



# GRESHAM COLLEGE

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## THE 19<sup>TH</sup> CENTURY CRAZE FOR STEREOSCOPIC PHOTOGRAPHY

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What's your image of stereoscopic imaging? Is it perhaps a Viewmaster, one of the last attempts to 'modernise' 3D for a domestic setting, which I remember as a slightly less boring alternative to home movies or colour holiday slides when visiting relatives. Or perhaps the charismatic presentations of Brian May, a modern 3D enthusiast, who has promoted awareness of some of the curiosities of 19c 3D in his books like *Diableries*. Or perhaps it's one of the recent crop of digital 3D films – *Avatar*, *Toy Story* or *Gravity*? Unless you have a specialised profession, it's unlikely to be this surgical training system; or one of the many kinds of stereoscopic microscopes in use in labs...

In fact, I'm not going to talk about any of these examples of stereoscopic imaging this evening, however interesting they each are. Instead I want to reach back to the dawn of stereoscopy and explore its extraordinary popularity during much of the Victorian period. To understand this, I need to recap briefly the new developments in visual media that immediately preceded it – which I talked about in my last lecture. The most important of these were two immersive kinds of experience that appeared in the 1790s and the 1820s respectively. The Panorama was launched by a painter, Robert Barker, first in Edinburgh, then in the centre of London, on Leicester Square in 1793. What it consisted of was a giant painted scene, shown inside a circular tower, which gave visitors the sense they were looking out over a real landscape, or over the roofs of a city. We have no surviving panoramas in Britain, but having visited two in North America, in St Anne de Beaupré in Canada and in Atlanta, I can vouch for the experience. With the help of some clever scene setting, by means of foreground modelling of real objects, the illusion could be highly convincing; and panoramas remained a popular attraction for the next three-quarters of a century.

The other new form of spectacle, in the 1820s, was known as the Diorama, devised by another painter Louis Daguerre, who would later become famous for an even more revolutionary new medium. However, the Diorama can best be understood as a form of landscape theatre, where a seated audience witnesses a series of atmospheric views, which often included moonlight or sunset lighting effects. There are no original Dioramas in existence, although you can find the name still fixed on buildings in Paris and here in London, but we can get a sense of what they offered from contemporary advertising, and from Daguerre's paintings.

But while the Diorama was popular and offered a relatively high-class form of immersive entertainment in many cities around the world, it was Daguerre's next invention that really changed modern media. Along with Nicéphore Niepce, he was one of the officially-recognised creators of photography in the late 1830s, and one of its early forms, the Daguerrotype, bears his name. Now photographs, of all kinds, clearly represented the fulfilment of a long-pursued dream – the creation of an accurate, permanent image. The phrase used by another photographic pioneer, the Englishman William Fox-Talbot, says it all: 'the pencil of nature'. Whether on metal, as Daguerrotypes were, or Fox-Talbot's paper prints, these offered a new kind of record. They didn't cancel out painting, as some thought likely, but they created a new form of picture-making that had the potential to be widely used, and to create an illusion of 'being these'.

Or did they? Photographs would be monochrome, mostly black and white, for the next sixty years, and would remain relatively small. Compared with panoramas and dioramas, they were far from immersive, even if they could



be considered fragments of reality. One possibility, soon embraced, was to print them on glass and project them as magic lantern slides. Lanterns had been commonplace since the mid-18<sup>th</sup> century, using hand-painted slides; now they could project cheaper, more detailed photographic images – which could be enlarged, as big as the lantern’s light would allow. And indeed, this would seem to be the origin of what we still enjoy today – projected photographic images, like the ones I’m showing you here.

But, at the end of the 1830s – the same decade that photography appears -yet another new possibility emerges. It was a London scientist, Charles Wheatstone, who discovered the principle of stereopsis, based on the bin-ocular positioning of our eyes - and demonstrated how it could be used to create the illusion of spatial depth paired drawings. Very soon, it became obvious that pairs of photographs, taken according to the principle that Wheatstone had demonstrated, could create a remarkable illusion – of really ‘being there’. The 1840s would see rapid progress in photography, and in creating viewing devices to commodify the stereoscopic experience. The elements of commercial stereoscopy took shape quickly. In its portable form, a card carrying two images taken from the same distance apart as they were mounted, and either a frame or a box that allowed these to be seen separately by the two eyes – the one developed by Oliver Wendell Holmes, the other by David Brewster, a veteran of ‘natural magic’, who had already written about the Phantasmagoria lantern show, and invented the Kaleidoscope in 1815.

The stage was set for stereoscopy to become a major entertainment phenomenon – and it was another new ‘medium’ that helped launch it. The Great Exhibition of 1851, Prince Albert’s gift to the nation that had not wholeheartedly embraced him, helped boost the popularity of stereoscopy – with the young Queen and her consort among the enthusiasts. // extracts from Victoria’s journal // With hindsight, we can see how the extravagant spectacle of the exhibition, housed in a building that was itself a temple of modernity, would have suited the peculiar experience offered by stereography. Visiting the Crystal Palace was having the riches of the world’s manufacture laid out before you, in a relatively compact, yet also hugely impressive, display. Having a set of stereographs (as they became known), amounted to having some of these sights and experiences compressed onto card – yet once inserted into a stereoscope, they would expand to fill the visual field.

The most extraordinary text describing the experience is Holmes’ 1859 essay in *The Atlantic* magazine:  
The first effect of looking at a good photograph through the stereoscope is a surprise such as no painting ever produced. The mind feels its way into the very depths of the picture. The scraggy branches of a tree in the foreground run out at us as if they would scratch our eyes out. The elbow of a figure stands forth so as to make us almost uncomfortable. Then there is such a frightful amount of detail, that we have the same sense of infinite complexity which Nature gives us. A painter shows us masses; the stereoscopic figure spares us nothing—all must be there, every stick, straw, scratch, as faithfully as the dome of St. Peter’s, or the summit of Mont Blanc, or the ever-moving stillness of Niagara.

Holmes delighted in the intimacy of stereographs, which allowed close inspection of famous monuments:

The stereoscopic views of the arches of Constantine and of Titus give not only every letter of the old inscriptions but render the grain of the stone itself. On the pediment of the Pantheon may be read, not only the words traced by Agrippa, but a rough inscription above it, scratched or hacked into the stone by some wanton hand during an insurrectionary tumult.

And of course, there was the opportunity for an extraordinary new form of armchair travel, to see the wonders of the world:

Oh, infinite volumes of poems that I treasure in this small library of glass and pasteboard! I creep over the vast features of Rameses, on the face of his rockhewn Nubian temple; I scale the huge mountain-crystal that calls itself the Pyramid of Cheops. I pace the length of the three Titanic stones of the wall of Baalbec,—mightiest masses of quarried rock that man has lifted into the air; and then I dive into some mass of foliage with my microscope, and trace the veinings of a leaf so delicately wrought in the painting not made with hands, that I can almost see its down and the green aphid that sucks its juices. I look into the eyes of the caged tiger, and on the scaly train of the crocodile, stretched on the sands of the river that



has mirror-ed a hundred dynasties. I stroll through Rhenish vineyards, I sit under Roman arches, I walk the streets of once hurried cities, I look into the chasms of Alpine glaciers, and on the rush of wasteful cataracts. I pass, in a moment, from the banks of the Charles to the ford of the Jordan and leave my outward frame in the arm-chair at my table, while in spirit I am looking down on Jerusalem from the Mount of Olives.

- *This is where I have to ask how many of you have actually looked into a stereoscope?* If you haven't, I can offer a chance to do so at the end – with apologies to online viewers (although I will put on screen some websites that offer you a simulation of 3D viewing). And while we're talking about the mechanics, let me say that the stereo illusion is not seeable by a proportion of the population (c.5-7%?). Also, that it is the 'slowest' of all optical illusions to deliver its images: so that many who quickly try out a stereoscope, and announce that they see nothing, are not allowing the several second that it takes to 'see'; while I find it also requires a kind of softening of focus to work best. Given that it is so much rarer as an experience today than in Victorian times, we can probably assume that stereo viewing was once a widely shared 'skill' – while today, novices have to be inducted...

At any rate, after the promotion of the Great Exhibition, the business of stereoscopy really took off, with a dramatic expansion of stereograph sets being published, and of new types of viewer. Very quickly, new companies saw the potential of creating libraries which would soon amount to virtual gazeteers covering geography, flora and fauna, and works of art, especially architecture and sculpture. Events would soon be added, making stereo sets the forerunner of the later 'newsreel' – as in coverage of the Anglo-Boer War in 1900-01, and of the battlefields and trenches of the First World War.

Looking at how the stereo business developed in the later 19<sup>th</sup> century, we might see an anticipation of what happened in cinema. The first global stereo supplier was the London Stereoscopic Company, launched in the mid-1850s, and before the end of the decade boasting it offered 10,000 stereo views. Two decades later, the LSC was in decline, and the new market leader was Underwood & Underwood, founded in 1881 in Ottawa, Kansas, by two brothers, Elmer and Bert Underwood (both from Illinois), who would move first to Baltimore and finally to New York City in 1891. It was the Underwoods who took the stereo 'offer' to a new level, publishing up to 25,000 views per day! – and introducing the library case – a version of what we call box-sets today... And although Underwood continued to innovate in new forms of photographic publishing, it was another American company, the Keystone View Company, based in Pennsylvania, which emerged early in the new century to take stereo into education, again on a massive scale. My friend Artemis Wright has researched the 'Keystone 600' set, a kind of visual encyclopedia, which was widely used in American schools until the 1960s, and regularly updated.

Holmes had written optimistically about the potential to create stereo reference libraries, as an educational resource, but it was Underwood and Keystone that developed systematic – not to say aggressive – sales techniques to take their wares beyond doorstep sales – like those of encyclopaedias and bibles - into formal education. And in doing so, they combined stereo view with sets of lantern-slides, which provided the model for the stereo catalogues – as they would for the future catalogues of film. And given the commercial energy of such companies, it's perhaps hardly surprising that visual education developed much faster in North America than here in Britain, where almost every new device was resisted by the educational establishment...

Meanwhile, back in 19<sup>th</sup> century Europe, a new form of collective stereo experience emerged with the first of August Fuhrmann's Kaiserpanorama installations in Berlin in 1890. The terminology is surely significant. A panorama was a collective, social experience, whereas the stereoscope was personal. Yet, with an audience of up to 25 seated around the Kaiserpanorama, watching a sequence of over twenty stereo views, which would be seen by each one after the other, this was a new form of 'individualised sociality'... we might even want to see this, in hindsight, as an anticipation of the individualised TV experience? Thanks to Walter Benjamin, now regarded as one of the founding gurus of media studies, we have an account of what it was like to visit the Kaiserpanorama in Berlin – a testimony to set alongside Holmes' quoted earlier:

There was no music in the Kaiserpanorama – in contrast to films, where music makes traveling so soporific. But there was a small, genuinely disturbing effect that seemed to me superior. This was the ringing of a little bell that sounded a few seconds before each picture moved off with a jolt, in order to



make way first for an empty space and then for the next image. And every time it rang, the mountains with their humble foothills, the cities with their mirror-bright windows, the railroad stations with their clouds of dirty yellow smoke, the vineyards down to the smallest leaf, were suffused with the ache of departure.”  
-Walter Benjamin, *Berlin Childhood c.1900*

The popular social experience of stereoscopy is something we no longer have access too – yet we can deduce that it was pervasive. Our great- or great-great grandparents would have been familiar with it. And an important point I want to make is that this major episode in modern media history has been largely airbrushed out of general knowledge of how media developed.

When the history of photography began to be written and taught during the mid-20<sup>th</sup> century, there was a strong bias toward emphasising its credentials as ‘art’. This meant that pictorialist photographers, and those making pictures that could be compared with paintings – such as, for instance, Julia Margaret Cameron or P H Emerson – became the key figures in a line that leads into the ‘great photographers of the 20<sup>th</sup> century. Along the way, we were told, there had been small ‘cartes de visite’ images, which helped popularise photography before the arrival of mass-market amateur formats and equipment, by courtesy of George Eastman. The problem with this condensed history was that it entirely omitted stereographs, except as a minor curiosity, when in fact they had been the largest and most pervasive form of photography from the 1850s until the later part of the century. Worse still, many of the ‘Victorian photographs’ we may see illustrated in books are in fact reproduced from one half of a stereograph!

There were reasons for this bias, certainly. One was the desire to legitimate photography as an independent art, which meant marshalling its aesthetic ‘essence’ in ‘the image’. Another was to free photography from its role in wider social practices – to see it in its own right, rather than as an adjunct to education and to travel. The hundreds of thousands – perhaps millions – of consumers of stereographs were less interested in the aesthetic quality of what they were viewing. It was the subject-matter, the ability to ‘visit’ far-off and fabled places which you could never hope to reach. Or indeed which you might prefer to visit stereoscopically than in the flesh – as the publishers of stereo tours would recommend: ‘better than going there!’ What also needs to be written back into the history of 19c photography, and the history of stereoscopy, is a recognition that the enormous appeal of stereographs helped to feed into lantern shows, and eventually into the first film shows of the late 1890s. Although film couldn’t, until the 1920s, deliver a true stereoscopic effect for a social audience, it was discovered that filming could create a sense of depth, if certain compositional practices were followed – especially filming on the diagonal, and using depth cues in the frame.

In a way, what film offered proved compensation for the loss of stereoscopic imaging. Although some of cinema’s pioneers – notably Louis Lumière – continued to believe that film could and should be stereoscopic. Which he finally succeeded in demonstrating in the mid-1930s. Since then, of course, 3D has come and gone on the cinema screen... but that’s another story, which I may return to in a future lecture. For the present, I would encourage you to discover the joy of stereo viewing, either here – or making use of some of the excellent websites that provide access to the vast collections that many libraries and archives still hold. The New York Public Library collection is one of the largest and best presented, with a ‘stereoanimator’ that allows you a form of stereo access to its vast holdings: <https://digitalcollections.nypl.org/collections/robert-n-dennis-collection-of-stereoscopic-views#/?tab=navigation>

Enjoy!