

# THE NEW MEDIA HANDBOOK

## 'Vectorial Elevation' – public arts project: Rafael Lozano-Hemmer

Rafael Lozano-Hemmer is an artist whose practice crosses a number of fields and approaches, but who often works with new media on a large and spectacular scale. In this case study he discusses a large-scale interactive art work, 'Vectorial Elevation', which was created as an interactive installation for the Zócalo Square in Mexico City for Mexico's Millennium New Year celebrations.

The interface between computers and users is demonstrated in this case study as a complex form of histories and conventions. In this project the interface is spoken of as not only being a point at which people and computers meet, but also a point at which ethics, politics and expectations all inform the way that the artist makes choices about the appropriate way to construct an interface. These decisions are as much informed by the histories of different ways of working, such as theatre and architecture, as they are about technology.

In this case study, Rafael discusses the various roles of the artist and shows them to be a complex group of functions and positions. They include the artist as the creative motivator and the visionary of the project. They also include the artist as the producer,



Figure 20.1 Rafael Lozano-Hemmer, 'Vectorial Elevation', Zócalo Square, Mexico City (1999–2000)

'Vectorial Elevation' was an interactive art project originally designed to celebrate the arrival of the year 2000 in Mexico City's Zócalo Square. Using a design tool on a website, members of the public were able to design immense light sculptures over the historic centre of the city. The designs were rendered by eighteen robotic searchlights placed around the square and could be seen from a fifteen-kilometre radius. A personalised web page was made for every participant with comments, statistics and virtual and real images of their design from three perspectives.

Photograph by Martin Vargas.

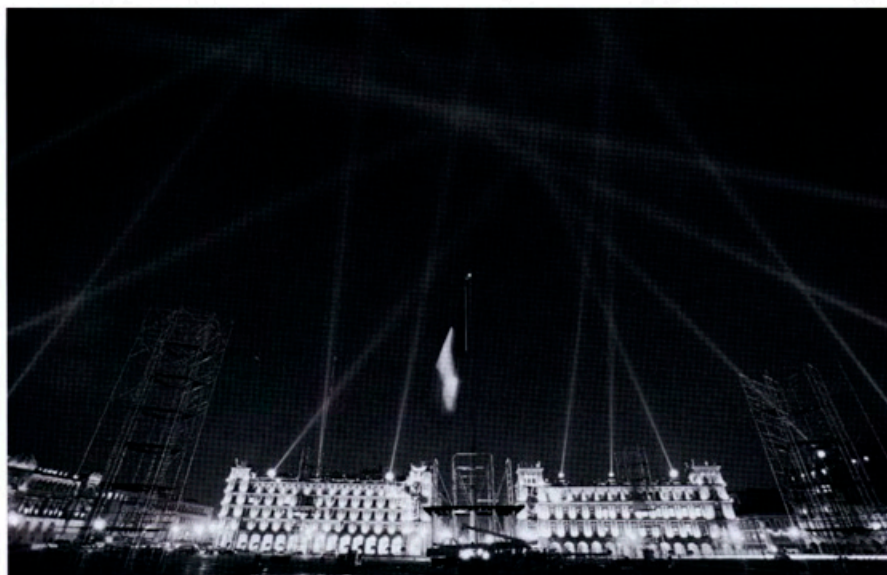
in this case operating at a very senior level with extremely large budgets, negotiating with the city and government at very senior levels, at the same time as managing a large team of practitioners. Last, they include the role of the artist as having a social mandate or social responsibility to develop work in a public context that addresses what the artist may define as his responsibilities.

Through his discussion, Rafael illustrates that this is substantially more than the way that, in another context, an artist might identify himself as having a responsibility only to himself or to further the technology he is working on.

## **'Vectorial Elevation'**

Rafael Lozano-Hemmer's large-scale public art work 'Vectorial Elevation' was created as an interactive installation for the Zócalo Square in Mexico City for Mexico's Millennium New Year celebrations. It ran from 26 December 1999 until 7 January 2000 and has since been repeated in other locations.

'Vectorial Elevation' was a massive light display in which eighteen giant Xenon searchlights were situated around the perimeter of the square, placed on the roofs of the buildings, and used to create a constantly changing array of patterns. From dusk to dawn over the period that it was in operation, the robotic-controlled searchlights moved into a new configuration every six seconds to present a new light design. These 'fingers of light' made designs that ranged from grids to cathedral-like domes over the city square and which appeared to change with the fluidity of a choreographed performance. Reaching over a half a mile into the airspace above the city square, the lights



*Figure 20.2* Rafael Lozano-Hemmer, 'Vectorial Elevation', (1999–2000); view of the municipal palaces. Photograph by Martin Vargas.

could be seen by the surrounding urban area for a distance of up to a fifteen-kilometre radius.

The lights were controlled and synchronised through a website with public access so that any visitor could design a light display. The website featured a 3-D Java interface that allowed participants to make a vectorial design of lights over the city and see it virtually from any point of view. Using a 'drag and drop' format with a series of simple options for people unfamiliar with design as well as more complex options for the more confident, the website enabled participants to make a design, see a model of how it would look in space, from various points of view, and to add their dedication before it was submitted.

When the project server in Mexico received a submission, it was numbered and entered into a queue. Every eight seconds the searchlights would orient themselves auto-

matically and three webcams would take pictures to document a participant's design. The site had a streaming video of the square to enable remote users to view the way that the designs were presented and, in addition, a design archive page was made for each participant with comments, information and watermarked photos of their design. Once the archive web page was set up the participant was emailed the specific address so they could view or save the documentation.

'Vectorial Elevation' was conceived as a massive public participation project as well as a public spectacle. So, to facilitate access, free terminals were set up in public libraries and museums across the country where volunteers could explain to people how to use the site. In addition, the site received contributions from participants from ninety countries and all the regions of Mexico.

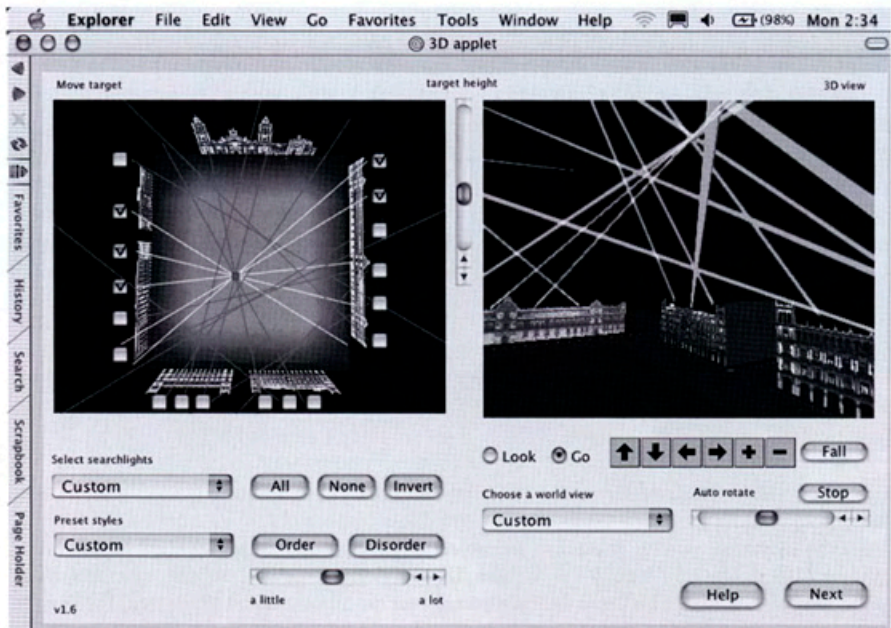


Figure 20.3 Rafael Lozano-Hemmer, 'Vectorial Elevation' (1999–2000). Detail from the online interface with 3-D java applet that enabled participants to contribute designs for the presentation in Zócalo Square, Mexico City.

'Vectorial Elevation' was awarded one of the leading international awards for new media art, the Golden Nica award, at the international festival Ars Electronica in Linz, Austria, in 2001.

## Background and interest in new media as performance

*Rafael, how did your background in arts practice lead you to make new media pieces in the public space and also to work on such a massive scale as you have often done?*

I started working in radio and performance arts, with live music. I would utilise available technology to create new sorts of instruments and use live sensors so that dancers and actors could control their own dynamic set design. Later my preference became to make performance into a 'theatre of the streets', which is to say that at any given point the city has embedded within it specific narratives, and what we wanted to do was disturb these stories. This way we would bring out tangents and subtexts to the narratives, or establish new relationships in public space.

*Later on you gravitated towards working with new media technology from more conventional forms of performance in the public space. Was it an obvious progression to work in the public arena with technology?*

When it comes to working with electronic media, I've always said it was closer to performing arts than to visual arts. It fitted in well to my approach to the 'theatre of the streets' which is a very theatrical approach to public space and one in which the

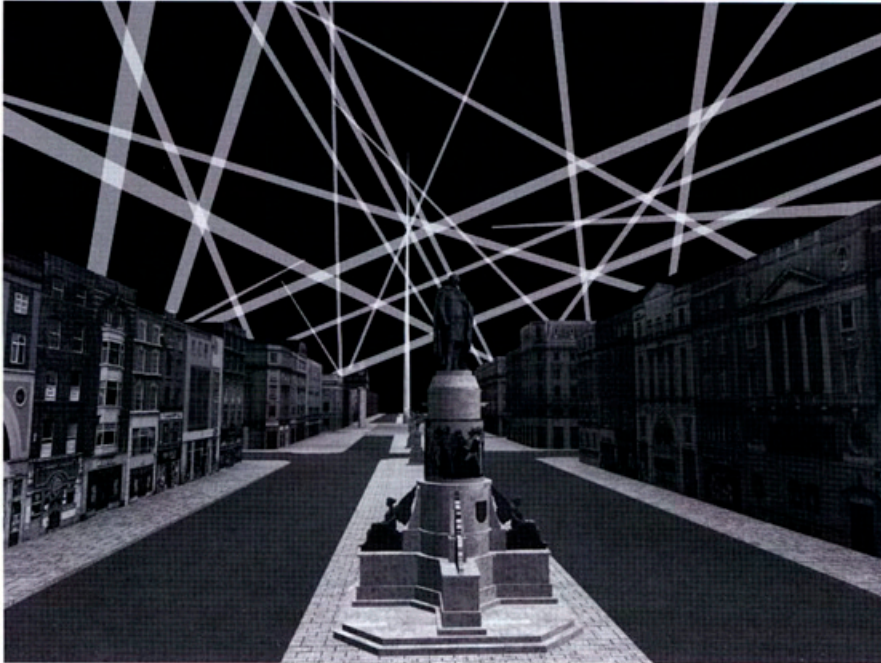


Figure 20.4 Rafael Lozano-Hemmer, 'Vectorial Elevation' (2004)

A 3-D rendering of a contributed light design in O'Connell Street, Dublin, Ireland, submitted while 'Vectorial Elevation' was presented during the celebrations for the EU expansion in 2004.

staging operates like a series of connective platforms within the city itself. I don't think of working with electronic media really as a collective object, but it is more of a process or a dialogue. Museums or galleries did not seem to be the best place to experience that, but to work in public space was the best way to get directness and dis-intermediation into work.

## Working with scale

*Creating work in public space also implies that the scale of the work is large, or that it can be expanded as necessary to take on the challenge of a big space. And your works have been very large, sometimes spectacularly so. How important has it been to you to work on this scale?*

I have often said that my work is only as big as my insecurities! Though it is true that I am interested in working with technological amplification. It gives a new way of thinking about the concept of virtuality which makes us seem very small, often almost non-existent in the face of the complexities of the machine and the network. In virtual environments, like an architectural walk-through, data is presented through encumbering interfaces like VR helmets, and your body is left behind, and the virtual environment asks you to suspend disbelief and believe in the simulation. In contrast to this, in a public space, the difference in scale between us and massive public architecture is such that we are made to seem tiny, almost to the point of negation of our own bodies. With relational architecture, which is what I have called my series of urban works, we do the opposite and amplify the human gesture so that it transforms the buildings around it.

*One of the things that seem significant about all your works is that there is a real sense of people joyously performing alongside each other. There is rarely the sense that there is one individual participant who has a priority in the piece while others can only be spectators.*

Yes, and my objective is not necessarily to have everybody take part in a managed way. Of course, there are limits to what they can do but I'm interested in setting up a platform that can still get out of control.

It is very important that in a public space no one will tell you how to act, and with media art including my own you are often given instructions telling you to press a button or move in a particular way around the space. This is something I have tried to avoid. For example, with an earlier work, 'Body Movies', which was created for a public square in Rotterdam in 2001, the interface was 'operated' by having people play with their own shadows, which is really very intuitive. I think the reason why a piece like this succeeds is because we all already have an intuitive understanding of what we can do with our shadows.



Figure 20.5 Rafael Lozano-Hemmer, 'Body Movies', Rotterdam (2001)

In 'Body Movies', photographic images of people standing in the street were projected onto the wall of a public square in Rotterdam. Passers-by could interact with the projections by casting their own shadow onto the building using the beam of large spotlights. Once they made their own shadow correspond exactly with that of one of the photographic images the program would then move onto another frame and introduce the image of a different person.

## Collaborations and team operations

*Can you describe how you work with collaborators? You've worked with a regular group of people over several years, some of whom share creative credits with you on the projects, including Will Bauer and Conroy Badger. How do you find that these sorts of collaborations affect the creative process?*

I've been working with Will Bauer, who is an engineer and composer, for a dozen years or even more – we started working with theatre and interactive installations. Later, I started working with Conroy Badger who is an electrical engineer and a programmer. I also programme – but enough to know that I am terrible compared to Conroy. From the earliest projects we've never had a precious division between the development and the production of the piece. It's usually generated through both the invention of the tools and the conceptual framework.

The model of collaboration that we started to work with was one based a bit in cinema or performing arts. It uses the idea that there should be a director with a lead voice, and very clearly defined roles for other people involved in the piece. This way we could still keep the eccentricities and the biases and the nightmares that make a good work of art. Prior to us deciding to work this way, I had worked in a bigger theatre group in which everybody had an opinion and the final result was work that was just a result of consensus – which is not good for art. Now most of the time our collaborations have a

core team and take on other people with different skills depending on the specific nature of the piece. For example, in 'Body Movies', which uses a very large number of photographs taken on the street, I worked with five photographers.

Today we live in an era of collaboration. I don't think the popular notion of the artist mostly working alone is often true with new media. Even if you are a solo artist working with Photoshop you have to be aware of the fact that your work is influenced by the programmers who built certain tools. I think when you are working with interactive art you are always working with a collaborative context and dialogue.

## **Necessary skills and expertise**

*We've talked about the other collaborators. What are the skills that you bring to the table as director and key creative visionary which enable a project like 'Vectorial Elevation' to take place?*

The first thing I think is the capability to understand the context and also to study the precedents and what other people are doing. Being a generalist is something that is extremely useful. I actually studied chemistry and art history and then I worked in performance, so I am the kind of person who hovers over several disciplines. It helps to be able to move between different disciplines, and to feel comfortable with the languages of those disciplines, when you aim to produce a project. Sometimes I call my function the lubricating glue. On the one hand you can lubricate to make things happen and take the path of least resistance so a project can go ahead. And on the other hand you 'conglomerate' people who would not otherwise be together, like programmers and producers, or funders and press people. I think that this kind of work requires that directorial capability to comprehend the multiple entry points and to present it to the general public, so that they can see it as something valuable. To do this you have to be rigorous with the kind of conceptual or ideological background you have for the piece and you have to understand the ways in which the technology can be made to work in your project.

## **The evolution of 'Vectorial Elevation'**

*How did 'Vectorial Elevation' evolve as a project? Did you have a very fixed sense, from early on, of what it was going to be, and what your approach to it would be?*

The commission for 'Vectorial Elevation' was for the Millennium celebrations in Mexico City and so I studied what other cities were doing to celebrate the Millennium. I got outraged over the kind of pedagogical 'sol et lumière' spectacles that are so often used and which try to represent the richness of a culture in an exhaustive way through icons and stereotypes. If you are trying to represent a culture, what is often most salient is what you are actually omitting. The Minister of Culture in Mexico was very accepting of my criticisms but said that the proposal needed to stem from an episode in Mexican history. I then nominated as a starting point the fact that cybernetics was first postulated in Mexico City at the National Centre for Cardiology in 1946, where Mexican cardiologist Arturo Rosenbleuth was working with Norbert Wiener to try to understand self-regulation of the heart. They hypothesised the theory of messages and feedback in order to understand this phenomenon. Based on this I proposed cybernetics as a part of Mexican history and thus 'Vectorial Elevation' as a project, which was accepted.

The site nominated for the project was Zócalo Square. The space is so large that the architectural scale swamps an individual. There could be a demonstration of 30,000 people but the numbers would seem tiny in the whole square. So I proposed that in order to work with such a space we needed to work with technologies of amplification that would not make it into a little ghetto but that somehow the whole square could be personalised. On top of that we had the fascination of working with the most powerful lights in the world, which are of course associated with military spectacles and victory parades and all of that, so we had to consider how we could turn around technology and make it into something that the people could use.

## Conceptual basis to developing an online project

*One of the very notable things about 'Vectorial Elevation' was that it united people of different communities in the one experience. There was an online community and an offline community, each in very different contexts and not necessarily working together but experiencing it together. For people online, designing light patterns made sense knowing that they would be realised in the public space with a live audience. For people in the square, knowing that the designs they were observing were sent in by the public was an important aspect that made the work more than just a spectacle. Was the online aspect of 'Vectorial Elevation' a fundamental part of the project from the beginning, as a way of enabling large-scale public participation?*

We agreed that we needed tools that could allow us to disseminate this project not only through the city but also through the whole world. So we aimed to use this as an opportunity to make a high-tech project in which people could be represented through their own creativity. In Mexico in 1999 only 1 million people had Internet access and they were mostly the elite so we also ensured that there were also public-sited Internet stations so that other people could go online.

The role of the non-interactive subjects was also an important part of the piece. You don't need to have everybody who participates in a piece to be going online or working with the interface. I was always inspired by the work by Sol le Witt, in which instructions are an important part of the conceptual aspect of the work. It is wrong to say that the moment of contemplation is not an active moment. The physical response to the way you react with the work affects your perception in an active way. Your body reacts to it and to an extent that is exactly what is happening in 'Vectorial Elevation'. When you are standing under the canopy of light, the entire field of view overhead is in motion. You feel a sense of motion, you feel a sense of displacement or dynamism, and those feelings are active so there is nothing passive about just contemplating.

*Did 'Vectorial Elevation' develop the way you originally wanted it to, or did you have to adapt it as you progressed with the development?*

Absolutely. One of the things I find fascinating is that, when you are making this kind of work, there is a large degree of improvisation in the actual development of the piece. As with most media artists I did not have access to the equipment that I would eventually use. When you're working with this scale, your understanding of the effect that these powerful lights will have on the square is entirely reliant on your imagination. When you finally do get to have all the technology together in the space and all of your decisions have to be compressed in that tiny little window of time, your capability to improvise, to make sound aesthetic decisions, has to go into high gear.

One of the examples of how that worked out in 'Vectorial Elevation' is that in my original concept I assumed that in order to process and present a fairly large number of designs the lights were going to have to render patterns in the sky every second or, at most, every two seconds. I wanted, as much as possible, the tempo of the piece to be like a heartbeat. I wanted almost constant motion. It was not until we started working with the lights that we realised that for the lights to move 180 degrees we needed eight seconds and that was, therefore, the maximum speed that we could have for the change of designs. The decision was made to bring down the tempo of the piece to eight or ten seconds. Upon seeing it I decided that we had to make it even longer. I realised that we had to work with a space of contemplation.

*Presumably, you were also having to deal with problem solving on a technical level as well as an aesthetic one. Did you have to make compromises?*

In this sort of project you are constantly having to deal with large, unexpected obstacles. The difficulties happen in the very last minute. Finally, you've got the technology in place and then a number of directorial decisions have to be made right then and there. And that's at the level of aesthetics but also with practical issues. We almost had to cancel the project because we put the lights up and turned them on and then all of a sudden we got a call from the airport telling us that we were shining into the landing trajectory of the aeroplanes and blinding the pilots. So, on one hand, we had to deploy

an immense amount of bureaucratic negotiations, and, on the other, we had to come up with a technological solution. We ended up modifying the program so that whenever the lights were directed towards the landing path of the planes they automatically dimmed by 30 per cent and the beam was opened more. So by the time that it could hit an aeroplane five kilometres away it would not actually be so bright. This kind of thing is totally overwhelming – you're about to be shut down for something which you didn't think of when you were first conceptualising the project and you've got to be able to respond very quickly.

I don't recommend making a work like 'Vectorial Elevation' to anybody who wants to have a peaceful and quiet time. This kind of problem happens all the time with projects and now, at least, when we show 'Vectorial Elevation' we know which are likely to be the problem issues. We know how to deal with censorship, with possible corporate takeover by sponsors, we know about air traffic control, we know about safety in terms of search lights, we know about dealing with the noise of generators, we know about the bandwidth we can get from the Internet – stuff like that. And now it is a lot easier to set up a project like this but definitely when you're first working on one of them it is like having to become something like a production manager for a rock opera.

*Earlier you discussed that you were interested in the narratives within different public spaces. On one hand we might talk of these as master narratives of power and history, but they are also about public ownership, expectation and understanding. 'Vectorial Elevation' demonstrates a work that is presented in a public context and has to negotiate the consent of the public on different levels. Sometimes it might be official, through formal channels, and sometimes it is much more subtle and about being respectful. Were there particular ways in which you had to approach these issues?*

One example of consent is political and about freedom of expression, and one of the really interesting political discussions we had was to do with censorship. In Mexico when we did the project, the Zapatista movement was very active. There were a lot of extremely media aware Zapatista activists who were carrying out all sorts of electronic disturbances online and then along came my project which was going to take place in the most emblematic part of the city and in which people would be able to express their opinions through this method without any censorship. It created a very interesting debate because the Minister of Culture of Mexico totally defended the freedom of people to say whatever they wanted. However, there were a lot of other bureaucratic characters in the background who were advocating that we should censor the texts that were being sent in online. So it was a very fascinating discussion to have, and of course all of this happened just at the very last minute. Just while we were trying to figure out how not to disturb the aeroplanes, we were also having to deal with political issues of censorship and practical and technological issues.

*Perhaps it helps to think about the sorts of projects that we are talking about as operating through evolving processes, not fixed. Often new media artists don't talk in terms of specific goals and outcomes when describing the works that they are aiming to make. Maybe this is about keeping the possible outcomes unrestricted but it may also help to keep creative opportunities open to them, which is something that new media artists are often most interested in. Does this matter to you?*

That's true, and if you know what the outcome is going to be, then why do it? It has to be alive – you have to create a space for the public to express their involvement. We have to trust that the public has a very sophisticated behaviour that will emerge, rather than treat them with a paternalistic attitude. Often you find in museums or other institutions that you are given a didactic linear reading of how to interpret a work, but this makes it boring. People are able to respond with much more ingenuity than some authorities think they are. With interactive art you depend on the public to participate, otherwise the piece does not exist. It's a really humbling decision as an artist because there's nothing you can do to control how the public will react. And the celebration of that is something that makes interactive art very strong.

Rafael Lozano-Hemmer's website is [www.lozano-hemmer.com](http://www.lozano-hemmer.com)