



## Preface

## Preface to this Virtual Thematic Issue: Modelling with Stakeholders II



Five years ago when the first Environmental Modelling and Software (EMS) Thematic Issue on “Modelling with Stakeholders” was published (Bousquet, Voinov, 2010), we were quite optimistic that stakeholder involvement in the modelling process was growing and that such a bottom-up approach could lead to better decision-making. Indeed, we see good progress as is demonstrated in numerous relevant publications. The Web of Science shows 9235 results since 2011 for papers that mention ‘participatory modelling’ and during the same time over 130 papers appeared in EMS.

It was therefore not surprising that a Session entitled “Modelling with Stakeholders: Old Problems, New Solutions”, organized at the 2014 International Environmental Modelling and Software Society Biannual Conference in San Diego, attracted considerable attention and filled a whole day with some 20+ talks. During the ensuing workshop, plans were made to work on a new Position Paper for an update on the most recent trends in the field.

It was then decided to also select interesting recent examples from EMS to include in the Virtual Thematic Issue (VTI). With 130 papers to choose from, this was a difficult task. Eventually we selected 16 papers, which does not mean that we think they are the best in the field; rather, in our opinion they are representative of a certain innovative trend, or they have an impressive methodological component. All of these papers are thoroughly analyzed and presented in the Position Paper that opens the Issue, and are set in their conceptual context where we have considered some 100 or more relevant scientific documents.

Several important trends were recognized as developing in the field of participatory modelling. Perhaps the most important are the quantitative and qualitative growth of social media, mobile applications, web services, and other means for wider popular access to data and information and for more social participation in creating these data and information. All this creates more potential for a deeper as well as broader participation of stakeholders in decision-making processes and further expansion of the development known as ‘citizen science’. On the downside, these new opportunities still do not immediately translate into better decisions and concrete actions.

As observed by Jonathan Swift in 1710, “it often happens that if a Lie be believed only for an Hour, it has done its Work, and there is no farther occasion for it. Falsehood flies, and the Truth comes limping after it; so that when Men come to be undeceived, it is too late;

the Jest is over, and the Tale has had its Effect ...”<sup>1</sup> With the Internet, information can truly fly around the world in seconds and this applies equally well to misinformation. Moreover it is unsurprisingly easy to find like-minded people on the Internet and build further support to the misinformation spread. This leads to group or “herd” thinking’ which can have a further self-enhancing effect: people are more likely to acquire their knowledge by consulting those who share their values and whom they therefore trust and understand (Kahan, 2012). So by the time “truth” comes out, we find that “lies” have already established a critical mass of supporters now engaged in a positive feedback self-reassuring exercise, effectively filtering or re-interpreting information that might contradict herd thinking. Or referring to Hegel’s notorious statement that if facts contradict theory, then “um so schlimmer für die Fakten”—so much the worse for the facts.<sup>2</sup> The ‘theory’ in this case does not have to be based in the paradigm of science. It could instead be the prevailing beliefs, biases, and preferences of the group, perhaps the value choices that promise comfort, physical, mental or spiritual.

People are still very dependent on fast system 1 thinking (Kahneman, 2011), primarily based on their intuitive ‘gut feelings’, beliefs, emotions and subjective values and biases. This can easily clash with slow system 2 thinking based on logic and information that comes from theory, modelling, data, and analysis.

With the new Internet connectivity and the ‘information highway’ that we now enjoy, we no longer have to rely on our memory—possibly defective and overloaded—to access facts and data. Instead we can spend more time and energy processing those facts and information. But can this avalanche of data (‘big data’) actually help us in making better decisions and improving our management? Or, will we be overwhelmed by the diversity of information and misinformation that is now available? Or will we use it to promote particular vested interests and group ideas? Will we use the abundance of newly available physical and human sensors accessed through the Internet and social media to solve the dire problems of the resource crunch (environmental pollution, minerals, energy, space, water, energy—you name it) that we are now facing as human beings, or will we use the information to gain more control for certain groups at the expense of well-being of other people? This is yet to be seen.

Being wary of instant messaging and instant opinionating does not mean that we are not also cautious of the slow digestive processes of participatory methods associated with modelling. We

<sup>1</sup> 1710 November 2 to November 9, The Examiner, Number 15, (Article by Jonathan Swift), Quote Page 2, Column 1, Printed for John Morphew, near Stationers-Hall, London. (Google Books Full View).

<sup>2</sup> <http://www.e-flux.com/journal/hegel-and-freud/>.

should as be concerned with a naïve belief in community solidarity (participatory approaches) as we are with a post-modernist belief in wisdom of crowds (foolishness of herds?). What is community in an age of social media and instant messaging? Community is not only localisation, it is no longer spatially constrained. There is no question that the participatory approach has enormous value in the local context with very rich, deep information; it privileges interactions, feedback and reciprocity. Participatory approaches are recognised for empowering and developing local capacity, and they explicitly aim to be socially inclusive, in terms both of having low technical requirements and a commitment to the marginalised (McCall et al., 2015). But things can be quite different for a community that spans continents and is connected over the Web.

Besides the obvious consideration that a participatory approach is slow –by definition, because of the slow reciprocal creation of trust – and therefore costly per (quantitative) unit of information, there may be other downsides. The participatory consensual model of building consensus can be vulnerable to ‘elite capture’, there can easily be influence, herd pressure, ouijaboarding (manipulating the outcomes), or bullying from the dominant in the group. In contrast, a strength of an online mechanism is its anonymity and secrecy. Its inherent danger of ‘thoughtless instant opinionating’ or trolling is at the same time a guarantee of not being unduly influenced by loud, dominant voices in an open meeting or participatory workshop where individuals may be hesitant to give their real opinions. Moreover, the many efforts which are made to overcome elite capture and make a participatory stakeholder process more inclusive, such as positive efforts to strengthen the inputs of women, children, or disadvantaged in decision-making, though morally appropriate with respect to equity, are by definition, interventionist.

Verification of data inputs and of findings in the participatory approach are in terms of trust, reputation and accountability. What is trust? How to improve trust between citizens, planners, decision-makers and assorted stakeholders? Whereas in large-scale online processes such as crowdsourcing and VGI, trust is associated with statistical aggregation and the potential for long-term back-checking; in a participatory frame trust is built on strong, reciprocal, tested interactions over a long time period. But that form of trust itself is internalised to members of the group who are already working together and trust each other –it is not easy to upscale and externalise to other actors, who are not a part of the ‘group’. As a generalisation, externals tend to be distrustful of the conclusions proffered by internally cohesive groups. There is increasing demand for visual and repetitive evidence, i.e. ‘objective’, geo-referenced, time-stamped, witnessed evidence –bodycams are trusted but human witness accounts are not, by neither citizens nor police.

At the same time, citizens are increasingly prone not to trust the use of the information and stories presented by authorities as ‘authoritative knowledge’. But trust is ethereal, it again belongs to the realm of system 1 thinking; it lies in the eye of the beholder. Participatory modelling can learn something from the articulation of trust in “Map Kibera”<sup>3</sup> which relies on ‘bounded crowdsourcing’ by using web reports but, preferentially, those from known trusted individuals in the community (RICS, 2011). One such collection of stories<sup>4,5</sup> that gives an inside picture of the realities of a village, the concerns, the strengths, the interventions, the way things actually meander as the implementation happens, is by two individuals based on their life over two decades in Paalaguttapalle village in

India. For that matter we can learn also from trust and shared confidence in social networking media such as Couchsurfing,<sup>6</sup> Feastly,<sup>7</sup> or Traveller Chic.<sup>8</sup> Again it is a big challenge to translate the knowledge and data (qualitative and quantitative) that we acquire from ‘hard’, logical analysis and analytical thinking into the ‘soft’ feelings, preferences and values that dominate when we choose to trust or distrust someone.

Apart from providing access to data and information, the web is also making it possible for modellers to expose models, data and software to citizen-stakeholders as users. Thus, citizens can change model inputs and study the resulting outputs to explore scenarios that better capture their perceptions about alternative futures, instead of being restricted to only those outputs which the modellers consider useful. Stakeholders can choose their own ‘desirable’ outputs and work backwards to study the inputs behind them and interrogate their likelihood. This helps users to become aware of the inherent uncertainties that characterize many models. The model structure itself can also be exposed so that it can be explored and extended. Some papers, including examples in this VTI, follow this ‘open model, open source’ approach; however, it is yet to become a common practice. Judging models less by their outputs, and more by their transparency and communicability, is likely to make such an approach more common. A progressive transition to community modelling (Voinov et al., 2010) and citizen science is happening, though slowly and unevenly.

The VTI was compiled to address some of these recent trends in participatory modelling, review progress, and identify problem areas. We also hope that it will stimulate our thinking about the future of the trade in our rapidly changing world and with the new technological opportunities that become available.

There is a good tradition in our Thematic Issues to thank the reviewers who were instrumental in improving the papers included. In this case all the papers were published over a period of five years and it would be difficult to go back and extract all the past reviewers involved. We therefore choose to jointly express our appreciation to all the anonymous reviewers who helped to build this VTI, as well as the Journal. It is only due to your hard work that EMS can manage to keep its standards high.

## References

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Alexey Voinov\*

Faculty of Geo-Information Science and Earth Observation (ITC),  
University of Twente, 7500 AA, Enschede, The Netherlands

<sup>3</sup> <http://mapkiberaproject.yolasite.com/>.

<sup>4</sup> <http://paalaguttapalle.blogspot.in/p/we-and-our-village.html>.

<sup>5</sup> <http://paalaguttapalle.blogspot.in/2015/08/drought-construction-of-pond-for-cattle.html>.

<sup>6</sup> <https://www.couchsurfing.com/>.

<sup>7</sup> <https://eatfeastly.com/>.

<sup>8</sup> <https://travellerchic.com/>.

Nagesh Kolagani  
Department of Engineering Design, IIT Madras, Chennai, 600036,  
India  
E-mail address: [nagesh.kolagani@alumni.iitm.ac.in](mailto:nagesh.kolagani@alumni.iitm.ac.in).

Michael K. McCall  
Centre for Research in Environmental Geography (CIGA), National  
Autonomous University of Mexico (UNAM), CP 58190, Morelia,  
Michoacan, Mexico

E-mail address: [mccall@ciga.unam.mx](mailto:mccall@ciga.unam.mx).

\* Corresponding author.  
E-mail address: [aavoinov@gmail.com](mailto:aavoinov@gmail.com) (A. Voinov).

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