ABSTRACT

LASER-SCANNING FOR LANDSCAPE PLANNING: IMPLICATIONS FOR POLICY AND PRACTICE FROM AN END-USER'S PERSPECTIVE

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LiDAR and allied data sources can generate vast amounts of resolute 3D data on landscape characteristics. Do we need this much data in landscape assessment and planning, and what can we do with it if we get it? This paper reviews the context and trends in policy and procedures for landscape planning, in relation to the advances that laser scanning methods offer.

There have been some important shifts in recent years towards a more interdisciplinary, socially focused, and qualitative approach to many aspects of landscape assessment and planning. Paradoxically, however, there may be an increased potential for the use of highly quantified and detailed technical data from laser scanning. In addition to the many emerging applications of 3D data in biophysical and ecological assessment and monitoring, the potential to measure and generate models of complex 3D landscape structures and surface features in great detail may for the first time enable us to quantify important experiential qualities of landscape. In the past, aesthetic and other phenomenological qualities of landscapes were known to be important to many social functions in the landscape, but have proven difficult to measure and sometimes to evaluate. While the trend in the field is moving away from explicit links between the physical landscape and people's psychological reactions to them, the ability of detailed 3D data to be used in landscape modelling, and in particular realistic landscape visualisations, has nonetheless many possible ramifications for landscape planning in the areas of public involvement and environmental perception.

In new cross-disciplinary planning processes, particularly in the transitional landscapes between extensive wildland or working forests and the urban centres, improved and continuous 3D data could be very useful in generating data for hybrid models of vegetation and built structures, eg. in computing fire risk from proximity and type of trees around and within housing areas on the urban-wildland interface. The potential for that data to underpin more defensible, realistic landscape visualisations may fill an even wider need, impacting many stages in planning. Virtual reality systems, as illustrated in this paper, are capable of showing far more visual detail than is actually available currently in landscape data. Laser scanning with automated object recognition could be very useful in developing accurate Digital Landscape Models (DLMs) to fill this gap, with numerous applications in planning, design, and monitoring, depending on cost-benefit ratios relative to simpler photograph-based visualisation methods.

However, planning procedures and policies still lag behind the technology in terms of how to incorporate qualitative (people-centred) and experiential information, together with technical assessments and models, into planning and decision-making. There may be a vacuum in the policies required to apply laser-scanning data appropriately. For example, there is limited guidance on ethical use of highly realistic visualisations which are capable of influencing people's emotions and attitudes on landscape issues. Potential dilemmas and benefits associated with the use of laser-scanning data are reviewed in this context, and some speculation is offerred on prospects for the use of this technology in future landscape planning.