



Editorial

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Journal of Chain-computerisation
Information Exchange for Chain Co-operation

2014 – Volume 5, Art. #3

Received: 28 November 2014
Accepted: 5 December 2014
Published: 12 December 2014

2014 – Volume 5, Art. #3
URN:NBN:NL:UI:10-1-114642
ISSN: 1879-9523
URL: <http://jcc.library.uu.nl/>

Publisher: Igitur publishing, in co-operation with the Department of Information and Computing Sciences, Utrecht University

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Editorial on the third founding article "Chain Communication Systems"

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Editor-in-chief

Usually an editor-in-chief doesn't write an editorial referring to his own papers, but the publication of 'Chain Communication Systems' is an exceptional occasion. This third founding article of the Journal of Chain-computerisation - based on an earlier text published in Snellen et al. (eds.), *Public Administration in the Information Age: Revisited* (Grijpink, 2012b) - complements two earlier founding articles 'Chain Analysis for Large-scale Communication Systems: A Methodology for Information Exchange in Chains' (2010) and 'A Chain Perspective on Large-scale Number Systems' (2012a). Jointly, these three papers present the current state of research in Chain-computerisation to our non-Dutch readers.

Chain-computerisation as a sub-discipline of information science offers new concepts, strategies, theories and tools that are better suited to successfully bring about large-scale information solutions for wicked¹ social problems. Within information science, it challenges the bias of 'small-scale thinking' characterising our traditional perspective on large information infrastructures. Information science urgently needs a theoretical framework based on 'large-scale thinking' to better understand why we are so often confronted with failing large ICT projects and systems.

Mainstream information science is no exception in struggling with bringing together small-scale and large-scale perspectives, as many sciences are in the process of trying to balance different perspectives, sometimes indicated with prefixes such as 'micro' and 'macro'. This process is taking place within information science only since the mid-nineties as a result of the Internet revolution. While economists have a long tradition of antagonist opinions since Keynes published his *General Theory* in 1936, information scientists and professionals are not yet fully aware of the challenge wicked social problems pose to their traditional small-scale thinking as reflected in tools and methods. For example, a successful local medical file system for a general practitioner is not automatically suited to successfully provide a similar functionality on a regional or national scale. The main reason is that the local system's implicit axiom -that a GP knows his patients- doesn't hold at that much larger level. Usually, this so-called 'fallacy of the wrong level' is not diagnosed as the root cause of ICT-disasters. Due to the traditional small-scale thinking of ICT-professionals and -scientists disasters are wrongfully blamed to poor project management or individual incompetence.

To get an idea of how to handle antagonist opinions based on small-scale and large-scale thinking in information science, we may look at how the antagonisms between micro-economists and macro-economists are handled in the process of tackling the actual economic depression in the Euro zone. Micro-economists favor reduction of government debt and budget deficits; macro-economists plead for stimulating the economy by government investments in infrastructures to offset low consumer spending. While the consequences of bad policy are felt by many people and public pressure on politicians and experts is very high, balancing micro- and macro-economic thinking proves to be nearly impossible. At the moment, budget cuts still prevent stimulating the economy.

¹ Rittel and Webber (Rittel & Webber, 1973) coined the term in the context of problems of social policy, an arena in which a purely scientific-rational approach cannot be applied because of the lack of a clear problem definition and differing perspectives of stakeholders. Wicked problems can be characterised by

- a. the solution depends on how the problem is framed and vice-versa;
- b. stakeholders have radically different world views and different frames for understanding the problem;
- c. the constraints that the problem is subject to and the resources needed to solve it change over time;
- d. the problem is never solved definitively.

Although Rittel and Webber framed the concept in terms of social policy and planning, wicked problems occur in any domain involving stakeholders with differing perspectives. (From: Wikipedia, November 22, 2014)

It is interesting to point to a similar antagonism in the field of data protection. The concepts and definitions of the EU Data Protection Directive (1995), such as data collecting, data processor, data processing, inspection rights and correction rights reflect small-scale thinking only. However, deleting incorrect data from the Internet or in 'big data' solutions in the Cloud proves nearly impossible within current regulations. Data Protection, too, needs new concepts and definitions which take the barely manageable large-scale digital environment into account. Unfortunately in the draft (2012) of the forthcoming European General Data Protection Regulation the data protection authorities stick to their small-scale thinking². And information specialists promoting Cloud solutions stick to their small-scale thinking to convince their clients, too. So, we have to wait until chain-wide co-operation focusing on wicked social problems using Cloud solutions is confronted with the same privacy problems we know from the traditional large ICT solutions.

The problem with competing perspectives and explanations within one scientific discipline is that each of them is right within its own theoretical framework. This type of antagonism is difficult to handle without an explicit balancing mechanism. Balancing different perspectives or explanations is not about deciding which one is right, but which one should be given priority in the light of a particular situation or during a certain period of time. If such a balancing mechanism is not available and accepted, social debates can go on indefinitely without scientific or practical progress being made.

Chain-computerisation contributes to mainstream information science by providing an explicit balancing mechanism by encompassing both small-scale and large-scale thinking within a multi-level chain concept making a distinction between two separate levels of analysis: at the 'base-level' of a chain small-scale thinking dominates, chain partners follow their own interests and efficiency is the standard; at the 'chain-level' large-scale thinking gets priority and effective chain-wide communication fighting the dominant chain problem is the standard. This unique feature of Chain-computerisation is explained in more detail in this new founding article.

In information science, the antagonism between micro and macro perspectives still remains hidden in the background of social debates. Failing big ICT-projects, however, are getting more and more attention and come across more and more public indignation, but the prevailing micro perspectives stress inadequate management control, greediness and incompetence as the main root causes of ICT disasters. In The Netherlands, the temporary Second Chamber Commission on big ICT projects recently (October 2014) reported this way. Inadequate management control, greediness and incompetence may be problematic, but without acknowledging that our strategies and system designs do not suit large-scale and barely-manageable environments, only marginal improvement will be attainable. It is about time that Chain-computerisation comes to the fore stimulating professionals and scientists in the field of information science to address the challenge of big information solutions for wicked social problems.

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² E.g., look at the following proposed change to the data protection regulation that will be directly applicable in all member states of the European Union: New privacy rights, including data subject's "right of portability" and the "right to be forgotten", will be established in the EU. The "right of portability" will allow a transfer of all data from one provider to another upon request, for example transfer of a social media profile or email, whereas the "right to be forgotten" will allow people to wipe the history clean.