Evaluating the Digital Songlines Game Engine for Australian Indigenous Storytelling

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Abstract This paper reports on a consultative development cycle with remote indigenous peoples around Australia, the protocols established for their respectful engagement, and evaluation of the digital storytelling game engine developed for them. The Digital Songlines (DSL) digital storytelling project is funded by the Australasian Cooperative Research Centre for Interaction Design (ACID). The project has been developing protocols, methodologies and toolkits to facilitate the collection, education and sharing of Australian indigenous cultural heritage knowledge since 2004. The project explores the areas of effective recording, content management and virtual reality delivery capabilities that are culturally sensitive and involve the indigenous custodians, leaders and communities from around Australia. It investigates how players, in a serious gaming sense, can experience Indigenous virtual heritage in a high fidelity fashion with culturally appropriate interface tools. This paper reports on evaluation of its effectiveness in the field.

1 Introduction

The underpinning philosophy of the Digital Songlines (DSL) game engine (DSE) development is to provide an accurate and affordable solution for the sharing of cultural knowledge that is directed and owned by, and meets the needs of, the community that instigates it [see also 7, 8, 14]. The DSE provides a voice for those groups of Australian Indigenous peoples that have a strong desire to maintain and share their local cultural knowledge using contemporary 3D gaming technologies. It is especially pitched at the younger generation who are already familiar with computer gaming culture. Yet, and despite gaming culture often not being considered a serious form of narratological expression, the stories to be told on this platform are very serious. For, whenever indigenous storytelling is performed, the implications for its uttering must be taken very seriously. In the telling of their stories, their culture is both maintained and affirmed. Hence, in the production of these stories within the game engine, notions of authenticity are paramount – narratologically, visually and experientially.
Most importantly, the features of the landscape and the fauna and flora depicted must be faithfully reproduced in such a manner that the stories to be told in this medium are closely linked visually and experientially with their ‘country’ of origin (the local landscape environment which may extend beyond view – literally and metaphorically). The production of this simulated ‘country’ raises ethical, moral, and social issues for the groups involved. To address these, all issues are discussed in a cyclical process of consultation with the various communities engaged at each juncture of the development process.

Many of these issues are addressed in the compilation of a set of protocols or ethical guidelines. They help establish a respectful procedural understanding for all parties involved. This paper discusses the consultative process, the protocols used, and evaluation of the DSE by its primary users. It concludes by suggesting that the DSE is a tool for empowering Indigenous Australian peoples to preserve, enhance, maintain, and pass on their cultural knowledge to current and future generations.

2 The DSE Development Process

Much of the material gathered for the production of a digital storytelling DSE is of a sensitive nature. There are a number of sensitivities involved in the gathering of support, and the gathering and application of information. In the first instance, the communities involved need to be actively seeking technological applications for the implementation and re-distribution of their local knowledge on a game-based platform. The groups and their members need to have the appropriate authority from their clan elders to talk with the DSL team about cultural heritage issues. There are some sacred and spiritual knowledge that cannot be shared without those with access having gone through a lengthy initiation process. But the initiation process itself is too sensitive to discuss hence will never be a part of any DSL project. The only information available in this area is of a very generalised anthropological nature form past studies. There is little or no contemporary access to this knowledge.

Hence, the main concerns we can deal with tend to be related to what the DSE supports: aural, visual, and narratological authenticity. Working in real environments – established and traditional community lands – these environments have to be accurately re-presented. Each project has specific requirements. Thus, new assets are created for each project. Assets from one project are not easily transferable to another. For example, we cannot use didgeridoo music where it does not belong in that country. Along with other assets within the country, ‘country’ itself can be thought of as an artefact. It is the largest artefact in Aboriginal culture. The accurate portrayed of this country is thus of paramount importance. As ostensibly an educational product, if we create inaccurate environments then ‘inter-actors’ with the product may be misled about a particular story, or scene within a story. This has implications not just for knowledge acquisition and cultural maintenance for posterity but, in Australian Aboriginal culture, the inaccurate telling of stories may affect the environments they refer to with deleterious spiritual consequences.

To understand this we must accept that there are vital differences in Western and Aboriginal knowledge traditions and practices. Where Western traditions emphasise
the differences between subject and object, between what exists and how we represent it in a variety of symbolic systems. Aboriginal knowledge traditions emphasise the unity of subject and object – of what exists and its reciprocal re-presentation or corollary. In Aboriginal knowledge traditions, language, ceremony, singing, dancing and other representational forms can influence events and cause things to happen. Objects and phenomena can be “sung” into and out of existence. These processes of the amalgamation of representation and reality have been going on since the Dreamtime (in Australian Aboriginal terms, the time of creation of all things) and continue to this day [see 12 for a more detailed discussion on this topic].

A key component of any DSL production is the depiction of ‘country’ (or landscape). ‘Country’ can be thought of as the largest single artefact in Australian Aboriginal culture. With ‘country as artefact’, unlike most gaming environments, the landscapes depicted in the DSE environment is not just a backdrop, it is very much an enveloping influence on the overall immersive experience [13]. It is both a receptacle and it actively participates in the telling of the story. Hence, every component of the storytelling application developed must bear the burden of the responsibility to represent country accurately. There are few insignificant details that can be excluded – everything matters. An extensive consultation process ensures this accuracy.

At each stage of the project the project team consults with the original custodians of the story. This ensures the assets have been used in the correct manner. It includes not just the landscapes but the knowledge that is embedding in those landscapes. Each individual plant and animal must be of the correct type or subspecies, and the narratological information associated with them has to be accurate and authentic. For example, a totem animal or Yurdi (an animal of special significance) may have a recurring theme in a story told by a particular community. Therefore, it must be included. Different animals have differing significance in different country. These are complex operations that require diligence and be allowed for in the production budget.

3 The Project Cycle

Each project follows an iterative consultative cycle. Initial planning is done onsite with the community. Planning which occurs offsite, is returned for comment. Consultation continues throughout the project’s development. A project cannot be finalised until this authentication process is completed. The typical process includes:

- visiting a remote community;
- members of that community are shown the main features of the DSE toolkit environment; and,
- their needs are discussed.

This may take several days. In the mean time, with permission, other members of the team may collect photographs, video, sounds, and samples of local materials, such as bird noises, grasses, and notes on, and photographs of, local landscape features. These are then used in conjunction with satellite and aerial photography of the region to build the toolkit. From this, a 3D ‘snapshot’ of their country is created. In prototype form, it is returned for comment. From this, more information is provided by the
clients about what they would like to see in their simulated country, the stories, what animals are needed and so on. A collection of agreed fauna and flora is modelled and animated. From here, a core version of the stories in the virtual environment is generated. This is again returned for further consultation, and so on, until consensus is reached on levels of authentication. Once the authentication process is completed the developed toolkit is handed over to the custodians of the client community for their express use and distribution.

4 Protocols

At each stage of the project, a set of protocols is addressed. These protocols address the intellectual property and copyright issues regarding Aboriginal cultural knowledge. They were established at the beginning of the DSL team formation in early 2004. They are intended to ensure that respect and recognition of their knowledge occurs and that protection from abuse of such information is avoided. The protocols were developed after original research and review of existing protocol documentation [such as that contained in: 1-5, 9-11]. The protocols are open to negotiation with the various groups engaged and have evolved over time. The latest protocols are included here. They are addressed at each phase of the toolkit production:

1. That the stories of Traditional Owners be recognised as a 'body of knowledge' that may be tens of thousands of years old.
2. That the stories are sourced from the Traditional Owner who represents the country of which that story might originate.
3. That the communities make their own decision on what stories they want to have represented in any Virtual Heritage project.
4. That an approval process be implemented and approved by communities.
5. That the story represents the community and clan, and is specifically placed geographically.
6. Ownership and copyright of the story is always held by the nominated traditional owner group or community council.
7. That the content of the Virtual Heritage application including artist styles is approved by the community at all key production stages.
8. That the story provided by the community is not modified unless approved and endorsed by the Traditional Owner representative of that community.
9. That the community be paid industry standard rates and receives royalties from revenue earned from any capitalization and commercialisation.
10. That Indigenous people design and participate in the creation of the Virtual Heritage application development at all stages of planning, design and production.

The protocols influence and direct what information can be sought and how it can be used. They have proven to be a robust yet flexible guide for the production of Australian Indigenous digital storytelling.
5 Evaluation

Over the course of each project a reciprocal relationship has been built with the development team and the numerous Aboriginal communities, groups, schools and museums engaged. The protocols have helped establish a flexible and respectful relationship between the communities and the project team. As a result, the various groups engaged have enthusiastically grasped the opportunity to gather information relating to their particular area of 'country' using a range of digital media. This has not only led to the skilling of many community members in digital media, but has provided a cultural focus for the sharing of knowledge practices between generations – a key goal of the DSL project. Early evaluation of the DSE by groups of Aboriginal adults and children shows that both the Songlines concept and the visual interface and interactive activities that are possible within the virtual environments depicted have been enthusiastically received.

The evaluation of the Songlines environment and user interactions has yielded rich data about the nature of re-presentation of Aboriginal knowledge, the pedagogical implications for Aboriginal learners, and the participatory design process for the construction of accurate local landscapes and cultural activities. The key thematic areas addressed to-date include, language learning, traditional food sources or ‘bush tucker’, traditional crafts (see figures 1, 2, & 3), and narratives associated with traditional landscape representation in painting (see figure 4).

![Figure 1: Learning about net-making in the DSE.](image-url)
Figure 2: Learning about grain grinding in the DSE.

Figure 3: Learning about spear-making in the DSE.
Evaluation has occurred in networked collaborative settings with educators, developers and participants interacting both physically and virtually through the media. Participants varied in their make-up. Ages ranged from primary school children through secondary school, and adults. Each session took about 30mins – this is the time needed to learn how to navigate in the world.

With a range of ages of participants there were multiple expectations of the kinds of learning the Digital Songlines environment could support. Preliminary feedback indicates that young participants, already familiar with the gaming culture, came to the pedagogical exercises with prior expectations on how games work and were either disappointed that the Digital Songlines environment was not like their own (commercial) games, or delighted that it was better. Where the younger participants expected typical game-like activities and tasks, including quests, the older participants looked for tribal stories, traditions and languages to be ‘brought to life’ so they could pass them on to the next generation. Older participants and educators saw the most important feature of the tool was how it allowed for exploration of the media so that they could construct their own materials for addition to the environment. They saw this process as evocative of ‘real’ learning through experience and recreation of a ‘living history’. The game became a kind of ‘new literacy’. Some of the more
negative experiences included: younger children (not yet acculturated to game-playing) became quickly disoriented, and right clicking for information was not intuitive. Some of the more salient discoveries are listed here:

- The Aboriginal children who participated in this exercise showed real pride when they saw what the program represented. They were surprised at the rich graphics and interaction. Others felt it was a historical simulation. Thus, as a tool for empowering self-determination and overcoming negative stereotyping by mainstream media, it was instrumental in dismantling preconceived ideas of self-worth and image – the normally held view that somehow indigenous peoples ‘cannot do this kind of non-indigenous hi-tech work.’
- Most of the younger participants, seven years of age and older, were used to games software which included some sort of quest. Therefore, they were focused on killing animals in the scene rather than investigating other features, such as visiting one of the campsites. They needed a purpose to go to the campsite. Their prior games acculturation meant they thought of interaction with games software as a demonstration of skills and the completion of tasks. To make them walk to the campsite, it was necessary for the teachers present to give them clear guidelines, a mission, or quest.
- In terms of language acquisition, we found that to learn some of the words, children needed to repeat the words as they listened to them, or have collective sessions with their teachers after interacting with the Digital Songlines environment to have particular points not clear in the game environment explained.
- A small difference in age groups made a big difference in how they interacted. Younger children took quite a while to engage and understand the exploration method and simple teacher-directed quests. These preschool children were still acquiring motor skills and needed various levels of mouse mastery to navigate. However, this was achieved within the timeframe of the session. Older children requested more of a challenge or quest-based interaction.
- There was a high level of interaction between the players. They talked to each other about what they saw and what they were doing. This indicates a strong association, connection and engagement with the software and environment depicted.

7 Conclusion

This paper outlined the underpinning philosophy of the DSL development process. The DSE toolkit used for Australian Indigenous storytelling goes some way towards helping to preserve the historically, culturally, and sociologically significant places, infrastructure, and artefacts of many remote Australian Indigenous communities for current and future generations in highly situated contexts [32]. The use of a game engine has proven to be instrumental in engaging with young and older members of
these communities alike. Its real-time 3D interactivity provides an educational platform for the sharing of their local knowledge. The three-dimensionality of the game environment also provides an appropriate interface for contextualising Australian Aboriginal knowledge sharing in its re-presentation of their most important cultural artefact ‘country’, embedded with authentic fauna and flora. This work highlights the need to find new ways to communicate diverse cultural understandings. More particularly, how technology can assist in the empowering of cultural identity in an increasingly homogenous world mediated by Western cultural values advanced by the same technology.

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References


3 Bostock, Lester. 1997. Greater Perspectives - Protocols for Production of Film, and Television on Aboriginal and Torres Strait Islander People. Australia: Australian Government.


