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Storytelling in VR, CAVES and other emerging forms: An interview with Roderick Coover by Katarzyna Boratyn

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The following interview with Roderick Coover asks how emerging cinematic technologies transform documentary storytelling. Though his early ethnographic projects, such as *Concealed Narratives* (1996, filmed and photographed in Ghana) and the *Harvest* (1999, filmed and photographed in France), he created interactive documentary forms that could bridge modes of expression. The works combine field-notes, editing observations, exposition, travel narratives, encounters and interviews with evocative imagery. In works such as *Voyage Into The Unknown* (2007), *Canyonlands* (2009), and *Estuary* (2013). Coover uses scrolling map environments to offer interactive, cinematic experiences in which users create paths among video clips and data; the works explore spatial knowledge and storytelling, national myth-making and land use. In works such as *Something That Happened Only Once* (2007) and *The Last Volcano* (2011), he layers stories on animated panoramic settings to present disturbing disjunctions in the expression of place and memory. His recent collaborative works *Three Rails Live* (2013) and *Toxicity: A Climate Change Narrative* (2016) are algorithmic. They use code to combine voices and images from a database in an ever-changing order; the works use storytelling and new technologies to address the questions of climate change and industrial waste. In *Hearts & Minds: The Interrogations Project*, a VR work about US military torture in Iraq, he and his collaborators use immersive arts, storytelling and gaming technologies to introduce challenging accounts of human rights abuse.

Keywords: Roderick Coover, documentary, emerging technologies, Virtual Reality, CAVE, interactive documentary, ethnography, documentary research, information arrangement, data visualisation

KATARZYNA BORATYN (KB): Why and when did you first start using emergng technologies in your work?

RODERICK COOVER (RC): I had been trained in filmmaking and cultural research, and I started using interactive tools in field-based ethnographic projects in the early 1990s, when I was working on a film project in Ghana in West Africa. At that time, I was looking at ways that contemporary national and international imagery performed in the public sphere alongside local forms of expression, and I found interactive environments invaluable for collecting and connecting the diverse materials that I was finding and recording. Therefore, my first uses had been oriented around research and production rather than presentation. The question was how to identify connections between collections of

images and other research data beyond more common documentary filmmaking methods such as creating bins and log notes. Programs like *Storyspace* and *Macromind Director* offered more effective means of connecting fieldnotes, interviews, stories and images than conventional video editing or writing. The structures transform thinking, structure and imaginative leaps. Storyspace, for example, allowed users to think multi-dimensionally by linking both between and within objects and sets of material, and even, for multiple levels, to objects and sets within sets, within sets, etc. With these formats, I found I could easily show how the same image could be interpreted in multiple and even contradictory ways. These forms suited the subject matter in expressing the multicultural and multi-modal experience that I was having in the field.

I was also attracted by how those early forms helped to bridge the research and presentation. Where traditional filmmaking offers only the slightest glimpse into the hours of materials, notes, editing choices and discarded versions that would go into making a film, in these formats, users could follow how a work emerges out of experience. At that time, before the invention of DVD and before the internet could handle video, such projects were developed as stand-alone kiosk installations and prototypes. This became particularly apparent to me in my next field site. I was working on a project in vineyards in Bourgogne in France about language, work and the sense of place. I shot photographs to note-take in preparation for making a film. I compiled these in the interactive photo essay *The Harvest*. At first this was just a matter of storyboarding, but as I began working with the images in the way and writing about them in differing ways, it became a project in itself. I also made the corresponding linear film *The Language of Wine: An Anthropology of Work, Wine and the Senses*, but I made it differently than I might have otherwise. The process drew my attention to how the poetics of languages, images and montage combine to shift emotional states and meanings.

KB: So these technologies offered a bridging of practice and presentation and a juxtaposition of temporal and spatial arrangements of information?

RC: Yes. Among the most exciting changes for me was how those technologies enabled me to bridge field research and creative methods. In the 1920s, the surrealists showed how gathering materials together that originate in differing modes can provoke surprising observations. The surrealist thread that had existed in the arts was also very prominent in twentieth century visual anthropology. Digital linking, game play, and now database systems, VR and locative media all expand this potential to disturb the comfortable order and discover alternative ways of seeing. I think this is also true of John Berger's work with Jean Mohr, which I found inspirational.

The spatial models, which have become much expanded now through research visualization in the digital humanities and other

fields, were among the early and very compelling aspects of interactive technologies and were very important to me in the 1990s and 2000s. Spatializing systems not only offered ways of bringing together field experiences and research materials, but, more importantly, of visualizing the kinds of "path-making" one does in building arguments and stories out of experience.

We have come a long way since those days, and perhaps, there are now new fusions between spatializing models and temporal experience. Today some of the things that most excite me are working with emerging cinematic technologies like Virtual Reality (VR), cave computer-assisted virtual environments (CAVES), game-based cinema, story-maps, database films and locative media. First are the paradigm shifts that working in these technologies can provoke because of their trans-disciplinary nature. Art and research are both brought together and propel each other in new directions. Second are the ways that these new technologies expand story-telling imaginaries by offering new structures and constraints. Third are the ways the stories told in these emerging technologies implicate or empower the user. Fourth are how they stimulate collaboration, both in production and in presentation, to open opportunities for creating hybrid creative work and bridging the once-separate presentational domains of cinemas, galleries, personal media, classrooms and public spaces.

Il. 1. *Hearts and Minds: The Interrogations Project*, by Roderick Coover, Scott Rettberg, Daria Tsoupikova and Arthur Nishimoto, 2016

KB: Would you tell us some more about John Berger and Jean Mohr as artists and how their works influences your way of thinking about or portraying reality?

RC: Yes, as you mention, there have been several collaborations between Jean Mohr and John Berger. One I often go back to is their well-known book *Another Way Of Telling*. It is built around a series of very eloquent photographic essays, and at its centre is a photographic fiction composed of an archive of photographs shot at different times. The work is driven by associations. Through juxtapositions, the work invites users to make connections between elements within the pictures, so users both compare whole pictures and their parts. As Berger argued earlier, images without context are rife with ambiguity. In many conventional books, the context is given by the text; images illustrate written ideas. But Berger and Morh's works are different. In moving among images and drawing out motifs, they show how users begin to create meaning; they build webs of signification. It is a process that has interesting parallels with digital media; perhaps, it offers a kind of bridge between contemporary digital media and prior approaches like those of interpretative anthropology. Their works offer space for us to read the images while continually shifting the contexts of interpretation. Berger describes the process as one that offers navigational space for interpretation, a kind of montage without the insistent forward motion of film. The approach offers lessons for how one might work with the spatial environments of web-pages, hypertext, interactive docs, games, Second Life and many VR works.

KB: You mentioned emerging cinematic technologies and their influence on the paradigms of audiovisual storytelling. Can you give some examples of how these changes have impacted your recent works? How do they enrich this relationship between research and art?

RC: A good example would be the *Altering Shores* project and the database film *Toxicity: A climate change narrative*. In 2012, I was kayaking through highly industrialized areas of the Delaware River shooting photos about land use. I was struck by how low to the waterline were so many of these potentially toxic, petro-chemical industries, and by the question of how such a landscape might be impacted by a rise in sea level. I expanded the project through mapping, photography and cinematography, mostly from a kayak.

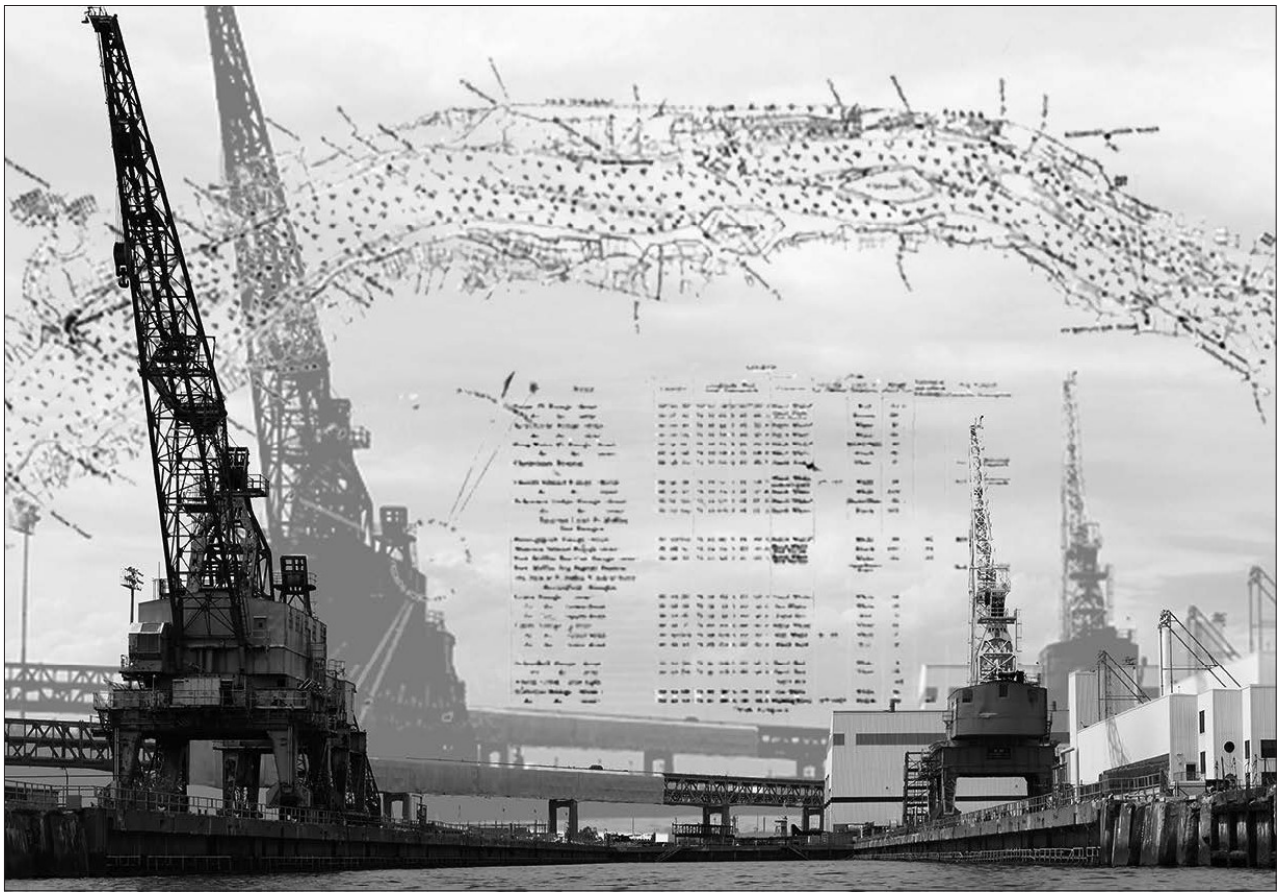
The Delaware estuary is a region stretching from Cape Henlopen and Cape May to Trenton. The tidal watershed includes numerous population centres including the cities of Wilmington, Philadelphia, Camden, Burlington and Bristol, among others. The region is among America's largest hubs for chemical, petro-chemical and other energy sector industries, and it is also home to vital natural resources that include vast marshlands which are home to hundreds of species of birds,

mammals and aquatic. These natural areas buffer communities from flooding and have important greenhouse gas absorbing properties. My fieldwork showed how rising tides and storm surges would pose threats of inundation, marsh destruction and pollution, particularly when floodwaters destabilize contaminated soils or ponds and disperse contaminants elsewhere. From the project's interdisciplinary perspective, these issues are both scientific and cultural. Environmental hazards may directly impact surrounding ecologies if they are not understood and contained. However, the narratives of sea-level rise are not simply those of the flooding and transformation of shoreline boundaries. Floods don't just destroy places, pollute water and land, impact ecosystems and render areas uninhabitable. They can also erase sites of belonging and memory and transform human relationships to the land. In this project, special attention is given to the impact of such changes on memory, lived experience and spatial practices. Thus, a work that concerns the ecological impacts of a rise in sea-level is also revealed to be one about the senses of place, the stories we ground in the environments where we grow up and make our lives, and the futures we envision, both individually and collectively.

To address these human impacts, I created an interactive non-fiction work and, then, I turned to the narrative and the fragmented options of algorithmic film. I worked with electronic fiction writer Scott Rettberg, and together we imagined stories about how individuals might adjust to the changing and toxic conditions of rising waters in this industrial zone. The resulting fictional work is a recombinatory film; it uses original, open source computer code to draw fragments from a database in ever changing configurations. It was the perfect choice because the system suggests infinite possible variations within a given set of possibilities. The stories, images and outcomes are different every time it is shown, evoking the infinite possibilities that time, nature and human choices offer. The film follows six fictional characters who witness changes taking place in the natural and urban environments, and who face fundamental choices in response.

The story takes place in a post-industrial shoreline in a near-future time (circa 2020). The increased frequency of storms and rising tides have flooded recently active refineries, petro-chemical plants, and brownfields, causing widespread contamination of nearby farms and residential communities, as well as natural preserves. A recent disaster at a coastal nuclear power plant has also contributed to the contamination of the land and water. Large areas of the lowlands of New Jersey (The Wash) have been evacuated. There are spikes in cancer rates and diseases caused by eating contaminated foods. But, for the six primary characters in this film, life goes on.

A fisherman looks for new ways to make a living from the toxic waters. A young woman chooses to escape from the increasingly bleak remnants of civilization after losing her job and her parents. A FEMA relief worker must cope with challenges that exceed agency capacity.



Il. 2. *Toxicity: A Climate Change Narrative*, by Roderick Coover and Scott Rettberg

A middle-aged woman strives to build community. A pig farmer has profits from an atavistic new economy emerging from the disaster. A teenage boy copes with his own illness and his mother's desire to return to the lost world of life before the climate changed. Their stories focus on choice-making as they adapt to the challenging conditions.

The fictions are interspersed with nonfictional accounts of deaths that occurred during recent storms in the area, most notably Hurricane Sandy. A recombinatory film uses computer code to draw fragments from a database in new configurations every time it is shown. As some stories seem to resolve, others unravel. Just as with the conditions of ocean tides and tidal shores, the stories cycle and change without clear beginning or end. Rather, individuals grasp for meaning from fleeting conditions of a world in flux. Characters' paths intersect, and story threads come together to offer moments of resolution, contact and visions of the future, before the narratives are broken apart and a fresh cycle begins.

The approach offers a way to both engage the scientific research and imagine consequences on a human level. The cinematic presentations provide a way to make often opaque scientific knowledge meaningful on a personal level.

KB: Is this also true with *Hearts and Minds: The Interrogations Project*? What changes as you move from cinema into virtual reality (VR)?

RC: In *Toxicity* I had already been working in a very wide panoramic format that would create a highly immersive 2D experience when projected in cinemascope or in a CAVE environment that surrounds the user with the image. However, the time conditions of *Toxicity* were different from *Hearts and Minds*. In *Toxicity*, Scott and I wanted to address the unrelenting force of time, arriving in waves like the tides, always bringing change. The system does not stop. Like *Toxicity*, we had the goal in *Hearts of Minds* of making difficult research accessible. In *Hearts and Minds*, however, the task was to create the space by which to enter into the landscapes of memory and hear very challenging material.

Hearts and Minds is an immersive 3D work based on US Military veterans' accounts of field interrogations and torture that they witnessed or did during the US-led war in Iraq in the 2000s. It was developed at the CAVE2 at the University of Illinois, Chicago in collaboration with Scott Rettberg, Daria Tsoupikova and Arthur Nishimoto, following original research carried out by political scientist John Tsukayama. It uses Virtual Reality technology to immerse participants in the minds of soldiers to understand the institutional conditions that made torture seemingly acceptable as well as the social and psychological consequences of such acts, even on those who do them. The project utilizes the technology of VR as a medium to evoke empathy, understanding and awareness. The work builds on the premise that, to change patterns of abuse, it is necessary to listen to the witnesses and perpetrators, in many cases young and ill-trained soldiers who never entered the military to become torturers and now find themselves struggling to reconcile their actions in the battlefield with their prior notions of their identities as soldiers. The work traverses modelled environments of American homes and distant landscapes of memory to offer illuminating connections and disjunctions between the here and there, the now and then. Bridging methods of visual research and ethnography, political science, digital humanities and computer science and offering models of collaborative research through uses of digital visualization technologies, the project innovates in terms of both form and content.

What I found most exciting was how the work slowed down time, offering space to digest very difficult accounts, and how the models provided ways to envision connections between the here and there or the now and then. The modelled home and the surreal memoryscapes are estranged in differing ways. Modelling the works in Unity® allowed us to show how some of these relationships are made through movement. Further, there is user agency, but as a kind of anti-game; the actions that might normally achieve conquest, such as firing at an object, instead provoke disturbing stories and dislocations.

I also began to appreciate the highly collaborative nature of working in large VR environments, that involve research, sound, photography, writing, virtual modelling and design. For much of the project we worked in differing locations, testing materials from afar through live virtual sessions and meeting in the CAVE now and

again to see how the parts would come together. These gatherings were provocative in expanding our creative process. The conditions of development and testing shaped the creative conversation. For example, where we expected the work to be suited for individual devices like Oculus Rift, we found that its very intense content was better suited for full performance or screening experiences than for casual, fleeting encounters, and we NOT built-in design choices to draw users into the longer format. And, just as collaboration was valuable for its creation, in presentation, we also found the group experience of CAVEs and cinemas offered an important means for users to build collective understanding of the difficult stories they were hearing, such as stories detailing torture and trauma. So, in a sense, various trajectories of experimentation in emerging technologies also return to fundamental experiences of the cinema, or more so, to the millennia-old experiences of storytelling and performance.

KB: Storytelling tools that use emerging technologies seem to be based on bodily and physical presence. This appears to be opposite to linear cinema, which is more about the eye and observation. In that case, what do you think is the difference between following the story (film) and experiencing it (e. g. VR)?

RC: Yes, there is an expanded sensorial aspect of emerging cinema in VR, but also in other forms such as mobile media, augmented reality and installations. Unlike reading and watching films, the activities of watching media in these new environments can bring together very different mental processes. Of course, filmmakers have always struggled with this balance between the cinematic sensorial triggers – perception – and its semiotics. Early in the 20th century, Eisenstein famously characterized the physiognomic effects of montage and the ideogram as first perceptive and only secondarily intellectual, and later in the century, Jean Luc Godard showed how cinematic voice and language structures construct experience, whether through the writing of police reports and interrogations, journal writing, audio recording or the creation of graffiti landscapes. The debate has similarly been wrought in nonfiction documentary filmmaking. We see the vitality of the camera's expression of the moment in observational cinema, sensorial cinema and reality tv, but also the continuing play with montage, language and shifting perspectives to destabilize any singular representation of the real. With new media, this dichotomy is extended to the point of its own unravelling, as the sensorial excess of immersive imagery of actuality can co-exist with augmentation, participation, writing, layering and other creative forms that disturb VR's seamlessness. This doesn't necessarily undermine the value of traditional cinematic oppositions of montage and mise-en-scene, but it does blur boundaries in new ways. This offers documentary arts very new possibilities for factual storytelling in the process of imagining, making and disseminating work

that are hybrid and polyvocal. Perhaps documentary faces problems concerning self-definition during this period of change that can cause short-term issues in areas of funding and festival access, but in the long run those issues will be minor and fade.

KB: Emerging technologies require the interaction of the viewer, and they shift his role from passive observer to active participant. How does the concept of interaction change your – director's – thinking about the narrative of the project?

RC: One of the first aspects of interactivity that I found compelling in working in these forms in the 1990s was the introduction of choice-making as a logics of exposition and meaning-making, and another was user engagement with the creative work as process rather than just product. Users immerse themselves in evidence and follow ways that an author has connected evidence to arguments. This allows users to consider the alternatives and better understand how choices in making meaning from facts are made. It introduces users to the logics of writing, filming and editing. Interactive forms expand the documentary film experience by bringing forward research and non-cinematic materials that would otherwise be hidden from the user experience. Reading and watching become complementary activities. Among the ways this has expanded has been through incorporation of the database in digital filmmaking. Another has been with the development of mapping and architectural structures that place users in environments, where the material they watch is integrated with a spatial theatrics. Emerging new fields within architecture, geography, sociology and computing have contributed greatly to these expanding ideas of what the cinematic image is and where it resides. The models also help us conceptualize the archives from which historic images are drawn, where both algorithmic and user choices help determine how images of the past meet the present. In some of my works, I have seen my role as that of showing how paths link evidence in the formation of ideas and arguments while leaving open opportunities for users to also engage the primary material.

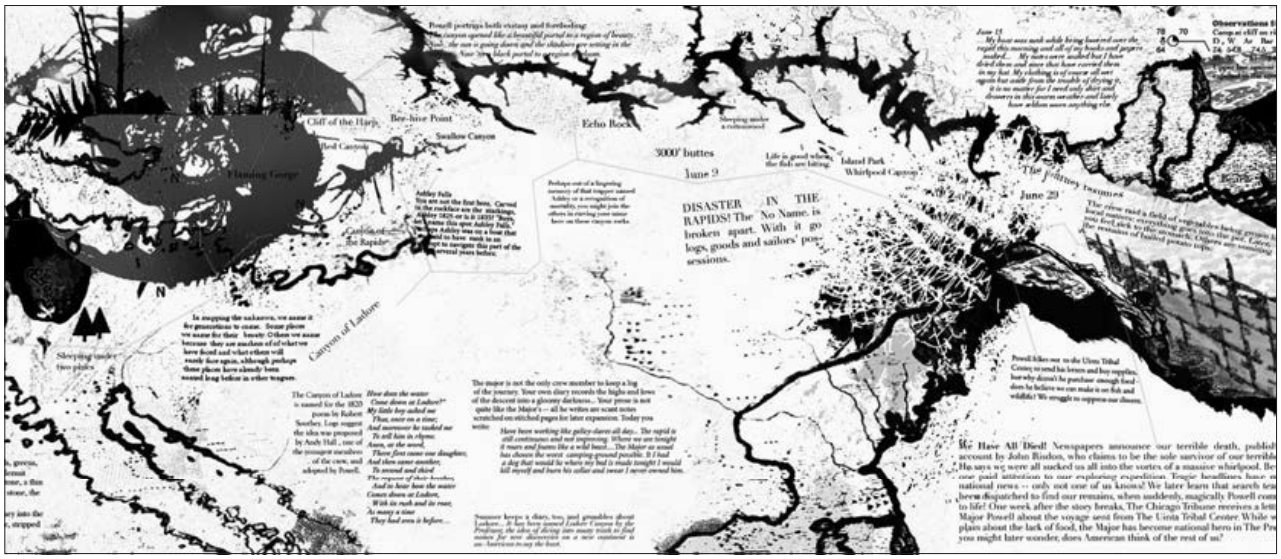
KB: Whatever technology is being used for storytelling, it will not be helpful if the audience is not ready to use a proposed device or medium. Who is your audience? Do you think about a particular group and their media skills while working on your new piece?

RC: This can be an advantage as well as a disadvantage. Audience familiarity with conventional filmmaking means that much is taken for granted, and filmmakers perpetually struggle with the constraints of structural expectations and television or theatre-release time-formats. The digital arena is open, and the maker who can instruct users to engage a work may have audiences approaching the work without such pre-conceived ideas. At the same time, it can be a struggle to bring

users over the "wow" factor of technologies. Take for example, the project *Hearts and Minds: The Interrogations Project*, which concerns very disturbing testimonies by US veterans of interrogation, torture and other violent acts. We designed the work for immersive CAVE environments, which are large rooms in which users are surrounded by a 3D image. We showed the work in CAVES but also in cinemas, on Oculus Rift, in festivals, tech shows, conferences and to general audiences. However, the challenging nature of the material, which includes statements by the perpetuators to violence describing heinous acts, requires sustained attention that is not always feasible. For example, it became clear that the group showing had great value in bringing users through the work and allowing them to share the experience, but we stopped showing the work on Oculus at tech shows and conferences, where casual, brief views of the work in those settings seemed inappropriate to the material. Do I aim for particular audiences? No. My experience is that audiences are always changing, both in their interests and in their skill sets. Rather I aim to engage important contemporary and enduring questions through new approaches, and I trust that the work will find audiences who are interested in the evolution of such ideas and questions. Audiences change fast, but the questions of documentary research endure.

KB: Interactive film, VR, CAVE – you seem to constantly look for new tools and technologies. What drives your choices on which medium to use to deal with a particular subject? And also, what would be the next technology you are planning to use and why?

RC: Finding an apt medium to explore a question is an act of projecting into the future how a form may shape one's route to an answer. Each medium offers possibilities and constraints, and each set of constraints limits and enables a creative process to unfold. Each route allows both the artist and the user a way to see a question in a new way. The media arts project *Voyage into the Unknown* is an interactive work about John Wesley Powell's exploration of the Colorado River in the American southwest in the 1860s and 1870s. The project is drawn from logs and photographs, so the creation of a map was apt. However, as the landscape was previously unmapped, a scrolling-linear form draws users into the journey downriver that has few escapes, and those that are there prove deadly. In the subsequent project, *Canyonlands*, an interactive environment offered a much more varied view of one writer's experiences of the landscape; the landscape he writes about has been transformed by industrial development, mass tourism and other forces. The paths through this landscape show an evolution in the writer's eco-political thinking. By contrast, in a work like *Hearts and Minds*, the goal was to create landscapes of memory in which users would have space to absorb the stories. The memory palaces would lead users to memory spaces that were enclosed.



Il. 3. *Voyage Into The Unknown*, by Roderick Coover

KB: Where do you see the future of the documentary?

RC: If what defines a documentary or nonfiction is already vague, the question probably becomes even more obscure, as the environments of immersion, writing, information sharing and image gathering mix, and as computer visualization spreads across fields and links them. One of the issues I have talked about before is the function of the documentary. Nelson Goodman's famous turn of phrase that the question is not "what is art" but "when is art" appropriately fits documentary media, which is infused into so many other kinds of arts, sciences and popular activities. Documentaries make valuable propositions about experience, teaching people to understand others and the issues that bind us, and that kernel remains even as new forms enrich its dimensions. In terms of the language of cinema and a language of documentary film, one of the changes that I see as a significant outcome of augmented reality is the dissolution of the "frame". The end of the "frame" is a radical departure both for film theory and for makers and requires new ways of pointing to what where questions lie. The issue is similarly posed in the challenge of building meaningful stories from collectively created media. Expanding Dziga Vertov's dream of every citizen becoming a Kino Eye, the collective media dissolves identity and forms a hive of information around a topic. This is both exciting and disarming, as those arguments that take time to build also require the space to be constructed and explained. Immersion is also very exciting as VR continues to open the imagination to what cannot be seen naturally by the human eye; while it is no more true or false than other forms of representation from painting to cinema, or from song to sound recording, it is a very exciting new arena to examine and question how worlds are imagined. Science has been driving much of the initial CAVE work in visualizing the miniature, such as neurons in the brain, and the gigantic, such as planets and constellations. Visualizations now being using in documentary contexts have been coming from the sciences

and this has been leading to new kinds of collaboration; there is great potential for work that shatters old, disciplinary paradigms. And, finally, I might talk of the database arts. Here we are searching for ways not just to gather and access past media, but also how to put the past in contact with the present, and give old media new meanings and functions. This contact with the past is valuable, turning historical data into the stuff of living stories. The dissolution of the frame, augmentation, collectivity and immersion suggest the need for very new theories about how and when nonfiction images function to expand consciousness, link ideas and make-meaning. These emerging forms propel new collaborations that dissolve disciplinary categories.