of moments identical to those I have lived through" (Durkheim, 1995, 82). There is a certainty, can be trusted on existence of both time and space. This can be based upon natural science, or generally measured global time and space.

When these dimensions are considered as social history and social relationships, formations or structures, they have social meaning and they are foundation for rational action. This is based on certainty of present and the probable knowledge about continuity of dimensions outside it. The social meaning of dimensions is bound with experience and, if they are global, our certainty is relative to the knowledge and risk assessment we have on these phenomena. They are also historically developed social knowledge relations and their different forms are dependent on relationship of global and history. Social is constituted as continuum of these dimensions and probability basis concerns consideration of social, this continuum. It does not consider existence of social relations in a certain moment – meaningful only in relation to experience – but their continuity that is attached with their meaning. This is always based on probability, but its degree is varying. This means the change of social rationality.

Knowledge about past, future or social space is knowledge relation by probability specified by relation of risk and continuity. Its meaning is developed when risks of a course of events are managed so that rational action is possible and a historical continuity build. Knowledge relation is independent of time and space. In experience knowledge, especially in the form of information, can transfer in time and space unlimited. It can be inherited from thousands of years and stretch out

into geographically global social relationships. Interaction based on knowledge relation is founded on ubiquitous global and historical knowledge. In rational action selections are based on this ubiquitous knowledge. There it has meaningful global and historical dimensions.

Global, as a dimension of knowledge relation, is mediated by transferable information, history, as a dimension, by in activity functioning knowledge. When connection to global and objective time is based on transferable information it is not empirical certainty as experience of time and space in active knowledge. When rationality is developed on basis of these it can have different forms presented in different social relations, groups, norms and rules and their relation to time and space. These form rational social formations as traditional communities, bureaucratic organizations and information society services.

Present is certain, includes no risk. But in risk situation "past loses its power to determine the present" (Beck, 2000, 214) and present its hold on future. By tradition power of past exists. Tradition too is developed from probable historical events but is not understood as such. Knowledge builds a relationship to past and partly to future. It includes social trust on continuity of risksless 'presents' of social formations and social trust required for construction of social relationships.

Development of knowledge forms can be described as historical and global enlargement of information and understanding. "The double movement towards larger and larger units of social integration and longer and longer chains of social interdependencies also had close connections with specific cognitive changes, among them the ascent to higher levels of conceptual synthesis"... "The cognitive mastery of connections over longer distances in time and space was an indispensable aspect of lessening fantasy content, of an advancing reality-congruence of knowledge" (Elias, 1992, 179, 180).

If the hypothesis concerning absolute social space and time is abandoned, situation seems to be different. The significance of knowledge and information, their social meaning, cannot be an absolute, Aristotelian, property of knowledge, but is created in social relationship. 'Larger units of social integration' and 'longer chains of social action' become socially meaningful when information of them becomes a managed part of social action; before that they just exist, as risks in a coincidental world. Social space and time are historically developed. Incidents without these dimensions are pure risks.

It is possible to conceptualize historically that larger and longer connections develop in technological development but this does not mean that they are socially meaningful, build social relationships. Only meaning makes for example possible "a steady expansion of human control over non-human nature" (Elias, 1992, 180). It is presupposed managed risk to develop social relations. If this has connection to geographical distance or temporal course, it is a statistical connection and depends on form of knowledge relation.

5. Economic Action

The presuppositions of capitalist economic action - everybody on the market is working according to the rational principles of profit seeking and labour power follows a rational working ethics - should be analysed in the framework of global risk management in global market. 'Global market' in this relationship means an

already rational, 'managed' system which is no more global in the social sense of the concept.

Instrumental rationality is a feature typical to economic action in capitalism, but not only in it. In traditional forms of exchange are developing forms which have properties of instrumental rationality, although other too. They are realized as Gift (Le Don). It is a value in itself but presupposes reciprocity; the recipient has obligation to reciprocate (Mauss, 1990).

The traditional society was based on elementary risk which was not experienced as risk at all; only as existence of coincidental others and coincidental incidents. It is dominated by present and history, tradition based on these. Rationality in traditional exchange is based on community, on a relatively continuous and riskless social relation. On the other hand it is based on time dimension. In commodity production starting point is that in the market is found a product that is needed. In exchange based on Gift time is needed to make a reciprocal service, and exchange is bound to time-limit (Mauss, 1990, 36).

Time dimension where this exchange is based on, is a knowledge relation constituted of probability of community which makes exchange possible and forms a tradition. Relation to continuity and selections made in it, is the most relevant factor in this exchange. There is not required any suppositions on properties of exchange.

Working ethics is based on management of working time. Between years 1300 – 1650 in Western-Europe happened a change in the concept 'time' (Thompson, 1982, 299 – 304). In traditional society time was 'task-oriented', flexible according to the work carried out. As soon as developed a division of labour and the employer-employed relationship, the need for the synchronization of labour increased and time became the employer's money and the shift to timed labour began. "Time is now currency; it is not passed but spent" (Thompson, 1982, 304). Puritan ethics, the core in the Weberian concept 'The Protestant Ethichs', valued time as a commodity (Thompson, 1982, 309) and the wasting of time was the first and principally heaviest of all sins (Weber, 1963, 167; Weber, 1971, 157).

Continuity of social relation created an absolute social time. Its development leads into the global time, "empty, neutral and detemporalized clock time", applicable anywhere and any time (Adam, 2004, 117). Concept is principally an instrument for management of working process and market relationships, later also a method for synchronizing the processing of computers⁵. It is based on division of labour and commodity production. It is an indispensable part of rationality in 'disembedding' social relations and closely connected with the inception of concept 'risk'. At the same time it creates dimensions where social incidents have a specific, fixed position in time-space; they are temporal and local.

A meaning in economic action, in exchange "... is concerned with the satisfaction of a desire for 'utilities' (*Nutzleistungen*)."

(Weber, 1976, 31; Weber, 1947, 145). By utilities the economic action of individuals is oriented to the estimated importance of the specific and concrete advantages (Weber, 1976, 34; Weber, 1947, 151). Utility is developing on basis of probability estimations of advantages.

⁵ For example a global ICT transaction processing system requires global synchronization of time. The concurrence and succession of transactions updated must be determined for updates to happen in an intended way.

Utility is commonly concerned as an individual, even egoistic principle of instrumental rationality. It should not be identified into need. Utility is possible to have on any article or service when need is directed into a specific article or service. But utility also requires these latter ones. It is global and historical.

Scientifically it is not possible to propose that utility should be a property according to which activity is directed. Such an argument would be Aristotelian. This kind of meaning activity has as result of historical selections, rational risk management. Selections are directed into global coincidental incidents. In this development is built a probability to act in a specific way; a reason for activity.

Utility is based on instrumental rationality and its specific knowledge relation. As instrumental rationality, it is a historical form. Selection in general has not property 'instrumental' and also utility has this meaning as property of human behaviour only in special relation of global and history where global is becoming dominant in relationship. Instrumental rationality is based on selections on basis of global knowledge relation where objects are selected on basis of coincidental alternatives and risk in selection is essential. When division of labour dominates risk management environment this is however connected to the historical – and local – factors of production and commodities.

In general framework rational orientation as utility must be analysed in relation to global contingency. Rational selections are in relation to global coincidental. About these selections is developed a social formation in a special relationship of global and history. The environment where this develops is social division of labour. Commodities are in market, especially when labour power becomes a commodity and 'immediate producer' selling his labour power, must get his goods from the market (Marx, 1972-1, 181 - 191).

In internal units of social division of labour is developed a social continuity, as consumers' utility, organizations' bureaucracy, firms' profit, and in larger social units classes and social (status, Weber) groups. But their relation to global market is governed by probability⁶. Also internal units of division of labour are developed into their continual form on basis of probability and risk, but its role in these social relationships is recessive. The knowledge relation where these are based on, is mostly constituted of knowledge forms active in immediate experience and interaction, when in the market this knowledge relation mediates only the immediate exchange but not assessment in time and space.

Utility is a social relation to division of labour; already specified relation to global incidents. This relation is specified by probability for having the advantages estimated. This is dependent on estimation of advantage and possibility to get it. It is also relationship of supply and demand in relation to global.

Instrumental rationality is connected with all economic activity. It is not at all clear what is first: economy or instrumental rationality. The economy as such should be understood as a historical phenomenon. It has not always existed

⁶ Market governance requires also governmental activities. - The financial crisis that began in USA at 2008 has been called 'exceptional', because the former big governmental intervention into economy ('New Deal') happened 75 years ago. Meanwhile similar interventions have however happened in many other countries (as in Finland 1991). When the development of an instrumental rationality based economic system has taken circa 2000 – 3000 years, interventions at 75 years interval are not only regular but even continual.

(Sahlins, 1981, especially 1 - 39), and perhaps will not always exist. 'Scarcity' does not mean absolute deficiency of goods and society can be affluent without producing large amounts of goods (Sahlins, 1981, 10). It also may not exist when social is dominated by rationality based on global dimension.

The forms of exchange and rationality connected with them are bound to relations of space-time. Geographical or temporal distance do not explain such forms. Question is rather on risk and continuity in these dimensions. Any presuppositions of properties of action are not needed for their explanation.

6. Bureaucracy and Information Society Services

Bureaucracy

Bureaucracy is a rational, exactly instrumental rational, on legal authority based ideal type of organization (Weber, 1976, 124, Weber, 1947, 301 - 302).⁷ It is a typical form of organization in market economy and on capitalism based forms of production.

Bureaucracy is based on the acceptance of certain principles: legal norms and rules; persons in authority occupy an 'office'; they obey authority only as members of organization and according to the rules; a person in authority has that position only as a member of the impersonal order (Weber, 1976, 125; Weber 1947, 302 – 303). Bureaucracy is based on use of information and expertise (Weber, 1976, 128; Weber 1947, 310). Nowadays it is also based on database – application – technical solution form of information processing system.

Social is interaction mediated by knowledge relation and includes management of global risks. Organization is not a structure a priori but constitutes of social action which has developed in relation to rationality and knowledge. Utility, division of labour and bureaucracy are a trinity connected with each other. Further there is attached the continuity of means of production as property where organization is formed around.

Dominating knowledge in organization is based on conceptual transferability and continuity. Organizations' conditions consist of risk management environment developed in social division of labour. There organization is relatively probable and continual social relationship, but not even there the basic social unit. Knowledge relation in bureaucracy includes tacit knowledge mediated in personal interaction and network information. Especially when the latter becomes dominating is developed information society service.

In bureaucracy the other forms of knowledge relation are covered by dominating conceptual information, but they exist, although secondary. Tacit knowledge exist in all human interaction. Network information, which includes 'all' knowledge, and in last instance a risk does it have meaning required by knowledge at all, is hardly developed when bureaucratic organization is formed.

Bureaucracy is a form of global risk management. It is a unit in social division of labour, whose relation to global is market dominated by on probability based rationality.

⁷ Other forms of legal authority are according to Weber traditional and charismatic types (Weber, 1976, 124, Weber, 1947, 301 - 302).

Also information used in bureaucracy should be considered in relationship to global information. Information creation is part of an organizational process. Information in bureaucracy is a continuous result of knowledge development based on managed risks (Mäkinen, 2008, 62 - 67, Nonaka – Takeuchi, 1995, 61 – 73). This is embedded, or 'consolidated', into managed conceptual information.

Bureaucracy concept does not specify knowledge as a form of interaction. Form of information in global environment, network information, is technically handled according to modes people are searching information and statistical procedures of its handling. Socially it is determined by a social process of risk assessment based on probabilities. 'Network' in this connection is possible to specify only according to risk management and can include whatever type of interaction.

When information is globally transferable and at the same time continually developing in human interaction, there exist not such a fixed organization with fixed time discipline as bureaucracy. In this sense presupposition of bureaucratic organisation is socially local information connected with the time based ethics in working process and written rules.

Bureaucracy is not an according to meaning constructed 'ideal type' or 'pure type' of rational organisation; risk management creates also tacit knowledge and network information. Bureaucracy is a border value which takes into account only formal, externally presented information. These are dominating features in time based organisations but become obsolete with the development of new forms of interaction, information and knowledge.

Information Society Services

In network organization, in contrary to traditional organization, it is evident that forms of organizing are interaction based on knowledge relation and risk management. Network organization is a basic form for organizational formation; bureaucracy is a special case.

The development of information society services means that networks become dominating in production and service relations. Information society service is a service whose production, delivery, and usage are spatiotemporally independent of each other. This independence is based on use of knowledge and information in their global forms and their transfer in global communications network.

There is a principal difference between forms of social relations based on separate units in division of labour and their network. If production and service units are separate organizations, even in co-operation, the social relation to global risk develops in framework of this unit and separately 'socially', as regulation of community or state. On products as commodities is based formation of global economic system, but not formation of general social system. In economic system it is not built global predictable social relations but they exists as risk society and risk network (Mäkinen, 2008/3). Predictability and reliability in global relations is built on hierarchical relations outside the economic system.

Action in network is principally global, not regulated by any community or state. But there is not either developed a predictability or reliability on basis of commodity production, but the information society service rationality is developed.

Social change at information society inception means a change in information, interaction and technology used in them. The most influential change lies in information. Information society service must always be defined by global knowledge resource. In general meaning and rationality are created in relation to all communication and information carried. Then it also includes risk. Continuity of social relationship in information society service is directly based on probability. It must be managed by knowledge development process, information security and social formation based on management of these.

Usage of knowledge or information do not separate information society service from commodity production, neither use of communications network. They however create a new form of social interaction which is global in principle. This interaction is based on social reflexivity (Giddens, 1990; Beck – Giddens – Lash, 1994) and on probability. There is nothing new in it. It is basis for construction of Self, social action and economic and formal, 'bureaucratic', rationality. However some remarkable changes are to be pointed out. And even more: we can understand better elementary, capitalistic and formal modes of rationality and reflexivity by examining its new forms.

The basis of modern reflexivity is generality of risk. In previous social formations "one knows how to ... calculate the probability of an event and how to increase or decrease that probability" (Bauman, 1991, 1 – 2). If that is not possible, decisions must be made by ambivalence. Predictability in traditional society was dependent on history, tradition. The social relations were rather stable and it was rational to suppose that these relations continue. They were consolidated by former risk management operations and obtained the status of social trust and continuity.

In 'second modernity', in essentially global social relations, ambivalence concerns the very basics of social life: social time and society, and the arrangements of production, in the sense of continuity of these relations. The basis of capitalist production and bureaucratic organisation was production process and organisational arrangements based on working time in fixed organisation and rational working moral based on time-discipline. In network develops a virtual work environment where working-time is not a management principle (Lee – Liebenau, 2002, 131 – 138).

Information is ubiquitous. The problem is how from this is developing socially functional forms of information used in social formations, as in services and organizations. When fixed organisational time-discipline or structure exist not, it is not possible to differentiate the results of organisation's continual development and the development process itself. Management processes become essential in organizational formations, not their 'structures' or predefined rules (Mäkinen, 2008, 100 – 101, 118 – 122).

7. The Change of Rationality

The change of social rationality comprehends that in modernity economic rationality and activity are based on probability, in second modernity also the other social functions are.

Knowledge Processing, Information Security and Social Relations

The rationality change in social relations has three information society specific characteristics:

- Knowledge relations develop into genuinely global. Knowledge transmitted in social relations is presented in tacit knowledge, conceptualized information and network information. Knowledge processing considers all these forms. It is a social process handling interaction rather than a technical process on foundation of formal information processing by information and communications technology (Mäkinen, 2008, especially 54 – 80).
- Information security consists of measures required for rational knowledge formation instead of information protection for continual organization's purposes. It is based on management of risks and measures according to this. It consists of activities which form information security management system and are independent of any specific organizational formations. Management is primary and basis for organization instead of bureaucratic rules (Mäkinen, 2008, especially 100 – 122).
- Social organizational formations are primarily networks carrying processes. Their social content is specified by knowledge relation and management structure by networked Bindings based on identification, authentication and non-repudiation of users, nodes and services (Mäkinen, 2008, especially 81 – 99, 222 - 228).

'Tacit knowledge' represents global inside organizational formation; it consists of the global relations of knowledge creation, including risk, and secondarily continual conceptual presentation of knowledge. For treatment of network information must exist a formal procedure; otherwise its functionality as knowledge is a risk. In this sense ICT-solutions based on databases and technical solutions do not develop global-ICT.

The enlarged social knowledge management concept has to present a social knowledge relation in interaction and a social process of knowledge development. The social knowledge development and processing of ubiquitous knowledge consists logical networks as part of the global transmission path.

Information security is a principal element of global information management. Global information is specified on grounds of risk management; it is not supported by any continuing social relations. Information security in information society service is specified by concept 'information security profile'.

There is no general solution for information security in global network. Security solution presupposes specification of social relation where it is considered to be relevant. It is built on possibility to treat and manage risks. In bureaucratic organization this form of social relation is already developed. It is based on historical, probable incidents, but on environment where significance of risk is limited inside the unit of social division of labour. In global network risks are dominating and probability is dominant factor in social relation.. Partial technical security solutions for that kind of network are possible to develop, but not the social trust security requires (Mäkinen, 2008/3). Security solutions must be defined for activities in network - information society services, determined by risk management systems on global probability basis.

This can be based on concept 'information security profile' (ISO 15408, Common Criteria, Mäkinen, 2006/7, Mäkinen, 2008, 86 - 91). It refers to a set of information security requirements independent of specific security implementations. User can specify information security requirements by referring to the profile. Relevance of information security profile depends on social process for acceptance of service providers and users. Information security profiles are in

anyway absolute solutions for service security but suppose a rational decision based on probability calculations.

Reality of information security profile implementation corresponds ideal type; they are possible to implement only in continuum of global and history; question is not about general characteristics of information security in external space and time but a probable continuity of social relation on basis of profile. Information security solution implements profile by probability that is specified in information security assessment process.

Organization is a subordinate unit in this rationality form. The principal unit is service which creates processes and networks having a management process considering knowledge relation and information security. Thus it is better to talk about networking organizational formations rather than organizations. Information society services are global but determined by risk management procedures which make them controlled, social relations.

Information security management system (ISO 27001) is the key element of economic and administrative reflexivity; in the corresponding way as predictability and reliability based on profit seeking and time based working moral are key elements of capitalist rationality. Rationality is mainly based on purely objective and risk based probability management measures. It is also genuinely social and genuinely global which become to mean the same thing.

Information security must suit with the general framework of rationality. If its management is based on hierarchical, on division of labour based organization model and on the other hand security of independently determined network, separated from the former, it does not suit to the framework of information society service. In that case organization is considered as bureaucracy and the framework of nation state 'society' is replaced by framework of global network. – Instead must be used a planning model which creates information security management system for organization and information society service (Mäkinen, 2007/10).

Binding, specified by identification, authentication and non-repudiation, builds a meaningful social relationship where components are no more risks for participants, but actors have a meaningful and rational relationship to them. By this is not created social formations whose probability is comparable to formal bureaucratic organizations; also continuity of social relations in organizational form have not a probability comparable with bureaucracy. Their content and extensions, as probability of identification and accepted co-operation, can vary.

Information security profile specifies the content of binding and co-operation of participants on basis of this. Their acceptance is a social process.

In global environment rationality evaluation is based on probability distributions. The simple relation between means and ends is not possible; every management event is based on probable outcome relative to some ends. Ends and means are based on several, meaningful factors of activity. Information security on this basis is analyzed by risks, audit and continuity (Mäkinen, 2008, 142 – 145, 196 – 199, 188 - 190). These probability distributions form the information security level of service in question (Mäkinen, 2008, 118 – 122).

Rationality in Social Division of Labour

The characteristics of rationality in modernity arise from global time and social division of labour and exchange based on them. From the point of view of social 'organic solidarity' "the most notable effect of the division of labour is not that it increases the productivity of the functions that are divided in this way, but that it links them very closely together" and "we must determine the degree to which the solidarity it (division of labour) produces contributes generally to the integration of society" (Durkheim, 1984, 21 and 24).

Organic or mechanical solidarity, and 'social facts' based on them, cannot be considered causes or reasons of action but as their rationality, or functions (Durkheim). They create the meaning of these activities, which may be called 'integration of society' or 'taking account the others'. It creates a mutual dependence and competition between the parties of division of labour. Between organizations, in 'society', principles of solidarity and rules are implemented in mutual agreement of participants and operations of state governed by law. The units in division of labour and social 'level' of activity are separate.

The cause for development of organic solidarity was according to Durkheim the struggle for existence when societies become more voluminous and concentrated (Durkheim, 1984, 208, also 205 - 217). This kind of argument is not relevant here but instead should be conceptualized a risk treatment leading to the meaning of social facts experienced in the framework of the social division of labour. Its causes or reasons on the other hand can be seen for example in the technological development and the space-time relations of production and exchange.

These 'material' conditions do not however explain the inception of capitalist rationality. Weber's main thesis, and his greatest scientific result, was to show that capitalist rationality is a historical phenomenon. Its inception cannot be characterized by contingency, as in the framework of 'struggle for existence' should be. Risk treatment and management are themselves rational activities. Historical events and also their causes are unique. There exist no such a totality which should constitute 'all possible events' and could be foundation for a general type of 'social species' (Durkheim). Action and its rationality are a continuum of global and history. The relations in social division of labour and exchange are varying, not coincidentally but according to rational risk management and treatment.

In an environment based on division of labour a global system is built only supposing that units are producing commodities. Network connections between these units are not rational in any other case than on general solidarity basis of agreements and governmental activities (Mäkinen, 2008, 275, Mäkinen, 2008/3).

Information Society Rationality

Social relations in global network on basis of social action itself presuppose rationality based on ubiquitous knowledge, ubiquitous network and - above them - global risk management constituting logical networks. (Mäkinen, 2008, especially 222 – 228, Mäkinen, 2008/3, Mäkinen, 2006/7). This is called network rationality. It is typical for information society. The social productive and administrative form is information society service.

Rationality as reflection of external conditions of humans develops into on probability based form of risk management first time in capitalist rationality; before that historical probability keeps risks insignificant. When in addition to economic all the other social relations start to be founded on risk, is created a society of second modernity, information or network society and as its limiting occurrence risk society.

In social sciences the meaning of social has been based on the fact that societies have been nation states, 'nationally structured' (Beck, 2006, 2, Mäkinen, 2008, 290 – 291, Mäkinen, 2007/8). This fact is central also in the discussion of globalization. It is not however reasonable to understand the basic social structure by any other 'absolute totality' as for example by global network. Society based on nation state can always be outlined by geographical boundaries. Global network cannot. It is ubiquitous and may be functionally constructed of several global networks in the same geographical, even local, area. Instead social content consists by meaning and rationality and its form of probability based risk management. Global dimensions have developed into socially meaningful formations.

Information society service is based on global network information. Its objective is global utility constituting on totality of services and products. When production is based on information, it is not question of applying information in production or as a reason of human conduct. That presupposes building of significance and meaning and rationality which can be the reason. Then it is however presupposed a probability of activity, which has history, continuity. In information society service the resource, where formation of meaning and rationality are based on, is global.

Network, or process organization cannot be described by local resources, as dominating factors, as for example by work discipline based on time or social division of labour. In process organization production is directed according to result and customers' requirements. These are part of customers' general welfare. In this environment organizational paradigm based on bureaucracy and division of labour is impossible. Organization is virtual and dominated by abstract information and risk involved with it. Service production and administration can exist purely in network without special organizational structures. Their continuity may be based on probability.

'Social' is constituted about human action reflexive to other humans and their means of living. There is constituted also social and organizational division of labour. Organization is built on knowledge relation based on this, knowledge and information used in interaction. When this is developed into use of global resources, organizational formation is based on processes and network which create information society services. They form the social totalities we live in.

8. The Social Change

There is nothing special to say that social formations are developed in history. Essential is to understand that this is not based on individual properties and causal relations. The 'past properties' do not determine what exists in present and this what exists in future. Both are globally coincidental although every selection is rational. Social meaning, as relation of global and historical probability, in events is attached in rational risk management.

From individual properties is not build social relations; in relation to social they are coincidental, risks. Knowledge relation, which has different forms on foundation of reflexive risk management, builds social as relation of risk and probability, global and history. Rationality forms are parallel to domination of spatiotemporal dimensions in social action.

The forms of social development are possible to separate by similar principle. Traditional society is based on elementary risk, which is not usually experienced as risk at all, but only as existence of coincidental others and events. It is dominated by present and history and tradition based on these. Same applies also to community and form of exchange tied on time and instrumental rationality developed in this social formation. Knowledge relation, which forms continuum of global and history, is dominated by history, tradition and riskless

In social era called modernity, capitalism or industrial society, risk is developed in exchange relationships dominated by division of labour. Social relationships are however bound with the socially local resources in labour, labour time, means of production and information governing production and administration. Risk concerns economic relations only on the market; class relations and social positions of people are rather permanent.

Second modernity, information society, network society, risk society, is based on risk. Its spatiotemporal dimensions are mainly based on information transmitted in communications network and productive and administrative organisational formations which have no definite time or structural form, in the sense that historical continuity of social relations is based on probability. Risk concerns all social relationships; permanent social formations exist not, but they are all varying according to the flow of information and treatment of risk.

Social itself is historically developing: "... the information society is not primarily a society in which the production of information displaces the production of goods. It is also not primarily a society in which knowledge or information becomes the most important factor of production. It is instead an order in which the principle of 'society' becomes displaced by the principle of 'information'. An order in which sociality becomes displaced by a certain 'informationality'. Sociality is long-lasting and proximal. Informationality is of short duration and at a distance" (Lash, 2002, 75, Mäkinen, 2008/3).

The problem however is how to compare distance and time; what are 'long-lasting' and 'proximal' on the other hand and 'short duration' and 'at the distance' on the other? Duration can be expressed only in terms of probability of a social relationship and distance only as a risk involved with a relationship. It is not reasonable to introduce a new concept for sociality, as 'informationality'. Rather the medium of social relationship has changed from language into formulation of knowledge in databases and network information managed by statistical procedures.

Somewhere comes the point where rationality based on treatment and management of risks is not possible. This realm of 'post-rationality' (Beck, 1994, 9), or rather 'beyond-rationality', lies in environmental problems and other parts of 'socialized nature' (Giddens). It however lies also in the hearth of the social change, transference of information in communications network. Internet is a service concept of communications network which in principle has no service or security level specified. Its risks cannot be managed, but it influences the social

life of all people (Mäkinen, 2008, 270 – 281, Mäkinen, 2008/3). Internet cannot be basis for Information Society; only perhaps Risk Society. Information Society must be based on services founded on probabilistic risk management rationality.

Concept 'Information Society' is in many ways a rather barren concept. It however is the best we have (Mäkinen, 2006/6). Meaning to activity in modern world is created by information transfer in communications network. In global social formations interaction is mostly based on the form of general knowledge called information, or network information. Information society service describes the global form of production and administration in this environment.

Modernity does not survive the development of global networks. Internet represents only the chaotic part of network (Mäkinen, 2005/1, Mäkinen, 2008/3). When risk managed networks and services are developed, recent economic and administrative structures shall collapse and new ones are created. It does not mean 'The End of History' (Fukuyama, 1992) but its Beginning.

Development is based on rational reflection of world. "We are neither creatures of the necessity of an irrevocable past, nor of any vision given in the Mount...Our values lie in the present, and past and future give us only the schedule of the means, and the plans of campaign, for their realization." (Mead, 1980, 90).

We and our values are the process.

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History of Modifications

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