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<u>Chapter Title:</u> Bringing Land Law to Life: Lessons from the development and deployment of an immersive 'Virtual Town' in the teaching of Land Law

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Introduction

The teaching of Land Law is often stigmatised for its seeming inability to draw on the inherent intellectual intrigue exhibited by university students during their studies. Indeed, a commonly held belief is that, by teaching Land Law, one may be drawing the short straw (perhaps only second to teaching Trusts and Equity). In recognition of this, we have enhanced the learning and teaching experience by utilising 3D graphics technology to integrate a "Virtual Town" into the delivery of our second-year Land Law module. A digital 3D model representing a small, urbanised, area whereby Land Law concepts can be demonstrated to students is incorporated into lectures, tutorials, and workshops, and has now been extended into assessments. An early version of the town can be viewed at https://youtu.be/oMiufsm58j4.

This chapter intends to set out the pedagogical advantages of adopting the Virtual Town for the teaching of Land Law. It describes how the town was designed, developed, and integrated seamlessly into the module along with how it assists digital readiness. It explores digital empowerment in regard to incorporating new tools into the learning environment. Finally, it will consider how the Virtual Town can be taken forward to enhance legal teaching in the future.

With this initial two-year project drawing to a close and the Land Law module moving forward, now is an ideal time to evaluate and reflect on the success of embedding the aforementioned digital artefact into the delivery of module content. By employing 3D visualisation(s), we have ensured that the teaching of Land Law remains future-ready, in key part by transforming a usually black letter law module to one using a dynamic visual medium to enhance the learning and teaching experiences of students and staff. Digital empowerment and future readiness are not just qualities that law students need to engage with and embrace, legal educators must also adopt modern practices to enhance their own teaching provision. Digital empowerment for legal teachers involves the effective use of technologies outside those common to a modern university environment, often serving as something of a baseline. This is with a view to enriching the student experience and contributing towards their legal development. This can be both in the improvement of grade outcomes, but also legal skills and graduate attributes. Land Law remains a challenging area in which to implement

digital empowerment and future readiness given the inability of the profession to embrace econveyancing, almost 20 years after the LRA 2002 (Dixon,2018, p34), but certainly the teaching of this area is ripe for new technologies.

The Pedagogical Advantages of Teaching with the Virtual Town

There are various reasons why teaching Land Law can be challenging within UK law schools. Its underlying concepts and proprietary interests may have little to no point of reference in students' lives, with few having gone beyond entering into a short-term tenancy agreement for their student accommodation. This contrasts sharply with the awareness arising from the portrayal of Criminal Law through popular culture, the involvement of Contract Law in everyday life, and Public Law's close association with political events never far from the front pages. Land Law, sadly, rarely features in gritty TV legal dramas or murder mystery novels, although an honourable mention can be given to the 1927 novel *Unnatural Death* by Dorothy L Sayers (Sayers, 1982), set to the backdrop of the "new" Land Registration Act 1925. It could be that TV producers have yet to formulate a means of drawing in the audience numbers that would justify the production of a 6-part drama series set to the backdrop of the finer workings of an easement or restrictive covenant. The effect is that students often have a limited idea of the subject prior to the first lecture of the year.

The teaching of almost all law subject areas, and especially, Land Law has been dominated by the text-based medium. This challenge within learning and teaching is summarised by King and Haapio who state "As a result, modern legal teaching, although providing students with more colourful textbooks, internet support sites, online legal databases and PowerPoint presentations etc., still appears to be text-dominated. All of the above rely heavily on textual elements and current legal textbooks, by using very few visual stimuli in the presentation of their teaching material, support the traditional approaches in legal pedagogy." (King, 2016, p84) Further states, "In most instances, we communicate our knowledge in written and oral form. Most legal literature is text only, black and white, with no pictures, graphs or examples. We may use charts in our teaching, but when it comes to legal research, memoranda, opinions, textbooks or contracts, most of us tend not to think of visual communication." (Haapio, 2010, p391). Perhaps the best identification of the challenge comes from Weir who states "Property lawyers revel in the medieval; the arcane, the convoluted but fundamental concepts that abound in property law. We simply look around us and see property law manifested in the chair we sit on... not to mention the fascination that awaits the next High Court case on native title...A student may not share our enthusiasm." (Weir, 2007, p107). These papers' identification of the challenge being that of a subject which, hitherto, has no point of reference for new students and is disseminated through large volumes of black letter law text. The absurdity of the situation is made evident when using the same medium to teach a generation of students brought up on a mix of smartphones and highly visual stimuli.

King's use of visual pedagogy seems particularly suited to the teaching of Land Law and allows connections to between the different proprietary interests attach themselves to land (King, 2016, p91). While Haapio notes that "Visualisation is used in many areas to help reduce complexity and convey information quickly, business managers and engineers commonly use flowcharts, timelines and other visuals to communicate information." (Haapio, 2010, p393). A natural conclusion might be that Land Law is ready for a visual approach to be undertaken in its teaching. The Virtual Town builds on King's work using visual pedagogy, with the benefit of a realistic 3D animation giving new views

and possibilities to learners. In Sherwin et al, the authors provide a list of seven ways in which visual representations can improve legal decision-making and judgement (Sherwin et al, 2006, pp241-245). Perhaps the most important being the ability of visual displays to convey more information than words alone, thereby allowing the learner to engage with greater emotional bandwidth (Sherwin et al, 2006, p241). Adrian identifies that "Legal education needs to keep pace with technology. It is suggested that this is achievable by employing two strategies simultaneously. Firstly, by embracing the concept of law as narrative; and then secondly, using interactive media to explore that narrative." (Adrian, 2010, p257) Certainly, the use of an interactive Virtual Town fulfils this criterion. One aspect to be recognised when adopting visual approaches is the time cost, as King accepts that this takes longer to prepare than traditional text modalities. They do, however, allow for more opportunities for critical thought and debate, as concepts and legal points are easily conveyed (King, 2016, p91). In a similar vein, Weir suggests that using physical models adds interest (Weir, 2011, p113) but are highly time consuming to produce and, not necessarily, the best option when teaching a class of twenty students. Hagan, while not directing visual approaches, supports innovative development of the legal curriculum with a design-oriented approach focussing on remaining usercentred, experimental, and intentional in how one operates (Hagan, 2019). Within this tool we have embraced these three principles while placing emphasis on Hagan's underlying message of when attempting new ideas, everything should be treated as a prototype. It should remain subject to forces of change, informed by the experience of participants.

The use of digital and visual technologies is already changing the very nature of practicing law (Sherwin, 2006, p235). The modern court room gives solicitors and barristers access to audio-visual technology to present arguments and, as such, the "law students have to do far more than become acquainted with the new visual technologies being used in the law today. They need to understand how new (and more established) visual technologies change the ways that their users and their audiences think. They need to develop a critical visual intelligence that enables them to anticipate the cognitive and emotional effects of visual and multimedia displays and to respond to their adversaries' visual and multimedia presentations. Lawyers of the future need to become conversant with the expanded toolkit of conceptual and technological resources that we have described above, not simply in order to communicate and persuade more effectively..." (Sherwin, 2006, p260) Therefore the use of digital imagery in the classroom can have the dual effect of enhancing engagement, but also improving skills for future careers. The Virtual Town ensures students are future ready in using visual stimuli and interpreting imagery, all while making classes more engaging. This digital artefact has also been designed to integrate seamlessly with the teaching pedagogy adopted by Hertfordshire Law School (Wild, 2017, pp.310-312). To this end, the Virtual Town itself is used in different ways. For example, in the form of short videos accompanied by audio narratives during online lectures, ad-hoc explanations within skills-based sessions, and question setting and answering for workshops (these will be explored in more depth-over this chapter). The tool itself feeds into a wider approach involving the enhancement of problem-based learning and legal skills for the workplace. In doing so, the use of the Virtual Town goes some way to incorporating and supporting the Knight and York, USEM Model (Knight and Yorke, 2002, p264-266). It gives the students an understanding of the subject, enhances skills requiring the observation of legal problems and creating arguments using visual media within Land Law. In sum, it encourages efficacy and the student's own recognition of their underlying thought processes in coming to the answers.

Despite a gradual trend towards a more visual approach, law is still a heavily text-based subject yet the advantages of making a shift towards a more visual delivery are too important to continue being ignored. The ability to embrace digital technologies in preparing students for future careers, improving visual literacy skills, and allowing students to learn in a more interactive environment make the use of advanced visualisations vital for the future of Land Law.

Design, Adoption, and Embedding of the Virtual Town into the Land Law Module

The Virtual Town has been jointly developed in-house at the University of Hertfordshire by the authors. This digital artefact was loosely based on the small Hertfordshire town of Baldock but underwent significant changes to ensure that almost every conceivable Land Law conundrum could be explored, as one student remarked "one town has never had so many dodgy conveyances and legal problems".

The Virtual Town was modelled using Google's 3D editing application, 'Sketchup'. Of interest is that this same software integrates seamlessly with the satellite data made available via the 'Google Earth' platform. Through this synergy, it is able to selectively download regions in isolation of their greater geographical area(s). While this functionality allows for the viable, photorealistic, representation of an existing locale, employing it would have also meant sacrificing creative agency over the depiction of the settlement itself. In our hesitance to commit to a process which might limit our creative vision, what follows is an explanation of the considerations leading to the manual authoring of the model and the suitable abstraction of a real-world town.

There are several variables to be mindful of when addressing how to convey meaning in a 3D virtual space. Indexicality - best understood as a modality of signage - is a primary factor often overlooked by those seeking to communicate information in a visual medium. This concept draws from a rich field of research on the subject of semiotics and is best understood by examining the art of cartography and its multitude of recognisable symbols. Modern day map making, often referred to as a form of 'neo cartography', is a largely computer-driven affair and procedural in nature. It is a process driven by algorithms designed to work at scales beyond the ability of humans to envisage. Its implementation deviates from traditional cartography which, in addition to conveying spaces visually, also serves as a vehicle for narrative. This ancient art form has found new appreciation in the entertainment industry inside video games. It is there that these media artefacts strive to depict fictional areas whilst holding the attention of users. It is by exploiting human intrigue and our propensity for pattern recognition that such feats are achieved. To this end, much emphasis was placed on the visual codifying of identifiable elements in the town and context in which they sit. Our goal was to elicit a response which generated an intrinsic motivation to explore the environment and glean meaning, thereby holding attention.

For the Virtual Town to be effective it needed to be incorporated into the schools teaching strategy, with the school using online lectures the use of an audio-visual medium was effective as an additional means of bringing variety to a presentation. This multi-modal approach made for a more engaging conveyance of information. When coupled with an integrated MCQ could both provide knowledge to students in a novel manner, but still be used to test their comprehension. For example, after viewing a short video within a lecture, created using the Virtual Town tool, a short

comprehension exercise followed (and the data collected). While the tool was used with online lectures, it could easily be transferred and used in traditional delivery with all the benefits.

The integration of the Virtual Town into the wider module required support from the wider module team. This took the form of meeting technical prerequisites and ensuring its correct utilisation within the classroom environment, the management of which proved to be complex. In addition to the existing cognitive load placed on staff during lessons, a new variable was present. This was to ensure that the town was used as a tool, and not a gimmick that would otherwise demonstrate technological skill with limited benefits to the underlying pedagogy. In such instances when teaching leases or mortgages, a conscious decision was made not to use the technology. However, when teaching proprietary interests' such as Covenants, Easements or Adverse Possession, the Virtual Town was used to help illustrate the law in ways that a verbal description may prove difficult for students to comprehend. The town was also used interactively, for instance when asking students to consider the basics of easements such as Rights of Way, Right of Water, Rights of Light and Right of Support. Students were asked to examine the Virtual Town, projected onto the board, and point out where a potential easement could be and what evidence i.e. caselaw they had to support the example that they had chosen. The Virtual Town was used as a means of posing questions to students in preparation for workshops and allowing them to visualise the scope of a theoretical problem between two neighbours. This approach was particularly effective when teaching acquisition of easements, an area of English land law that can be complex and difficult to communicate verbally. To ensure the module was balanced for all learners, in addition to the audiovisual presentation of the question, a text-based version was readily available to ensure that different types of learners were supported, in addition to meeting study needs agreements. The audio-visual questions were presented from a first-person perspective, at eye level, as if the student was in practice and walking over the affected area with the client.

Finally, the Virtual Town was integrated within the module assessment, most notably involving the Oral Mediation assignment which only took place during the first year of its use. When incorporating the Virtual Town into the assessment it allowed the assessment information to include, photos, plans, and videos of the problem-based scenario.

As with many technologies, the Virtual Town has some limitations when considering its suitability for different contexts. The town was not able to be used for all aspects of the module, especially in relation to leases, when looking inside properties was required. However, this may have been possible were it not for time constraints. Of interest is that the use of the town was seen, by some colleagues, as an erosion of a traditional teaching modality which places emphasis on knowing the law and cases. We respectfully reject such criticism, as we hold that the teaching of law must move forward, informed by contemporary research, and enabled by diverse skillsets. The use of the Virtual Town is not and could never be a silver bullet for ensuring successful outcomes for students or staff. Students are still required to put the hours in, while staff need to be adequately supported in their use of the technology.

Our approach to using this tool, both within the classroom and in lectures, brought Land Law concepts alive in a manner not usually seen in the teaching of covenants and other areas. The use of a dynamic visual medium to facilitate content delivery has the potential to ensure students are fully prepared before entering practice. Should a future client present photos or ask their solicitor to

come for a site visit, graduates would understand the best way to convey and explore such information. Therefore, providing exposure to a greater variety of modalities by way of drawings, mocked up Land Registry plans, and true 3D visualisations holds merit. The use of the tool also had the additional affordance of giving students exposure to 3D modelling technology and authoring processes in a professional context. As Sherwin et al identifies, the increasing use of technology in complex legal cases, for instance the identification of a virtual reality system being used before the Bloody Sunday Tribunal allowing witnesses to recall evidence from multiple perspectives, and to confirm testimony (Sheriwn, 2006, p256-257). Therefore, giving students time and support in their use of rudimentary 3D design tools gives them a future ready exposure to a digital technology not normally associated with a law school.

Future Readiness in Learning and Teaching Land Law

Future readiness in the teaching of Land Law isn't a fixed end point, but a method of continuous improvement. The goal lies within the effective use of technology to enhance learning and teaching. It manifests through the discovery, or development, of methods facilitated by the use of currently available technology. It supports the delivery of a curriculum's constituent elements in an enhanced form. As an example, the now common use of digital learning environments across programmes of study, or the use of tools such as Padlet within a seminar to encourage and promote debate outside of the classroom. With this approach, at times, big leaps forward can be made while, at others, small incremental improvements must suffice. In the use of off-the-shelf technology, sometimes in innovative ways, the overall cost is kept to a minimum ensuring the viability of such projects. As Shewin et al observe, the use of digital and visual communication is changing the methods employed by lawyers; that being able to visualise arguments means they will strategise their cases differently. The benefit becomes apparent when cases are prepared in new ways, allowing for a relationship between numerous elements to surface in more elegant fashions. Such discoveries would otherwise remain hidden from traditional modes of cognition (Shewin et al, 2006, p235). Therefore, for students to become future ready they will need to cultivate visual literacy as defined by Sherwin et al; "...being able to identify the meanings that pictures leave unsaid and to translate those perceptions into words" (Shewin et al, 2006, p261).

Visual literacy will likely become essential in embracing the future, especially in the UK where the use of such communication is at the judiciary's discretion, and therefore of significant potential value. In looking towards the future, the adoption of AI technology in the legal sector has the potential to radically shake-up legal professions (Kairinios, 2019). The potential to reduce the need for extensive legal knowledge is on the horizon with publicly available databases allowing users to summon obscure legal knowledge with a few clicks of a button. In its place, the future ready law course will likely be focused on the cultivation of discernment. The acquisition of critical thinking skills while emphasising the examination of law from different perspectives, made possible via the convergence of numerous modalities. Future readiness is then being ready to use new technologies whilst exploring opportunities to adapt and apply them in pursuit of improving the student experience. This while systematically developing the skills that future lawyers will need as the legal world embraces technology both inside and outside the courtroom.

Digital Empowerment and Future Development of the Virtual Town

It is our belief that digital empowerment for legal teachers involves employing technology in innovative ways. It means moving beyond the sector-norm of modern university to further a student's learning experience and contribute towards their legal development. Whether through email or discussion forums, such digital interventions have served to augment social interactions between educators and their students.

It does remain something of an irony that, as we strive for efficiency in our use of technology, it often presents new and unforeseen problems. To address this, it is necessary to turn our attention towards the computer sciences. To understand what is commonly referred to as user experience design (UX) we must decode some subject knowledge in a bid to converge our disciplines. UX, in the context of educational technology, is best understood as establishing best practice as it relates to students use of technology. It focusses on minimising cognitive load and ensuring that the introduction of new elements does not place additional burden on their studies. Being able to gauge the UX through a faithful interpretation of the student experience may be the most important factor in deciding how one employs the use of technology for teaching.

Despite its unfamiliarity to existing Land Law practitioners, there are numerous affordances attributed to the use of interactive visual media. Its true value, however, becomes evident when exploring the adaptability of computer-generated graphics and its potential to convey content in a manner either photo-realistic or abstract in nature. The latter being defined as a simplified representation of a complex scene. Such abstractions become relevant when considering the potential of other immersive technologies and the manner in which we interface with them. This could be in the form of immersive Virtual Reality (VR), wherein head-mounted displays are used or as Augmented Reality (AR), which involves the use of what is best described as a looking glass allowing for the real-time annotation of the physical world. Both allow for the control and recreation of physical spaces, re-arranging them to explore hypotheses and communicate ideas. As such technology becomes readily available, so too will baseline digital literacies need to advance in order to exploit them. This might take the form of exploring a remote, inaccessible location to examine living conditions or to experience events from a first-person perspective, revealing new findings.

The 3D visualisations used in the Virtual Town demonstrate the rich potential for embracing technology in the teaching of law. Similar technology could also be harnessed to add value to the greater curriculum, notably in the teaching of the Laws of Evidence, Housing, and Planning Law, with potential scope in Public International law and Environmental Law. The restrictions for its use are only limited by the imagination and the usefulness of being able to demonstrate a legal concept in a virtual environment. Furthermore, with the advent of the Solicitors Qualifying Exam (SQE), law schools may embrace the development of an SQE ready LLB style undergraduate degree. To these ends, new digital tools such as the Virtual Town will be needed to enhance the acquisition of knowledge and concepts, thereby freeing up time within the curriculum to focus on the practical skills required. Finally, the Virtual Town has the potential to bring case law alive by giving students an enriching audio-visual experience in a way that wouldn't be possible when reading from a page.

Impact of using the Virtual Town

For the use of the Virtual Town tool to be a success, the module needed to measure a positive impact on student engagement. This would need to be in conjunction with a positive review from staff teaching on the module. Evidence from sessions involving the Virtual Town noted a high level of student engagement from teaching staff and students. In the end of year module feedback questionnaire (MFQ), students declared that the Virtual Town had a positive impact on their learning experience. One alumnus who made use of the Virtual Town, when asked about their experience noted:

"The 3D Virtual Town greatly enhanced my learning, allowing for complex sections of Land Law to literally jump off the page and be quickly comprehended. I am sure this technology should be extended to improve the learner experience in other areas of law." Richard Buchanan, University of Hertfordshire, Graduate 2018

Student feedback validates the positive impact that the use of the Virtual Town had on class engagement. An additional, incidental, piece of evidence to support the increasing interest in Land Law was a rise in the quantity of third year dissertations wishing to explore the subject. Our data also indicates an improvement in student outcomes when embracing the technology, first at the lower end of the marks scheme where the module failure rate dropped 5.8% on the previous year. At the higher end those achieving firsts (70% plus) increased 7%. This increase was not at the expense of those achieving 2:1, which remained identical, but a decrease in those receiving 3rds and 2:2s. Therefore, pushing the grade bell curve towards the higher end. In the second year, these improvements could not be sustained and while the failure rate increased once more, those who achieved a first-class mark for the module only dropped by 2%. In sum, while the results for the second year, when the Virtual Town was in operation, noted a decrease, the overall results were still an improvement on the year when no Virtual Town was used. These results suggest a positive impact on the student mark outcomes for the module. In order to maintain the assessment quality, a rigorous internal and external moderation process was undertaken with assessments being sent to moderators after the assessment.

The impact on staff has also been positive. Neal Geach, Associate Dean for Learning and Teaching within Hertfordshire Law school stated, in regard to the application process for the Routledge/ALT teaching with technology prize in 2016:

"The Virtual Town that Thomas and Andrew have developed is an exceptional learning tool which has numerous pedagogical advantages. As a former Land Law teacher, I can see how it brings to life the different proprietary interests that may exist and illustrate them in a practical way to aid the visual learner who can struggle to deal with such concepts in the abstract when they have no practical experience of them. Indeed, I have heard many students talk in a very positive way about the tool for this very reason.

The Virtual Town also has many benefits that can be transferred to other modules. I am keen to utilise the town in my Law of Evidence and Advocacy modules to visualise crime scenes

from which to assess the plausibility of evidence (e.g. could a witness really have seen what they claim from that vantage point) and so create a more realistic scenario."

Team members also declared this digital artefact as 'useful', noting the improvement in understanding exhibited by students due to having another tool to make such sessions more engaging.

The use of the Virtual Town was generally a success with improved results from across the year group. A more engaged student group emerged, and school staff embraced the use of the town to develop their own teaching practice.

Conclusion

The Virtual Town has proven itself as a useful tool for the teaching of Land Law. In doing so, it has shown that the module content can be made future ready by embracing technology as an additional central pillar alongside core subject knowledge, research, and teaching. The use of the digital artefact had benefits for both the student and staff experience. The approach assists students in their development of existing skills in tandem with additional competencies associated with visual literacy, an increasingly important skill for the modern solicitor and barrister. The biggest drawback extends to the time it takes to develop and create 3D models for such sessions which, for those lacking competence, requires greater consideration than simply writing a text-based problem question. In the authors' experience of using the town, it has certainly been worth the extra preparation time. Happily, it has also become evident that as familiarity increases, so does the efficiency of the authoring process.

Our project tackles one of the most challenging aspects of teaching Land Law, doing so in a way which utilises technology that is available off-the-shelf. The Virtual Town made an immediate impact in the grades received by students across the module, improving outcomes not just of the highest performers but moving the class grade profile upwards. The use of the technology has opened the door for potential use in other modules and unlocked the idea of self-learning activities based on the 3D model which a student could access when ready.

Academics using digital technology in legal education have a duty to embrace new practices to enhance and support the curriculum. In doing so, they will meet the expectations of students who demand a more innovative and interactive approach to learning. Employers demand a highly competent workforce with skills that are ready from day one and go beyond previous expectations. In order to meet this demand for change, modules need to embrace technology not only in how learning and teaching is delivered, but also within the content of the teaching sessions themselves. 3D visualisation is a useful tool in helping to facilitate this change and bring law alive in the classroom.

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