

## Mediascapes: An Integrated GI Perspective

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*“If time equals money ... then so does position”* (Ordnance Survey 2005). Nowhere is this more important than in the mobile phone industry where, for example, sales of GPS-equipped mobile phones by Nokia were expected to reach 35 million devices in 2008 (BBC, 2008). Pervasive gaming and location-based services (LBS) are catching the public imagination and making digital geographic information more relevant than ever before. Mediascapes, pieces of software in which media fragments are experienced at appropriate spatial locations (i.e. geo-contextualised) during an exploratory/tour experience, offer the chance to study many of the challenges posed by LBS. This paper considers how mediascapes of various kinds can be used in a teaching and learning context and in particular the role GIS has to play in supporting their development. Our discussions are framed both in the context of software known as mscape<sup>1</sup> that can, in a simple form, be used to prototype pervasive location based media by any computer literate undergraduate or member of the public, and also with reference to the design and use of bespoke mediascape tools

Designing an effective mediascape for broader consumption requires considerable thought regarding space-time movement and the mapping between physical and virtual worlds in a manner that encourages immersion in the subject matter (Reid *et al.*, 2005; Mackaness & Bartie 2006; Priestnall & Polmear 2006; Jarvis *et al.* 2008). Building effective hybrid location models that link geometric (coordinate position) and symbolic location (Becker & Durr, 2005) in a manner that provides sensitive contextual information remains a major challenge for geographers and GI scientists in particular. This is reflected in a wide range of recent research papers looking at issues in location-based services more generally, such as bearing, visibility (Beehree & Steed 2007) and scale and extent of mapping (Dillemath *et al.* 2007; Paolino & Sebillo 2008), and the design of more egocentric mapping (Meng, 2005). As Reid *et al.* (2005) note, *“Mediascapes present a new design challenge in how to represent the digital information which overlays the physical world”*.

The mediascape development environment Mscape, created by Hewlett Packard, offers a easy way to integrate background digital maps with media such as photographs, video and audio, these media being displayed upon entering simple geographical ‘regions’. The mscape package has been used by schoolchildren (Jones *et al.* 2003; Williams *et al.* 2006) and the public alike, as the rich web archive of mediascapes<sup>2</sup> and location-based games demonstrates. At one level then, the mediascape provides a technically benign way of introducing the concept of location based services to a wide range of students who may interact and/or create and critique their own personal local geographical expressions on a variety of curriculum themes, subject to context. The range of applications submitted by the public to the mscape library, from location-based performance poetry to simple location-related games for use by schoolchildren, to ecological study tours, illustrates both that mscape is usable and has captured considerable interest in spatial services at many levels.

However, we highlight an expertise gap between a highly usable hands-on authorship tool for prototyping location-based services on the one hand, and the spatially complex task of designing user-centered mobile output on the other. While mscape supports the construction of polygonal and circular regions by the user and the assignment of appropriate media to those regions, it provides little

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<sup>1</sup> <http://www.mscape.com>

<sup>2</sup> <http://www.mscape.com/browse>

guidance as to the ideal shape, size and position of these regions. The tighter the mapping between physical and virtual world, arguably the more engaging and immersive the interactive experience will be. The scripting language of mscape offers some built-in potential for more advanced design but for many users this is prohibitively complex. There is an urgent need for an approach to bridge this expertise gap if the greater immediate potential of mediascapes as a teaching and indeed research tool for students and more effective platform for the public to construct location-based services is to be realized.

As we have already highlighted, it is pedagogically important that we expose our geography and GIS students to contemporary spatial phenomena such as mediascapes and location-based tools. However, this exposure needs to be done in an efficient and effective manner within an already crowded curriculum, in a manner appropriate to level. Table 1 reveals a wide range of connections between GIS and mediascape that have not previously been considered together. As the table shows, both usage and design of mediascapes occurs at all levels within the curriculum but with different emphases. For example, mscape holds pedagogic advantage at schools and undergraduate level when the intention is to support students in constructing their own mediascapes, whether that is for an application end goal (e.g. local histories) or a GIS/representational issue. For non-programmers, this ability to build a spatial tool has proved highly popular with both human and physical geography Undergraduate students alike. Whilst looking at levels of attainment in GIS, it is also important to consider how the more general processes of spatial thinking are scaffolded within chosen GI tasks (Golledge *et al.*, 2008).

Level	Task	Learning objective
School	Construct mscape to represent local village history	Engagement with local histories Thinking spatially re spaces/places Introduction to digital technologies & GPS
Public	Use of mscape for the representation of local digital historical archives	Engagement with local histories Thinking spatially re spaces/places
1	Use of bespoke mediascape tool to engage students with upland landscape development	Introduction to digital technologies & GPS Geomorphological sense-making
2	Use of mscape for human geography field site introduction	Training in observation Mobile technologies as transferable skill
3	Construct mscape to represent notions of topophilia/topophobia (in conjunction with written literature-based review and reflections)	Develop critical understanding of the representation of space/place in GIS
4	Use of mscape for introduction to the sites of a city	Familiarisation/orientation to the city for new MSc students (many overseas)
4	Design of mscape for sites in a city on a variety of themes	Familiarisation with location-based gaming Visualization/interface issues on mobile platform GIS analytics (Lidar-derived viewsheds, buffering, nearest neighbor analysis) Research considerations in location-based

		tool design, effectiveness & usage
4	Demonstrate advanced scripting in mscape	Identify wider relevance of programming as a core GIS module
4	Programming & testing of bespoke mediascape elements	Develop Visual Basic skills GIS analytics (including viewsheds) Reflection on GPS accuracy considerations Research considerations in location-based tool design, effectiveness & usage

**Table 1:** Current Pedagogic connectivity between GIS and mediascapes in the GIS curricula at the Universities of Nottingham & Leicester 2008/9.

We might also debate whether the use or reflective construction of mediascapes has greater pedagogic power. Staff-built mediascape tours have been criticized as didactic, yet where used carefully amongst traditional approaches for familiarization and observation training or used to ask students location-related questions rather than simply provide answers, student feedback has been positive. The more constructivist approach of asking students to carefully reflect and argue content and design of mediascapes has won particular student favour at Undergraduate level. At Masters GIS level, the integration of mscape with GIS analytics has levered great student interest together with analyses of location-based tool effectiveness over space time in relation to content. The design of bespoke mediascapes has proved a popular extension to the programming modules, transferring skills to the new mobile platform and empowering students with tools to design their own navigation aids or spatial data capture devices to support dissertations. In all cases, the link between geography and mediascape provides an important bridge to the core GIS themes such as spatial and network analysis and the emergent mobile location-based tool and persistent gaming genres.

There is a tendency for modular teaching to fragment knowledge but this integrated approach implicitly asks students to integrate their understandings across themes and make deeper connections across modules. Overall, while the concept of mediascape is not found within the GIS Body of Knowledge (DiBiase *et al.*, 2006) explicitly, it has now become embedded as an integral part of theoretical and applied geography at many levels of our teaching.

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