Class Notes: BPM Research and Education

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Of Ivory Towers and Boundary Spanners

We all live in a yellow submarine…

When I go to work in the morning, in the office building that hosts our BPM research group, on the way up to our level I come by this big breakout room that hosts a number of computer scientists, working away at the next generation software algorithms and iPad applications (I assume). I have never actually been in that room, but every now and then the door is left ajar for a while and I can spot couches, lots (I mean, lots!) of monitors, the odd scientist, a number of Lara Croft posters, and the usual room equipment you'd probably expect from computer scientists (and, no, it's not like that evil Dennis guy from the Jurassic Park movie, buried in chips, coke, and flickering code screens… It's also not like the command room from the Nebuchadnezzar, Neo's hovercraft in the Matrix movies, although I still strongly believe these green lines of code make a good screensaver).

Anyway, when that door is closed, and my insights into computer science are limited to my own imagination, you may still see a yellow post-it note stuck to the door. It's been there for ages (at least for the length of my time at Queensland University of Technology). It very simply reads:

"We all research in a yellow submarine."

I obviously don't know which of the many metaphors from the Beatle's brilliant song our dear computer friends actually refer to, but I have always interpreted the statement as the mid-20th century translation of the old connotation of researchers living and working in an ivory tower. You probably know this metaphor already. The ivory tower is a designator of a world where intellectuals engage in pursuits that are disconnected from the practical concerns of everyday life. Needless to say, the metaphor usually carries pejorative connotations of a willful disconnect from the everyday world – esoteric, over-specialized, or even useless research.

In my personal view, the yellow submarine carries a similar denotation: Think about it, a pretty much (if not hermeneutically) closed down vessel, typically buried deep under the sea, with only your think-alike comrades present to share thoughts and ideas, with contact to the outside world limited to a number of pings and the odd periscope look around. And the background of the Beatles song, in my head, always makes it sound as if all members of the submarine are cheerful and happy to be down there and not anywhere else.

The purpose of my Column is not to debate whether or not science or research in general is locked in the ivory tower/submarine, whether it should or should not be, or what the interpretation of the color yellow is in the submarine metaphor. A theoretical physicist probably has his views on this matter and so does a mathematician or an arts professor.

Rather, I am presenting my views upon this metaphor as a BPM researcher. So what is it about BPM research? The interesting point is, I think, that BPM research is generally believed to fall into

a category of science that is called "applied research." Applied research is a type of research that is about accessing and using some part of the research communities' accumulated theories, knowledge, methods, and techniques, for a specific, client driven purpose. So, applied research typically deals with applying pure, fundamental (often theoretical) research to practical problems in real-world domains.

So, if we were to believe the statement that BPM research is an applied discipline, then at least two questions consequently arise:

- Are BPM researchers working on practical, real-world problems?
- What are the practical, real-world problems, anyway?

I would think that most of you would have at least your own answer for these two questions. I am not saying that there are definite answers. But my point is still that within the context of an applied discipline, there should be some alignment between what researchers are doing and the challenges that industry is facing.

In my own research, I have tried, together with my colleagues Dr Marta Indulska, Dr Michael Rosemann, and Dr Peter Green, to shed some more light into this continuum of real-world practical challenges faced by industry, and the academic challenges to which researchers devote their attention. Realizing that the field of BPM is large, we focused on one key application area relevant to Process Management – the modeling of business processes.

What we did can be described as a Delphi Study (if you want to learn more, a good starting point would be [1]). We got in contact with a large network of representatives from three cohorts – *BPM academics*, *vendors of BPM software and consultancy solutions*, and *end user organizations involved in BPM*. Through multiple rounds of data collection and analysis, we worked out for each of the cohorts their most prominent challenges of process modeling. Our goal was not only to identify the current hot topics on the radar screens in the BPM community but also to study to what extent BPM researchers are actually working on topics that are of interest (i.e., that cause headaches and joint pain) for industry practitioners.[1]

Here, on three of the tables extracted from our study, is what we found.

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[1] I should note that the overall study was much larger, focusing on current issues and future challenges as well as the benefits from process modelling. The relevant papers [2, 3] can be downloaded from http://eprints.qut.edu.au/view/person/Recker,_Jan.html.

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What Academics Regard as a Challenge

Have a look at the top ten identified process modeling challenges in Table 1. This list represents the consensus of twenty-five BPM researchers from all over the world about the process modeling topics that they regard as relevant intellectual challenges.

Table 1. Top Ten Process Modeling Academic Challenges [3]

Rank	Challenge	Description
1	Model-driven process execution	The support for process enactment, automation, or execution based on process models.
2	Methodology	The definition of the process of process modeling.
3	Service orientation	The support for aspects relevant to the management of web services, service-oriented architectures, or quality of services.
4	View integration	The integration of various modeling views (e.g., data, object, human, resources) in process models.
5	Value of process modeling	The establishment of a business value proposition of process modeling.
6	Standardization	The standardization of process modeling approaches, methodologies, tools, methods, techniques, or notations.
7	Model management	The management of process model variants, versions, releases, changes, etc.
8	Data-centric process modeling	The modeling of processes from a data-focused perspective.
9	Compliance	The support of process compliance management issues through process modeling.
10	Tool support	The availability of adequate tool support for process modeling.

What do we learn from this top ten list? In my view, academics focus on challenges pertaining to the **method** of process modeling (methodology, view integration, model management, data-centric modeling) and **information technology** for process modeling (model-driven process execution, service orientation, tool support). These two research areas cover seven of the ten challenges, with the remaining two falling under **governance** issues (standardization and compliance) and **strategic alignment** issues (the value of process modeling). In my view, this research portfolio suggests a focus on the (IT-driven) functional properties of process modeling.

What Practitioners Regard as a Challenge

Let's contrast the academic consensus on process modeling challenges with the practitioner perceptions. The same data collection and analysis process as the one above, this time with around twenty representatives from organizations actively pursuing BPM projects, resulted in the top ten list shown in Table 2.

Table 2. Top Ten Process Modeling Practitioner Challenges [3]

Rank	Challenge	Description
1	Value of process modeling	The establishment of a business value proposition of process modeling.
2	Buy-in	The acquisition or ongoing ensurance of buy-in and commitment from relevant process modeling sponsors.
3	Standardization	The standardization of process modeling approaches, methodologies, tools, methods, techniques or notations.
4	Expectations management	The management of expectations related to the practices, tool support, outcomes or value of process modeling.
5	Governance	The definition of rules, responsibilities, duties and practices.
6	Training	The establishment of process modeling expertise.
7	Process architecture	The establishment and use of an appropriate process architecture to guide the modeling.
8	Model integration	The compatibility, portability, exchange and integration of different process models.
9	Adoption	The adoption of process modeling approaches in an organization.
10	Re-use	The re-use and leverage of previous process modeling work, references or outcomes.

Striking. I have obviously been involved in the design, conduct, analysis, and write-up of the study, but, still, compiling these tables again in 2011 and examining the two tables in comparison, I can't help but find the differences striking. Let's have a closer look. In a way, we can conceptualize the noted top ten challenges of process modeling, as perceived by practitioners, as being predominantly, problems of **strategic alignment** (value of process modeling, expectations management, process architecture), **governance** (standardization and governance), and **culture** (buy-in, adoption, and re-use). A **people** problem (training) and an **IT** problem (model integration) round up the list of challenges. So what is noteworthy? Well, for one thing, the method of process modeling (i.e., the functional properties of process modeling) does not appear on the radar screen of end user organizations. To me, this suggests that the way process modeling is conducted operationally is not regarded as one of the key problems; rather, the adoption and value of process modeling as a "black box service" is a key concern. The way you can put it bluntly is

"I trust that you can develop accurate and appropriate models of our processes. But what am I to do with them to get some return on my investment?"

What Vendors Regard as a Challenge

Finally, let's turn to vendors – the providers of business process modeling tools and consulting solutions that strive to enable and assist with, process modeling in organizations. I personally find this part of the BPM community an exciting one to observe. For one thing, they are highly active and highly visible. BPTrends is a key outlet for several of the global key players in this area, and several of those are also active in the Web 2.0 community. I am just mentioning the blogs of Sandy Kemsely, Derek Miers or Bruce Silver as but three representatives of this cohort of experts that is proposing normative advice to end users.

So what do they regard as process modeling challenges? Let's inspect Table 3, which was compiled based on the feedback received from 18 vendors.

Table 3. Top Ten Process Modeling Vendor Challenges [3]

Rank	Challenge	Description
1	Model-driven process execution	The support for process enactment, automation, or execution based on process models.
2	Business-IT-alignment	The use of process modeling to support alignment between business and IT stakeholders, viewpoint, or approaches.
3	Value of process modeling	The establishment of a business value proposition of process modeling.
4	Ease of use	The complexity or easiness of process modeling methodologies, tools, or notations.
5	Standardization	The standardization of process modeling approaches, methodologies, tools, methods, techniques, or notations.
6	Collaborative modeling	The involvement of multiple people in the modeling of processes.
7	Training	The establishment of process modeling expertise.
8	Service orientation	The support for aspects relevant to the management of web services, service-oriented architectures, or quality of services.
9	Model management	The management of process model variants, versions, releases, changes, etc.
10	Ontology	The use of business or domain ontologies for process modeling.

The one thing that strikes me here is that vendors are seemingly concerned with issues that are spread across different thematic areas – we see **strategic alignment** (business-IT-alignment, value of process modeling), **governance** (standardization), **method** (collaborative modeling, model management, ontology), **IT** (model-driven process execution, service orientation), and **people** (ease of use, training) issues covered in this top ten list – a broader focus than both practitioners and academics. We also see that four of the ten challenges identified by vendors are not on the radar screen of the other BPM parties – business-IT-alignment, ease of use, collaborative modeling, and ontology.

A Call for Boundary Spanning

So what do we make of these results? I believe there are two sides to the story. On the one hand, we are now in a good position to understand key issues and areas of key focus for three key cohorts of the BPM community. For instance, we now understand potential roadblocks when we seek to establish process modeling in our own organizations. We can also anticipate new research results and next-generation technologies by knowing the areas of current work in academia. Finally, we also understand the key areas of focus that vendors place when assisting with process modeling.

Still, in a more normative manner I think we also found insights about a potential disconnect – and, importantly, ways to overcome such disconnects between BPM academia and BPM industry practice. If we follow the basic assumption I laid out above that research should consider relevant topics of (at least future) interest to practitioners, then our study points to a somewhat stark contrast between challenges identified by business process modeling practitioners and the challenges of interest to academics.

How do we deal with this contrast? I see two ways:

1) **Industry-inspired research**: In this scenario, academia takes on the relevant challenges faced in industry (or those that are expected to be challenges in the not-so-distant future). In other words, industry is in the driving seat to identify research themes for academia. Following our study above, we could, for example, identify the following topics driven by industry interest:

   - *Value of business process modeling***:** Research that studies the value proposition, the net benefits, or the cost drivers associated with business process modeling.
   - *Expectations management***:** Research that examines the expectations and pre-conceptions, and the (dis-) confirmation of those, of different stakeholder groups involved in business process modeling.
   - *Training***:** Research that studies different approaches to building business process modeling expertise, the effects of expertise on the quality of business process modeling, or the key factors determining process modeling expertise.
   - *Process architecture***:** Research that examines the development, use, composition, or value of architectural models to guide the act of business process modeling.
   - *Adoption***:** Research that studies the key determinants and impediments associated with the adoption and continued use of business process modeling on an individual or organizational level.

2) **Industry-inspiring research**: In this scenario, academia calls upon its status, as thought-leader and driver of technological innovation, to identify solutions and approaches beyond the current status quo but that will innovate organizational practices. Here, academia is in the driving seat to identify – based on their intimate knowledge of the field as well as the literature – the ways BPM will be conducted in the years to come. Again, following our study above, we could, for example, identify the following solutions that will determine the state of BPM in the (near) future:

   - *Model-driven process executions***:** Solutions that allow the automatic enactment of processes on basis of the conceptual models developed.
   - *Methodology***:** An advanced procedural model for guiding the process of process modeling.
   - *Service-orientation***:** Better mechanisms, methods, and tool solutions to integrate process- and service-centric management of the enterprise.
   - *Collaborative modeling***:** Technological and methodological advances that support collaborative, distributed, or remote process modeling of intra- and inter-organizational business processes.

Both lists are obviously not meant to be complete but still paint a picture of better process modeling in the future. Also, I am not making an argument that research should *lead* industry or should *follow* industry. I believe there are good arguments for either way, and I wish not to delve into this often opinionated discussion. Rather, and importantly from my point of view, I think the continuum of industry-inspired and industry-inspiring research paints two different yet complementary ways of **boundary spanning** – ways to overcome a potential mis-alignment between the interests of academia and industry. Together (more so than via each way individually), I would argue this is the roadmap for finding your way out of the ivory tower. Or, if you prefer, that's the nautical map illuminating a path for our little yellow submarine back into the harbor that is called organizational reality.

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Acknowledgments

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