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EDITORIAL

JOSIS' 10th anniversary special feature

JOSIS, as Mike Worboys put it in his editorial introducing the first issue ten years ago, is "an online publication and all articles are free to access for any person" [17]. In that first issue, Michael Goodchild set out his view of the progress that GIScience had made in the last twenty years, and made some predictions about where the subject might find itself in the future [6]. Amongst these were the ubiquity of positional information; the role of citizens in producing, and not just consuming, geographic information; the possibilities and limits of real-time, continuous monitoring of geographic phenomena; a move from two dimensional representations to methods which capture the third, fourth and fifth dimensions; and the challenges of education. Ten years on, these predictions are still relevant, and indeed (as so often the case with Goodchild) startlingly prescient. JOSIS has published papers addressing many of these areas, with a strong focus on methodological and theoretical contributions.

However, since JOSIS' launch the world has also changed. Climate change has become a climate emergency, biodiversity and nature's contributions to people have been recognized as important contributors to Sustainable Development Goals[1], easy access to location-enabled devices in many people's pockets has changed the way that societies operate, and most recently, a global pandemic has impacted on all of our lives. All of these events bring into sharp focus the ways in which the data, technologies, and methods we work on can be used for good. However, they should also make us remember that geographical information can be used to reinforce inequalities, and that the use of technology is never neutral. With this in mind, we asked all members of our editorial board to write vision pieces showing the diversity of ways in which our field can contribute to both basic science and major societal challenges. Each of these pieces aims not only to review, as Goodchild did, where we are, but also to say something about where we are going.

Of course, when we sent our invitations we had no inkling of the global crisis which was about to unfold. Some of the pieces make reference to this, some do not. But COVID-19 put things into focus for many of us in academia. Just as in many other walks of life, for a few it was an opportunity, for many a struggle, and for some, far too many, a tragedy. COVID-19 brings home to many of us who are more privileged, what uncertainty really means, and shines a light on the incredible luxury of mobility. As we attempt to deal with it through technology, the real implications of privacy and location awareness, and ways in which these can be misused are more important than ever. And the implications of how we communicate even seemingly simple scientific information used in making literally life

[1] https://www.un.org/sustainabledevelopment/sustainable-development-goals/

or death decisions become ever clearer. In all of these areas, our field can make real and profound contributions. It can only do so though, by thinking harder about its place in science as a whole, and working across disciplines to address real problems. At the same time, it is important that basic theory is not neglected, since strong theoretical foundations are central to meaningful applications.

In this issue, we bring together the first fifteen pieces contributed to JOSIS' 10th anniversary special feature. Some editorial board members chose to write their piece alone; others asked colleagues to contribute. Like our editorial board, these are diverse, and they span a range of topics. They address directly how we communicate through maps [8] and the importance of the categories we choose to reason with [3, 4]. The computational tools we develop and apply are profoundly important, and linking these to cognition is essential [5]. New data sources such as geo-tagged social media can provide us with different ways of exploring such cognition in a bottom up way [10] and perhaps contribute to more nuanced considerations of the ways in which the environment is represented [14]. Analytical approaches to deal with large volumes of data, which are increasingly generated by the crowd [2] or Internet of Things sensors, encompass geospatial artificial intelligence, machine learning [9, 15] and visual analytics [1], and must communicate and consider uncertainties [7]. These have paved the way for more efficient decision support systems, for example in agriculture [13], and for solving ecological problems [5, 14, 3]. Analysing and influencing mobility, across a wide range of spatial and temporal scales is a crucial challenge if we are to create a sustainable, and not simply an optimised but profoundly unequal, future [16, 12, 11]. As spatial data plays an essential role in a wide variety disciplines, we could do better to expand our reach beyond the usual geospatial applications, for example in astronomy and neuroscience [15]. For sustainable mobility and resilient future societies, spatial sciences can be leveraged to develop more sustainable forms of mobility services [16] and to support policy making through better predictive models and more intuitive visual analytics [11].

Returning to Worboys' inaugural editorial, JOSIS was envisioned to help our community bring "scientific communication into the 21st century" [17] through the adoption of an online and open-access self-publishing model. By that measure JOSIS has been a success for our research community. Thus, this 10th anniversary gives us an opportunity to build on that success and rethink what *effective scientific communication for the 21st century* can mean. We feel it relies on making our science relevant to the pressing issues that humanity and our planet will face this century. This is arguably a more difficult aspiration to achieve, yet one that we feel is important for JOSIS to embrace going forward. This collection of invited papers begins the conversation of what that might look like, a conversation that we hope will continue with the next 10 years of research published in JOSIS and across the spatial information science community more broadly.

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