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## **Theatre of Science**

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Around the turn of the last century theatregoers could enjoy many different forms of entertainment, including drama, music, comedy, and...wait for it...science shows. Surprising as it may now seem, leading scientists of the day were prepared to take off their lab coats, put on some greasepaint, and tread the boards. Packed houses would watch in awe as these learned men demonstrated the very latest scientific advances, including electrical wonders, amazing chemical reactions, and the marvels of magnetism. Unfortunately, this heady mixture of entertainment and science didn't stand the test of time, and within a few years the scientific showmen found themselves out of the limelight and back in the less glamorous world of lecture theatres and public halls.

Fast-forward about a century or so to late 2001, and I receive a telephone call from science writer Simon Singh. Simon and I first met about ten years ago when we worked together on an episode of a well-known BBC television science program, *Tomorrow's World*. Simon had called to ask if I was interested in being involved in a joint project. He thought it would be fun for us to turn back the hands of time and co-present a science show at a London theatre. I was initially sceptical for two reasons. First, it wasn't my idea. Second, I wasn't convinced that the latest discoveries in physics and mathematics would really hold the attention of a modern day audience. Sure, there were lots of successful science shows for children, and even some aimed at a family audience, but Simon wanted to move beyond that. He was eager to reach regular theatregoers, essentially asking them to choose science over Shakespeare. The challenge seemed considerable, but it was an interesting idea, and I agreed to be involved.

Simon persuaded *The National Endowment for Science, Technology and the Arts* (NESTA) to fund the project, and he invited theatre director Portia Smith to help create

the show. After much deliberation we settled upon the title *Theatre of Science*, and set about finding an off-West End venue in London. Our initial approaches were met with a dispiriting mixture of disbelief and scepticism, with several theatre managers telling us that a science show simply wouldn't attract an audience. However, persistence paid off and we eventually found a venue willing to host the show. *The Soho Theatre* is located in the heart of London's theatre land, and has forged a considerable reputation for staging unusual and cutting edge performances. The Soho's manager liked the idea of taking science out of the lab and onto the stage, and offered us a run at his theatre.



After a few days of rehearsal, the show started to take shape. The first half involved Simon illustrating various aspects of probability theory by demonstrating gambling scams and undertaking bets with members of the audience. After the interval, I explored the psychology of deception and lying with the help of magic tricks and optical illusions. Strictly adhering to a 'don't tell – show' rule, both halves involved as much audience interaction as possible. For example, when discussing the efficacy of lie detectors we hooked up an audience member to a polygraph, and projected their physiological data live onto a large screen as they attempted to deceive the audience. We also thought it a good idea to inject some comedy into the proceedings. Simon started off the show by using mathematics to 'prove' that the Teletubbies are evil, and undermined *The Bible Code* by pointing out that the same principles can be used to demonstrate how the death of Diana Princess of Wales was 'predicted' within the pages of *Moby Dick*. We also made a conscious decision to construct a show that was decidedly low tech, simply equipping ourselves with an overhead projector, some

acetates, and a couple of marker pens. We ditched the idea of any staging, including wings or sophisticated lighting plots, and chatted with the audience as they walked into the auditorium. This low-tech approach to staging seemed appropriate. Science is all about trying to discover how the world really works, and so it seemed right to remove the various theatrical devices that usually employed to help an audience suspend their disbelief, and instead present the show in a far more straightforward way.

We opened at The Soho Theatre in March 2002. The idea of two academics venturing onto a West-End stage armed with just a few acetates and a couple of theories attracted the attention of the media, and the show received a considerable amount of press and radio coverage. As a result, our initial run quickly sold-out and the theatre were happy to add some additional dates. The performances drew a strong response from both the audience and reviewers alike. One newspaper, *The Evening Standard*, wrote that the show ..'almost makes academia sexy', and described it as '... a unique masterclass on the mind'. Similarly, magazine *What's On* wrote "... an uplifting, thought-provoking and frequently hilarious alternative to the usual theatre fare." Perhaps more importantly, feedback forms indicated that about half of the audience had absolutely no background in science, nor had attended any previous science-based event. The show was taking science to this new audience simply by being performed in an accessible way within a theatrical context. One online review underlined this point, noting, 'Don't fear the men in white coats, this is an entertaining hour for even the most scientifically illiterate.'



*The Royal Society* were kind enough to provide funding for us to take the show up to the Edinburgh Fringe Festival in August 2002, and we again attracted a sell-out audience. Flushed with success, Simon and I did nothing more with the show for a couple of years. Then, in 2005, again supported by NESTA, we decided to stage a more ambitious version of the show back at the Soho Theatre. We devised various new items. For example, each night Simon was given just three minutes to explain the entire history of the Universe, and then demonstrated the concept behind redshift by electrocuting a gherkin.

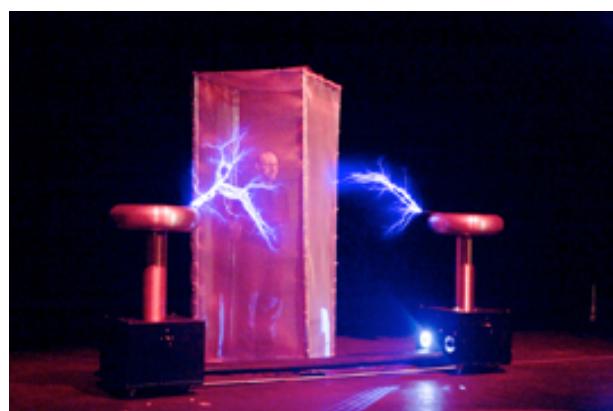
Part of the expansion process involved bringing on board other performers. A few years before, I had worked with Delia Du Sol, one of the UK's top contortionists, on a project exploring the science of anatomy. This work had involved taking MRI scans of Delia as she performed extreme back-bends. During *Theatre of Science*, we showed these scans to the audience prior to them watching Delia's performance, in order that they had a much greater understanding of how her unique anatomy allowed her to bend her body into seemingly impossible shapes. We also invited musicians Sarah Angliss and Stephen Wolf to perform the world's only theremin duet, and explain how electromagnetism allowed the performers to play these unique instruments without touching them.

Whilst developing ideas for the show, I came across a quote from magician Harry Houdini, stating that if a performer wants to guarantee a full house, he or she should simply advertise the fact that they are performing a stunt that may result in their own death. The words resonated with me, and I started to look around for a genuinely dangerous, but science-based, stunt that could be performed in the intimate setting of The Soho Theatre.

Eventually, I came across HVFX - a company that makes high voltage electricity equipment for television and stage. I approached them, explained our situation, and technical director Nick Field kindly agreed to put together something for the show. He constructed two rather odd looking metal pillars, known as Tesla coils, capable of generating six-foot bolts of million volt lightning. They also built a coffin-shaped cage that would go between the coils and absorb the full force of the strikes, assuring us that various incontrovertible laws of physics meant that it was safe to stand inside the

cage. As a finale to the show, either Simon or myself entered the coffin-shaped cage and absorbed the full force of the strikes. There was no room for error, as the bolts of lightning were potentially lethal.

The staging of such a dangerous stunt attracted a large amount of media attention and once again, we quickly sold out for the entire run. Again we added more nights, and again they sold-out too. We proved that science could hold its own against more mainstream forms of theatre, and the reviews were positive, with, for example, *The Times* remarking ‘The spirit of Houdini lives on’.



In 2006 we were invited to perform the show for a short run in an off-Broadway theatre. Co-sponsored by the Centre for Inquiry office in New York as part of an arts and science festival being organised by CFI Director Austin Dacey, we boxed up the show and crossed the Atlantic. The Theater For The New City is located in the heart of New York’s East Village district – an area home to several other unusual off-Broadway shows including The Blue Man Group and Stomp. With the invaluable help of CFI Intern Jessica Brenner, we set about staging the show. The Theater’s cavernous auditorium provided a perfect Frankenstein-like setting, and allowed us to crank up the output from the coils.

The hefty construction of our cage had prevented us shipping it to America, and so we had to create a new cage onsite. Unfortunately, obtaining a generator that could produce the power settings required by the European coils proved surprisingly time consuming, and so we had precious little time to construct our new ‘cage of death’. A quick trip to a couple of hardware stores resulted in a stack of 6 foot long metal tubes,

a small saw, a roll of thin metal mesh, and a pair of industrial scissors. Simon and I set to work, and managed to hastily construct a wobbly, but workable, cage, finishing just fifteen minutes before the opening performance. The curtain went up and we faced our first American audience. Fifty minutes later, with the stage bathed in red light, we moved the cage between the coils, and Simon bravely climbed inside. The coils buzzed into action, and the bolts of lethal lightning slammed into the somewhat whippy structure. Simon emerged alive and the audience applauded and cheered.

It was only later that we discovered that the new cage was potentially far more lethal than one we had used in Britain. The UK cage is constructed from thick copper tubing, making it safe for the performer to touch the inside of the cage. However, the much thinner mesh that we had used in the US meant that touching the inside of the cage would, if you excuse the pun, prove to be a shockingly lethal experience.

We played to packed houses, and again showed that there is an audience willing to spend a scientific night out at the theatre. We will remember the experience for a long time. Not only because of the buzz of taking the first science show off-Broadway, but because night after night, we were a little too close to the one thing that performers dread - dying on stage.

Five years ago, I fully expected Theatre of Science to be a one-off set of performances that would not do especially well. I am happy to admit that I was wrong. There is an audience for science. It is all a question of presenting it in the right way. A century ago, some of the world's leading scientists took to the stage to educate and excite the public about their work. Our experiences suggest that they were onto something, and our hope is that other academics will now step into the limelight and continue the tradition that is theatre of science.

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