

# **Comments on “The Quality of Business Process Modelling Methods”**

## **by B.-J. Hommes and V. van Reijswoud**

Pieter W.G. Bots

*Faculty of Technology, Policy, and Management  
Delft University of Technology  
P.O. Box 5015, 2600 GA Delft, The Netherlands  
E-mail: p.w.g.bots@tpm.tudelft.nl*

Quality matters. Good models are important to our discipline, and Bart-Jan Hommes and Victor van Reijswoud are to be commended for their effort to define what constitutes a good business process model. Their first steps in developing a Quality-based Modeling Evaluation (Q-Me) framework reflect a sincere determination to improve the current practice of business modeling by providing the means for objective comparison of modeling methods. The fundamental questions they must tackle are: ‘What is model quality?’ and ‘Can it be measured objectively?’ Quality is an elusive concept, and while trying to capture it in a framework, one is bound to get tangled up in what Hofstadter (1981) calls ‘funny loops’. To gain a proper understanding of the approach the authors take in defining and operationalizing model quality, I try to trace the choices they make and assess the consequences of these choices.

Q-Me seems to be founded on three paradigmatic choices:

1. the ‘four ways’ view on modeling is appropriate to capture those aspects of a business process modeling method that constitute the determinants (in the sense of ‘independent variables’) for model quality,
2. the classification of processes as material/information/business, and the distinction between core processes and supportive processes, are appropriate to define business processes as an application domain, and

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3. the FRISCO quality properties are appropriate starting nodes for a tree that operationalizes model quality as the 'dependent variable' of modeling method evaluation.

These decisions make sense, since they establish an immediate connection with previous work in relevant academic communities. But what biases do they introduce? Within the constraint of a two-page review, I can only point out some potential dangers.

First and foremost, figure 1 on page 116 reveals a blind spot that results from the adoption of the 'way of modeling' and the 'way of working' as looking glasses: for lack of a 'way of analyzing' and a 'way of implementing', the evaluation framework has no concepts to represent the *pragmatics* of a model, i.e., no concepts that can describe how insights are systematically derived from a model, or how these insights are converted to action. The FRISCO quality property 'effectiveness' offers but a fragile handhold for investigation of this vital aspect of model quality: does the model help improving the business performance?

Secondly, the adoption of a classification of processes within organizations in three categories (material processes, informational processes, and business processes) and the distinction between core processes and supportive processes as the standard for 'suitability' and 'completeness' may need reconsideration. If this classification is axiomatic in the sense that it *defines* the business process application area, this axiom deserves a more elaborate introduction and justification. If it is an arbitrary choice, it defies further attempts to *objective* measurement, which would seem to be the ultimate purpose of the Q-Me framework.

The Q-Me framework succeeds in providing the concepts necessary for objective measurement of the FRISCO quality properties 'coherence' and 'expressiveness'. 'Coherence' is operationalized in terms of the *existence* of relations between modeling concepts. However, it does not address the semantics and pragmatics of these relations, although these might make a significant difference in the *strength* of these relations. 'Expressiveness' is defined as a relative measure, since it requires at least two modeling methods to establish its value. Objective measurement therefore would require a standard for the business process domain, similar to the 'Turing completeness' criterion for imperative programming languages. Moreover, such a standard would effectively counter my earlier criticism on the definition of what constitutes the business process domain.

The FRISCO quality property 'comprehensibility' is more slippery when it comes to objective measurement. How to establish the consistency of the notation-meaning and meaning-concept relations in the Q-Me framework? If

the arrow in a flowchart is comprehensible because an arrow is a ‘natural symbol’ for sequence, what about the arrows that model causality in concept maps, or the arrows that model inputs, controls, outputs, and mechanisms in SADT (see e.g., DeMarca)? Apparently, arrows are ‘natural symbols’ for a variety of concepts; it is the notion of ‘natural symbol’ is inherently subjective. The second operationalization of ‘comprehensibility’ – the number of different modeling concepts used in a method – can be measured objectively, but such a count does not take into account that ‘loading’ of symbols (e.g., four different meanings of an arrow in SADT) *decreases* comprehensibility, whereas a hierarchical structure of a modeling method (e.g., the recursive decomposition of activities in SADT) *increases* comprehensibility

When the relation between modeling concepts and ‘reality’ becomes more central to a FRISCO quality property, the Q-Me framework obviously needs more work, still. It is doubtful whether ‘determinism’ is a property that can be measured objectively. Any symbolic notation requires ‘correspondence rules’ with objects in ‘reality’, and how are such rules to be expressed? Any language is intersubjective, at best. A similar problem emerges when trying to operationalize ‘effectiveness’. The authors acknowledge that a lot of empirical ground needs to be covered here, still. ‘Effectiveness’ is by definition a measure for goal attainment. But what *is* the goal of a modeling method? If the goal is merely representational, it is attained the moment the modeler states the model is complete. If the goal is to be functional in analysis, the types of questions the model should be capable of answering must be defined more precisely. If the goal is practical, its expected impact on the behavior of people must be defined, etcetera.

To summarize, the current version of the Q-Me framework is successful in operationalizing quality mainly in terms of the syntax of a business process modeling language. Syntax may constitute the structure of conceptual models, but semantics and pragmatics are their heart and life blood. To be a truly effective means in the hands of business modelers, a conceptual model of quality should focus on measuring these aspects. In its present state, Q-Me may be lopsided still, but it has good growth potential.

## References

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