LIGHT YEARS : JURASSIC COAST AN IMMERSIVE 3D LANDSCAPE PROJECT

Jeremy Gardiner

Artist

43, Gordon Square, Bloomsbury, London WC1H OPD
UK

mail@jeremygardiner.co.uk

<http://www.lightyearsprojects.org>

Abstract – *Light Years : Jurassic Coast* is a three dimensional temporal arena of a UNESCO world heritage site. A mixture of both old and new, hybrid techniques that combine characteristics of painting, drawing, computer animation, landscape data and immersive VR. Inside this virtual space is a topographical landscape of the Jurassic Coast in three dimensions. *LY:JC* uses technology normally associated with computer games in creative and innovative ways. *LY:JC* can be transmitted in scaleable formats to allow the work to be viewed on a mobile device, plasma panel, stadium sized screen or experienced in remote locations with a portable projector.

INTRODUCTION

For two decades using different means in diverse contexts I have always maintained a dual purpose. The first objective has been to utilise the convergence and combination of different technologies to produce visually and intellectually challenging artworks. The second aim has been to extend common notions of narrative, place and identity using cutting edge digital media.

Some of us collaborate because we enjoy working with others. I think the reason most people collaborate is so that something other than their own experience can be brought to the work. In my case nothing has had a stronger impact on the refinement of *Light Years: Jurassic Coast* than working with Anthony Head, digital artist and computer programmer. We have since formed a partnership for the development of future artworks, <http://www.lightyearsprojects.org>

Our first objective was to consider a specific item of hardware or software in terms of what it could do and determine whether or not it would be useful, whether or not it would allow scope for an idea to be developed or communicated. The second objective was to decide whether the specific qualities of a piece of hardware or software were interesting enough to enable us to build a work of art. The third was to identify hardware and software capable of doing what we wanted it to do. The fourth was to make the hardware and software perform in a certain way even if this did not follow the intentions of its inventors. These four objectives were all considered prior to the actual making of the artefact.

Figure 1. Gardiner and Head. *Light Years : Jurassic Coast* installation. Chelsea Art Museum, New York City. March 2009.

<http://chelseaartmuseum.org/exhibits/2009/imaginalis/index.html>

DORSET COUNTY MUSEUM

The Jurassic Coast is England's first natural World Heritage Site, a ninety-five mile long stretch of coastline running from Orcombe Point in East Devon to Old Harry Rocks in East Dorset. Its geology spans the Triassic, Jurassic and Cretaceous periods, 185 million years of the Earth's history. Erosion by sea, weather and human activity has resulted in a huge variety of different landforms; cliffs, beaches, landslides, arches and caves, which provide an incredibly rich visual and scientific resource [1].

My interest in the geology of this unique location inspired me to develop ideas for a collaborative project, using the Dorset coast [2] and Dorset County Museum as resources. The research centred on exploring parts of the coast-path on foot, by sea and by air. Access to the archives of the Dorset County Museum supplemented by the support of the curators facilitated my investigations, allowing me to highlight the connections between the physical characteristics of the landscape and related artefacts in the Museum. There were visually significant turning points as the project progressed. The opening of a forgotten cardboard box revealed hand coloured maps [3], intended to record the geology, but which were beautiful artworks in their own right. A boat trip along the coast provided a vantage point from which to observe the dramatic contrasts

of geology and colour. A tangible sense of history was generated by the 19th century, museum library and the densely shelved museum stores stacked with neatly labelled boxes of artefacts.

The partnership with Dorset County Museum has allowed me to explore, understand and interact, leading to work which represents another layer in the documenting of the history of the coastline. Through my visual exploration of the Jurassic coast I hope to foster interest in the wide range of experiences it has to offer and create opportunities to educate the public not only about its history but also location and possibilities for the future. Also within the remit of this project, my paintings and working methods draw attention to environmental issues, highlighting the changing nature of this coastline as it evolves visually and structurally in response to erosion.

A PAINTERLY APPROACH

What the surface of the world looks like depends on where you are in history; every landscape is merely a phase. My work about the Jurassic Coast reflects a journey of 160 million years back in time to revisit specific places that I have known since my childhood, derived from subjective experiences in places where land, sea and sky converge. My sense of atmosphere and form has been strongly influenced by this natural environment on the Dorset coast while my colour palette reflects this connection; sometimes the methods I use for constructing a painting are forced in new directions by a desire to honour specific features in the landscape.

Jeremy has walked this coast, ridden it and even flown over it. He has drawn it endlessly, studied deeply its history, its geology and, above all, its palaeontology. All this long experience and innate sympathy, to say nothing of deep and subtle actual observation, he now distils into these remarkable paintings. [4]

Figure 2. *Clavell's Tower*. Acrylic on poplar panel. 90cm x 60cm.

In exploring new visual directions and media, I have tried to remain responsive to these origins; to an area now re-christened the Jurassic Coast, but celebrated for its fossils [5] and its beauty since the mid-19th century. A careful observer may delight in finding recognizable features incorporated in my paintings and prints, in an attempt to mirror the effects of time on this landscape.

All the images of *Light Years : Jurassic Coast* that make an appearance in the digital projection are painted in the studio. Starting with a prepared wooden panel on which the entire development of an image takes place, each one is a subtle relief constructed of large flat poplar panels. Many layers of paint are applied which are then scraped down and overpainted so that the intermingled strata echo the multiplicity of memories that inform the work. The complex physical construction of the panels reflects the accretions of memory that have helped me to build a mental image of the place I am trying to portray. The painted surfaces have been inspired by visits to boat-yards, where the patina of hulls are examined for their shape, colour and, above all, surface properties. The hulls of ships which, when they are repaired, vary abruptly between glossy smoothness and weathered roughness.

Figure 3. Jeremy Gardiner painting in the studio

These painted panels are endowed with transparency in the virtual space; that is, they are able to interpenetrate without an optical destruction of one another. Transparency however implies more than an optical characteristic; it implies a broader spatial order. Transparency means a simultaneous perception of different spatial locations. Space not only recedes but fluctuates in a continuous activity. The position of the transparent planes has an equivocal meaning as one sees each figure now as the closer, now as the further one.

Figure 4. *Summer Storm and Sunlight, Old Harry*. Acrylic on poplar panel. 122cm x 58cm.

Painting is a process of finding out, and landscape can be its thesis, the catalyst to map out our universal view of the world. Painting, like science, cannot discover the same things twice. The artist is therefore compelled to take those directions that the still undiscovered and unexplored dictate. It is these directions that my visual art work is following at the moment.

One of the virtues of the visual arts is their ability to capture and encapsulate feelings, memories and opinions and preserve them beyond their fleeting instant. Interactive installations offer the additional feature of transporting the viewer into the work as it develops. Unlike still paintings or sculptures, interactive installations unfold in real time.

Everything a painter does in the studio, from mixing colours, to creating shading and blending elements into formal arrangements involves spending hours working on an image, and in the end all he has to show for it is a static finished piece. I wanted to take this further, and thought that the physical nature of the juxtaposing of planes and lines could be used as structural elements in an interactive artwork. The elements themselves could be used to create their own form of poetry in a virtual temporal space. Kandinsky said “*Artistic composition has two elements. The composition of the whole picture. The creation of the various forms which, by standing in different relationships to each other, decide the composition of the whole*” [6].

Unlike painting, digital media can create the illusion of time-travel, in which the viewer has the illusion of entering some other place and period through a virtual window. Time and space travel is purely speculative, encouraging daydreams and reverie. Travelling in this manner is an imaginative act, an act of memory and

reflection. The new variable is audience choice, which can take users in unexpected directions and combine elements of the artwork in unpredictable ways. This requires a greater commitment to planning, interface design and making all the elements work together.

VIRTUAL VIEWS

In recent years the full promise of interactivity has started to be realised through digital technology. In 1999 the National Trust launched *Virtual Views*, a project I initially started while developing a CD-Rom of 3D models in 1996 entitled *The Isle of Purbeck – an interactive sketchbook of topographical landscapes*. This concept grew into *Purbeck Light Years*, and today *Light Years : Jurassic Coast* is an example of a contemporary interactive artwork that manages to create a unique aesthetic experience while taking full advantage of the latest computer graphics technologies. *Light Years : Jurassic Coast* presents a three-dimensional temporal world that can be dynamically viewed from different angles and at different times of day. This world evokes a contemplative atmosphere based on real and abstract elements, but also offers some playful elements such as the sound of the birds, wind and waves. Created with a mixture of techniques that combine painting, drawing, computer animation and immersive virtual reality, this interactive installation recreates a segment of the Jurassic Coast, a UNESCO world heritage site in Dorset and Devon.

Figure 5. Isle of Purbeck CD ROM 1996

All the vistas of the location in *Light Years : Jurassic Coast* can be reached easily by ‘floating’ ‘walking’ or ‘sailing’. Just as you move about within a picture with your eye, the sensation that you have here is one of being enclosed by order and yet at liberty to navigate within it. The immersive environment represents one moment, continually. Painting shows one moment, how we perceive the world to be. The characteristic of reality is that it is made up of frozen moments or discrete fragments of time perceived one after another, like the continuous movement in this digital artwork.

Technically speaking, the hardware behind *Light Years : Jurassic Coast* consists of a fast personal computer with a powerful graphics card that is capable of rendering life-like images in real-time. This configuration of equipment is not unlike what young audiences use at home to play high-end action and adventure computer games, but the artistic intention and images displayed are very different. The projection of images is done through an HD projector with a brightness of 5,000 lumens, which is more than enough light for a 10-metre projection. The interaction between viewer and installation is passive, the spectator being transported through time and space while the atmospheric sounds are delivered through a surround sound system.

Figure 6. Screen grab. *Light Years : Jurassic Coast*

DEVELOPMENT

The rendering and navigation software that drives the installation consists of custom routines developed by Anthony Head having my paintings as departure points. The serene three-dimensional objects and environments portrayed in *Light Years : Jurassic Coast* were built with a variety of modelling and image mapping techniques. The rendering of these objects and environments happens in real-time as the viewer moves within the landscape. The resulting shapes and colours in the environment are the result of real-time calculations of how sunlight and ambient light reflect, scatter, and refract through the luminous atmosphere. To add to the mood, simulated weather systems come and go, night follows day and seasons change in real time.

While the locations along the ninety mile heritage coast are always identifiable, the way we use colour excites the emotions by making the spectator acutely aware of the

changes brought about by season, time and weather, which affect its appearance and the surrounding atmosphere. The visual language of *Light Years : Jurassic Coast* includes richly worked surfaces and a strong sense of light is suggested not only by contrasts of value and hue, but also by the use of surface effects that emulate stained pigment, chalk and translucent washes in a way that light seems to come both from a source external to the picture space and from within the surface of the picture itself.

Feelings, memories and impressions change with time because we keep in our memory only certain facets of events and ideas. The best-preserved and clearest memories are usually those based on the most significant aspects of a moment. Much of the emotional crispness and aesthetic steadiness of *Light Years : Jurassic Coast* has to do with the elegant simplicity with which the environment and the interactions were conceived and built. The terrain along the coast was derived from a terrain data of Dorset. The overall scale, height and polygonal density of the mesh was then adjusted and optimized for a real-time situation where the impression of movement is paramount.

The shapes representing the coastline and geology of the coast were built with computing-efficient vertical planes on to which different types of image maps were applied. The colour, texture, transparency and irregular shapes on these planes have their origins in digital scans of the plein air paintings and monoprints of the coast. The colour images mapped onto the surfaces representing ground and sky gradually blend into new images. This constant transformation enables the scene to evolve depending on the time of day or night. The rain is an example of a programmed random event, which represents the unpredictable nature of weather in Dorset. The light changes when it rains in *Light Years : Jurassic Coast*, the scene becomes darker and the fog increases.

Figure 7. Monoprint 163cm x 41cm

The sound in *Light Years : Jurassic Coast* enhances the atmospheric nature of the environment, and this installation recreates that. Some sounds are activated as the viewer approaches a specific location. The noise the wind makes for example, increases in volume as one moves along out to sea. The sound of the sea and additional natural sounds all occur randomly, interspersed with silence.

The splendour and mystery of this 200 million year old coastline permeates the experience. But this interactive installation does not seek to create an accurate model of the past, or to recreate vanished moments. *Light Years : Jurassic Coast* is about the passing of time, time past and time present, perhaps a future time too.

LIGHT YEARS PROJECTS

The precursor to *Light Years : Jurassic Coast*, *Purbeck Light Years* became the first digital work to win the Peterborough Art Prize in 2003 [7]. The Peterborough Prize is the only major contemporary art award shortlisted by experts and then decided by public vote. It was possible to gather audience responses while the piece was on display both in Peterborough and later for two months at the Lighthouse Centre for the Arts in Poole. In Poole it was also possible to display the drawings and paintings that are the content for the piece. Peoples' reactions to the exhibit were:

Wonderful, evocative painting and at last a piece of digital art that's beautiful and moving and not just clever.

Transfixed - the moving screen is quite, quite beautiful, full of emotion, delicacy and strong powerful forms.

Refreshing to see someone filling the gap between 'fine art' and 'digital art'.

The paintings are skilfully executed and the digital piece is very engaging.

Really love the ambient mood created here. Great to know that a painter can move to another artform so naturally and with such feeling.

Figure 8. *Purbeck Light Years* installation. The Lighthouse, Poole, Dorset. 2003.

Audience feedback shows that sound has had a tremendous influence on users' perception of the content. Sound designers believe that sound accounts for more than half of the experience of using an interactive product. Successfully integrating sound into *Purbeck Light Years* required special attention to mixing and timing. The sound effects were balanced at every moment to produce the correct emphasis and mood. Synchronizing sound to changes on the screen was technically demanding but added substantial impact to the installation.

As a result of the audience response to *Purbeck Light Years* our reaction has been to see *Light Years : Jurassic Coast* as part of the ongoing Art and Technology debate. This debate will continue and will always cause contention. There will always be those who maintain that art is, by definition, unique. Equally there will be those who proclaim the death of painting at the hands of some new medium, process or procedure. Neither belief is a realistic one to adopt. What seems certain is that electronic technologies will continue to penetrate every level of our culture, from production to distribution, and that new technologies will call forth responses from artists ready to use them.

ACKNOWLEDGEMENTS

Anthony Head for all the collaborative work with *Light Years*.

Daisy Sutcliffe and Jurassic Coast team members for their advice and encouragement.

Denys Brunsden, Professor Emeritus of Geology at Kings College for his advice on the geomorphology of the Jurassic Coast.

Nick Lambert for his technological support and suggestions.

Amanda Wallwork for her collaboration and direction on the 'Mapping the Coast' project.

Jan Rafdal for preparing and printing the monoprints.

Jon Murden and Jenny Cripps for their patient curatorial advice at the Dorset County Museum.

Nina Colosi for curating the show at the Chelsea Art Museum, New York City.
Stephen and Sylvia Paisnel for their advice and encouragement with the artwork.

References

- [1] BRUNSDEN, D. and GOUDIE, A. *Classic landforms of the West Dorset coast*. The Geographical Association Press, 1999.
- [2] DAVIES, G. *The Dorset coast*. A& C Black, 1935.
- [3] WINCHESTER, S. *The map that changed the world*. Viking, 2001.
- [4] PACKER, W. *Along the Dorset coast*. Campden Gallery catalogue 2007.
- [5] FORTEY, R. *Fossils : the key to the past*. Natural History Museum, 2002.
- [6] KANDINSKY, W. *Point and line to plane*. Dover Books, 1980.
- [7] WANDS, B. *Art in the digital age*. Thames and Hudson, 2006.