

# Surveillance: The Emergent City, Panoptic Aesthetics

*Keywords: Surveillance, city, dataveillance, networked, panoptic.*

## STANZA

### **Surveillance.**

'Imagine walking out the door, and knowing every single action, movement, sound, micro movement, pulse, and thread of information is being tracked, monitored, stored, analyzed, interpreted and logged. The world we will live in seems to be a much bigger brother than the Orwellian vision; it is the mother of big brother' (Stanza, 2004).<sup>(1)</sup>

This statement embraces my vision relating to the surveillance artworks made that repurpose live surveillance (CCTV) footage and that monitor the landscape to unfold layers of data. It is the rationale for all the artwork made and referenced here that manipulate and reform other content over networks to make art.

The artistic systems created by me are not only relational but are also 'alive' and given agency with real-time data feeds. These artworks are not just triggering lists of historical assets (data, texts, video etc) to give this illusion. Our relationship to the wider surveyed and monitored landscape with which we now complicitly interface becomes the main exploration in the artworks. Also made explicit are key references to a wide range of theoretical sources, from Bentham to Foucault to Deleuze, creating a thread on surveillance and visual cultures which was interwoven in the development of this 'new' media art.



Public Domain II. Using all CCTV cameras in the galleries. Seen here as a simulation which worked online from 2008 to 2019 taking images from all the galleries all at once. (Stanza, 2008)

Foucault, made the link to Jeremy Bentham the English reformer who utilised the Panopticon as a metaphor for contemporary life where permanent visibility assures the automatic function of power; this spurred a proliferation of texts and theory in the field. Gilles Deleuze writing in *'Postscript on the Societies of Control'* (1992) revised the model from the disciplinary society, moving on to the surveillance society. David Lyon then suggested that the *'music is made'* in collusion with the conductor reinforcing a centralised position of control but inferring a symbiosis (Lyon, 2006).

This relationship now becomes more like an entangled mesh of interactive connectivity and exerts itself in hybrid liquid form now far removed from the original Bentham Panopticon; which is actually linear and fixed. The panopticon is a type of institutional building and a system of control designed by Jeremy Bentham in the 18th century and

brought to life in the form of a central observation tower placed within a circle of prison cells. From the tower, a guard can see every cell and inmate but the inmates can't see into the tower. Prisoners will never know whether or not they are being watched. The era of universal surveillance has been created and moved into the mainstream arena with the high profile cases of Julian Assange and Edward Snowden.

My position in this is to suggest we all have become complicit by our agency the *dataspace*; we are active in our feedback, contributing and collaborating with the methods of surveillance. We might not agree to this, we might rally against the invasion of privacy and constant monitoring, but it does not stop us using our phones, our computers and submitting our data.

The symbiotic relationship of my artistic and technological practice is explored through the means of network-based devices, first lens-based surveillance (cameras) and then dataveillance (networked sensors).

In these algorithmically driven artworks what is also made malleable are the wider systems of the networks of data from the city. For example, to discuss the problems in defining surveillance I refer to Urban Generation (Stanza, 2002) in which three hundred cameras are networked into the online net-artwork which is reworked by an algorithm in real-time.<sup>(2)</sup> Control is leveraged from one system of control and re-presented back to the audience as an open system within the aesthetic gaze. The agency of the data is alive and corruptible and made malleable demonstrating real-time performativity as well as possible networked disruption and abuse.

Essentially content derived for one purpose is now re-interpreted and the data, in this case image-based, is reformed to create a generative screen-based artwork. In this technological system it is the code, the algorithmic interpretation of the data that facilitates the opening and closing of gateways to create new meaning. This narrative also creates borders, within databases of locked or private information. Essentially algorithms have been added to Foucault's list of prisons and once again these

platforms serve to illustrate our complicit relationship to this interrelated world, trafficking meaning in varying directions. The algorithms build invisible layers around our experiences online and this drives the ethical debate into the use and abuse of data online.

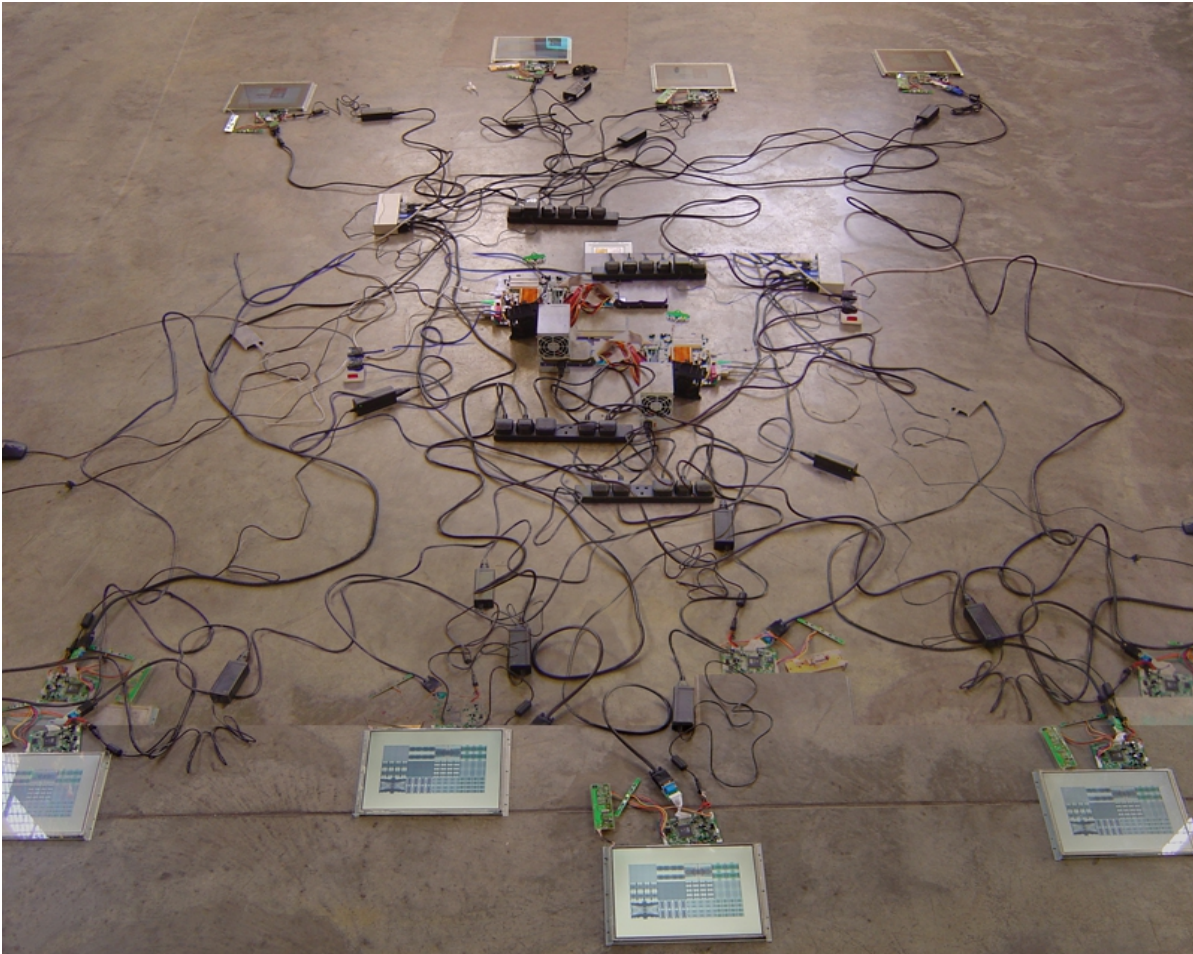
Speculative art practices have problematised the loss of privacy from different perspectives and this issue aligns itself with the substance of my artworks. David Lyon in conversation with Zygmunt Bauman proposed that it is in the city that we experience surveillance in ways that are multi-faceted, multi-layered, and moment by moment (Bauman, Lyon, 2012). Therefore it is the real-time moment, a constantly monitoring city via ubiquitous technologies that is the focus of the artwork, as it is in the ever present that we are always under observation. Within this context all my artworks in some way observe and sort the city and its concurrent behaviours via the ubiquitous technologies of today (CCTV cameras, sensors, phones, databases, code, algorithms).

This inherent feature of surveillance and control within digital communications now blurs the digitally panoptic and Orwell's big brother which have become one and the same. A seminal moment for me in the ubiquity of surveillance in society was the infamous James Bulger murder which was caught on closed circuit television systems (CCTV) as low-resolution video images of Bulger's abduction from the New Strand Shopping Centre in Bootle, Liverpool at 15:42 on Friday, 12 February 1993. Councils and police have since argued that CCTV can be used to prevent crime; this initiated a huge investment in CCTV in the UK. Since 1993 through state funding CCTV technology and now IoT smart city technology has increasingly embedded itself in the landscape and urban fabric which is now on a global scale.

The influence of surveillance culture is now very broad as the social, political and individual invasion of privacy has been highlighted by scholars and academics, not just artists. Whilst the sheer breadth of this discourse largely falls outside the remit of this essay, it is however worth acknowledging. Furthermore my artworks do not exist in isolation from previous artistic research it is useful to initially provide some continuity, shining light into the new optics that are offered by surveillance and this technology as



a framework for artistic expression.



Urban Generation. Installation Version. Wires, Cables, Screens, Net Art. Real-time software. (Stanza, 2002 – 2004)

There have been many international exhibitions about surveillance in the last twenty years. Two examples are '*Ctrl Space*' (2001) at ZKM in Germany and '*Please Come Back*' (2017) at the MAXXI in Italy. The latter addressed the world as a prison, and set out to remind us about the relationship between artistic creativity and surveillance and control.

Artists David Rokeby and Julia Scher have both investigated lens-based surveillance technologies in depth. Other artists that have made artworks using CCTV and surveillance include, Nam June Paik, Dan Graham, Peter Weibel, Bruce Nauman and more recently James Coupe, Jill Magrid, Manu Luksch and Rafael Lozano-Hemmer.

These artists and artworks are well known, for example:- Nam June Paik's TV Buddha (1974) is a closed circuit video installation, bronze sculpture. Dan Graham's Time Delay Room (1974) were two rooms under surveillance by two video cameras with an eight second delay. Julia Scher's Predictive Engineering (1993) is a multichannel video and sound installation, with live cameras, sensors, microphone, mirrors, tape, plastic balls, drone. Peter Weibel's Endless Sandwich, (1969) a closed circuit video feedback. Bruce Nauman's Video Surveillance Piece: Public Room, Private Room (1969). More recently other artists using surveillance cameras include James Coupe's Sanctum (2015) CCTV tracking in the gallery with added narrative of storytelling. Jill Magrid's Evidence Locker (2004) where the artist collected videos from Liverpool CCTV networks with herself in the images. In David Rokeby's Sorting Daemon (2003) the system looks out onto the street, panning, tilting and zooming, looking for moving things that might be people. Manu Luksch created Faceless (2007) from CCTV footage blocking out the faces. Rafael Lozano-Hemmer's Zoom Pavilion (2015) after Stanza's 'Visitors To A Gallery' (2004) which also used the audience in the gallery.

All these artists have incorporated reflective surfaces and lens based CCTV (surveillance) cameras that vie for attention via the spectacle of society. This acknowledges Lacanian psychoanalytic theory, where the person subjected to the 'gaze' encounters a loss of autonomy upon awareness that he or she is a visible object and 'signifies a psychological relationship of power, in which the gazer is superior to the object of the gaze' (Schroeder, 1998).

### **Stanza's Artistic Methods**

In general, there are three simplified methodologies that are common to all strands of my working practice.

These involve: Collecting data (often using) using networked wireless sensors or cameras. Visualizing data through iterative experimentation to make these data represent something that supports the artistic contexts. Displaying these data in an artistic context so the audience comes to a concurrent understanding of the outputs.

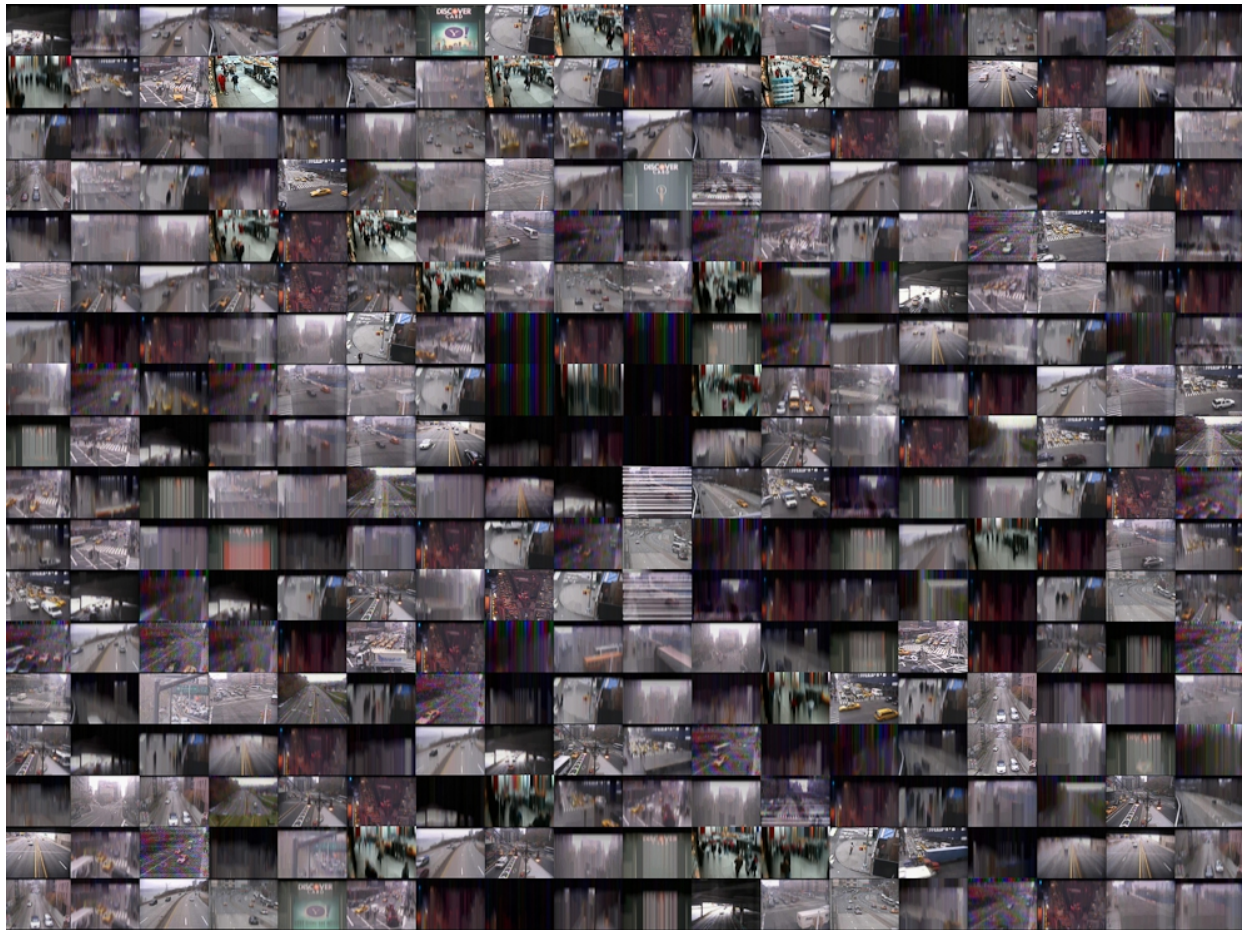
This modus operandi is typical for all of the artwork in *The Emergent City* series. By understanding how to use technology in creative and novel ways, I have engaged with and developed a whole range of software and technological tools. This open methodology led to the creation of sonifications, visualisations, and sculptural objects; as well as apps and feedback into other networks and integrated systems. Charlie Gere acknowledged how *Stanza* works seamlessly with technology when writing about this work in the essay, '*Stanza's Object Oriented Aesthetics*' (Gere, 2014).

Over fifteen netartworks that I made between 2000 and 2005 researched systems for data usage that could access vast areas (across cities and around the globe) incorporating ideas about lens based surveillance, control, and the performative quality of real-time media. '*Urban Generation; trying to imagine the world from everyone else's perspective, all at once*'. (2002 - 2004) illustrates the ideas of surveillance and control. Made as a piece of netart to be experienced outside of the gallery setting it was also exhibited in twenty media art festivals and gallery group shows between 2002 and 2018.

The data (in this case images) that you see are re-mixed into this online artwork that looks like a filmic experience, but it is not a film as it is constantly evolving and will never be the same again; the images are not recorded. Each screen is a live real-time image taken from one of three hundred networked cameras in the city of London. This generative artwork called into question the 'urban generation', a period during which the threat of terrorism has made our environment ripe for surveillance and privacy abuse. Private space has become public space, public space has evolved into covertly governed or overtly corporate space. The border of this space cannot be separated in this panoptic mirror gaze.

*Urban Generation (2002)* *CCITYV (2002)*, *Globals (2004)*, *Amercia Is Bleeding (2005)*, all create a unique interpretation of a multi-point perspective of the city that exists always in the present time. The online system expands both the distance and experience of the artwork not limited by other artworks presented as gallery installations, and these systems based artworks have moved beyond the linear and the

interactive to fuse a hybrid interweaving generative systems. These artworks are exploring the rhizomatic multi-nodal networked experience connected to the theme of networked panoptic surveillance that occurs in all work that follows, and this was an important breakthrough point in my work circa 2002. These artworks led to the speculation of a larger technological sphere on a global scale that could be interrogated via smart city wireless sensors which occurs in *Sensity (2004-2009)*.



*America Is Bleeding (Stanza 2005) Networked cameras from all over New York created into online net artwork.*

The world as a system can therefore be seen as a giant multi-user multi-data sphere. To take part you really have to put something back in; that's like life. To take part you have to input data so others 'may' see the output of the data response. Albeit in this case you don't have a choice since this panoptic manifestation now operates without our permission regardless.



From a global perspective this observable and monitored mobility can be identified through traffic patterns, pedestrian patterns, in ways similar to seeing bird flocking patterns. Pattern recognition can be seen in the architecture, patterns in the buildings, patterns in the architectural fabric of the urban design network. And closer inside the micro patterns of the city, we have the life cycles of the atomised, the insects, the life of continuity, all of which exist along a timeline of past, present and future. Everything is connected. These themes are now being explored once again using artificial intelligence (AI) and machine learning techniques (ML) of much larger data sets. The remediation of everything becomes possible and towards this end a STANZA.API has been developed with machine learning built in to frame hundreds of smart city data feeds into newly created artworks.

This notion connects the reader to the wider technological ubiquity and ethos of monitored (*surveillance*) space. This interconnection suggests a value for this information of control which will be a new currency as power changes (within networks). Therefore I speculated that the central issue to be developed would be the privilege and access to these data sources. Taking some of these data and making something (*artistic*) was an endeavour to reclaim ownership of the data in 2002 and place it back in the public domain.

This theme of control or monitored space within lens based surveillance cultures is pursued again in my artwork *Visitors To A Gallery, Referential Self, Embedded*. The installation made first made in 2004 at The Watershed UK as part of an artist in residency then exhibited in 2008 in Plymouth Arts Centre. It was also shown for 'A Look Inside' Surveillance Art expo at De Markten Brussels Belgium 2013. The installation makes visible those things not usually shown in galleries and reveals the nature of gallery-visiting itself tracking the visitors and presenting them back to us as the artwork.

Artists have of course used CCTV and surveillance cameras for art for some time, including the Surveillance Camera Players who performed with props and subtitles, especially for CCTV cameras around New York since 1996. What my artwork highlights

in the case of the 'visitors to the gallery' is a critical view of the current rhetoric about visitor participation in galleries for, here, the visitor is not necessarily participating in the work voluntarily. The artwork acts to reinforce the complicit and performative agency the audience now has with these technological systems.

In my digital artworks (2001 - 2007) connected with surveillance, where lens-based situations (CCTV technologies) are used, the concern is to use multiple lenses from multiple perspectives and incorporate the whole as a real-time networked flow. Images are not recorded; the emphasis is on the monitoring of people and public space as something ever-present. The system created has no past and no future, just the real-time ever-present moment where the landscape is a hybridized audiovisual representation of the data space. The artworks become audiovisual representations based on the sights and sounds of the city's pollution, noise, traffic data and the people in it, as this is once again evidenced in the artworks.

Another of my media artworks investigating the real-time event (agency) and the panoptic aesthetic is titled 'Globals. Never the same again always different' (2004). The artwork alludes to a global observation (surveillance) system and presents the audience with seven hundred real-time observational channels which are always on, and always changing all mediated into the one artwork. This creates a constant view of world cities changing and evolving around the clock, recombining these data, thus acknowledging our integrated relationship to the wider systems where, 'we will also become exceedingly trackable, naked, predictable manipulated and ...programmable' (Leonard, 2016, p.37). The artwork seeks to place the viewers and the experience of the artwork in the middle of this confrontation of the manipulated body (as an asset) in the data space (city).

Other artists who have used networked cameras in their artworks include Wolfgang Staehle who famously used the webcam pointing at the World Trade Centre when the planes crashed (2001). Thomson and Craighead (2004) also used found footage from the web to create short films. In both cases, the feeds were served up directly as they were found and create a more playful Duchampian vision of a found source

recontextualised around another narrative.

What is different in my artworks like *Urban Generation* (2002) et al was the re-appropriation of multiple feeds and channels, all operating at the same time, while representing them all back online through a browser to the audience which is also online, thus alluding to the network's space we have now become incorporated within. The audience was in the middle of a mega-structural form, the stacked city layer, monitored, and incorporated into a closed loop of consumption. This widening horizon of ubiquitous and enmeshed technology has recently been poetically described by Benjamin Bratton who questions what planetary-scale computation has done to our geopolitical realities; these computational layers, smart grids, mobile apps, smart cities have become inside of us while all now part of '*The Stack*' (Bratton, 2015).

The multidisciplinary artworks are designed to float and drift as data, and continually unfold through networks. The work is no longer determined solely by its existence on the web and operates within the field of 'expanded internet art', as it demonstrates various methods, both online and offline (Moss, 2019). This hybrid meshing of data, information, sensors, cameras and connectivity illustrate this expanded entanglement.

My artworks identified here also use these multiple sources and then go further to manipulate the aesthetic of the real-time feed. In other words, the system of control is controlled by the artist's custom algorithm, albeit for aesthetic reasons, almost suggesting and demonstrating a reversal of trust in technological systems. The separate layer of intelligence (the algorithm) exerts a dystopian anxiety as we speculate how this massively distributed megastructure was re-fabricated on a planetary scale, and what type of society this will create.

What differentiates these works is the context. These artworks exist to break down the networked image and redistribute it almost as a commodity, identifying the system of control that is increasingly becoming embedded everywhere. By using custom code however, the artwork manipulates the camera feeds to demonstrate that anyone can take control of the content and therefore the context. There is a newly emerging

perspective shift created by presenting multiple different camera feeds to the screens at the same time. This multi-point perspective signifies a different experience and visual truth from the linear films of other artists working in this period. The sheer scale alludes to a planetary scale conglomeration that Constantinos Doxiadis (1967) referred to as Ecumenopolis, except now it has manifested as a virtual over-layer of systems technology which is planet wide and deeply embedded with dystopian panoptic overtones of an Orwellian sensibility.

It can be stated therefore that there is no centre in the data space; there is just this nodal mesh network that the individual is situated within. There is a reorientation to expanded internet art and what is termed 'informational milieu' (Terranova, 2004), a conglomerate of communication channels. The user and the audience are part of everything in this drifting space; shared overlapping.

My artworks of this time (2000 - 2005) produce a different result at every viewing and therefore, a different experience of the artworks which can only be appreciated viewed side by side. If you sit next to someone looking at the same work on your machine, the screens are different. Thus, time and space are expanded into this artwork (see later); something we have now become familiar with in today's bespoke AI social media platforms (2020). This panoptic 'gaze', though slight, becomes a stepping stone from the past of Bentham and centralised control to the present of data liquidity (Lyon, 2006).





Visitors To a Gallery. Plymouth Arts Centre UK. Tracking visitors and embedding them in the artwork. CCTV from multiple galleries, custom sensors, electronics and hardware systems to affect images. (Stanza 2008)

In the lens-based gaze of the *Visitors To A Gallery* (Stanza, 2004 - 2008), you the audience become the art while it also claims you like a data for consumption within the art experience. The artwork reduces the audience to be no more than an observable controllable asset (commodity) or *bit* in the data sphere that is the gallery (*database*). Rather than witness the artwork the visitors are witnessed and mediated by the artwork to become the spectacle and material. 'Visitors To a Gallery' therefore becomes enslaved by the surveillance gaze creating cultural value and commodity. In these artworks you have to be there to take part, by default. The body is needed in the data space; it cannot exist on its own.

The panoptic gaze sells the obligation to cooperate, to play along; it is now a condition

of the social. The real-time relational data space, the sense city of layered information (surveillance lens-based) now changes lane to the extended data-based, data-driven algorithmically monitored everything.

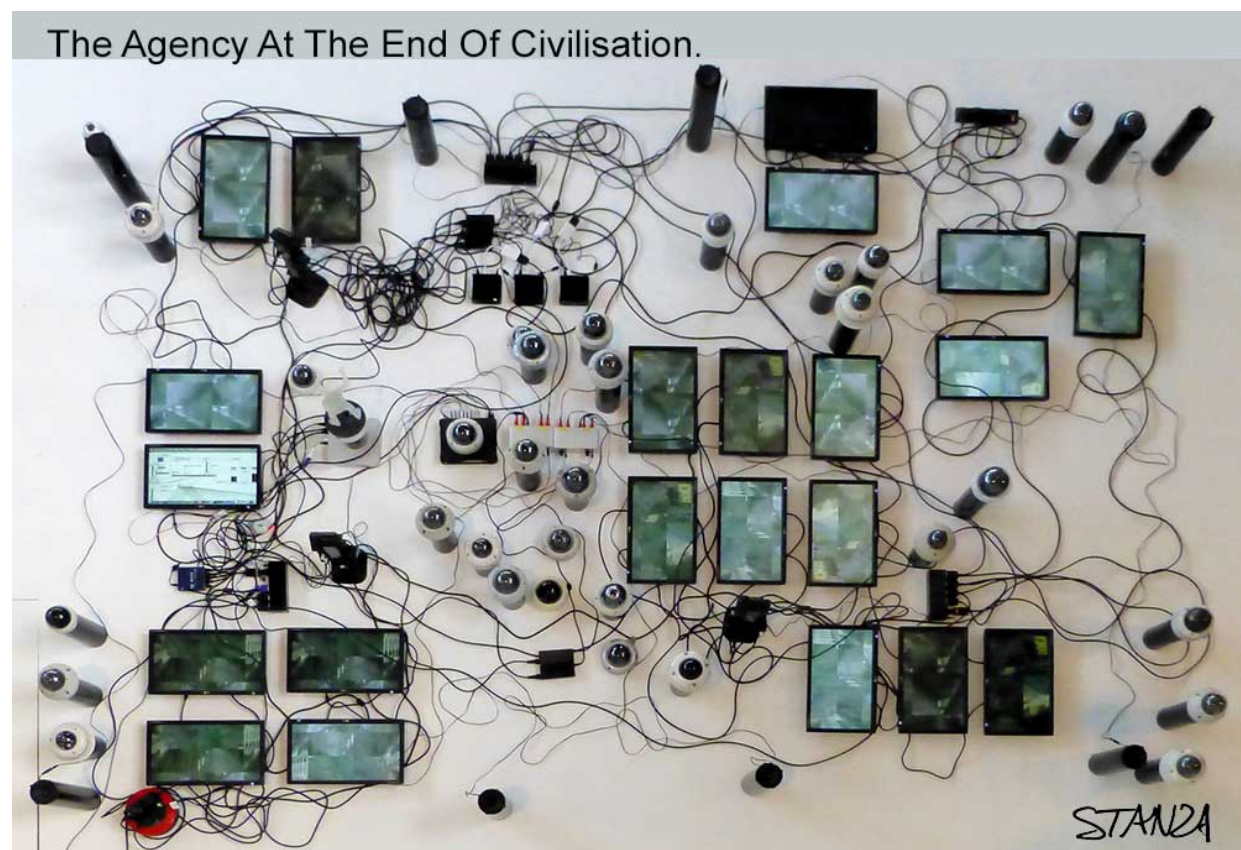


The Reader. 100 led matrix displays and custom PCB boards, perspex body, base box and laser cut metal plate, arduinos, PCB boards, power sockets and custom power box. (Stanza, 2014)

Underpinning and embedded in both the early artworks and my investigations into dataveillance are a whole series of potential problems about observation, surveillance, and the ethics of the control space (controlled by machines). By researching surveillance systems, tracking software, wireless sensors networks as a practitioner at any given time, the artistic outputs created demonstrate a concurrent understanding

about the social and ethical implications of such technologies, both in artworks as well as public domain space. Indeed, the internet itself can be seen within the same panoptic sphere.

The artworks deliberately speculate and allude to where these technologies could lead us in the future, especially *The Nemesis Machine* (Stanza 2010 - 2017), the large cybernetic sculpture of city data. While building art systems and tools to enable these systems online, further questions become highlighted about the ethics of the control space and surveillance space. How we understand and value information is of great importance. It seems reasonable to suggest that visual metaphors might simplify our understanding of data in space.



The Agency At The End of Civilisation at Winchester Science Centre, UK. Cables, Screens, CCTV, Speakers, Real time data-driven installation with predictive behaviour. (Stanza, 2014)

Mixing both lens based surveillance and a dataveillance based systems the artwork *The Agency At The End of Civilisation* (Stanza, 2014) also incorporated additional

future predictive control and machine intelligence via a software system. The control system in this work is manipulated to redirect attention where the system wants. In this case the database is, in effect, manipulated to disclose another truth which alludes to new knowledge. This artwork uses 44 million car registration numbers in real time and mixes the time, position of each car (GPS) and merges this data with live CCTV from two hundred cameras and then adds more informational data to create an altered narrative.

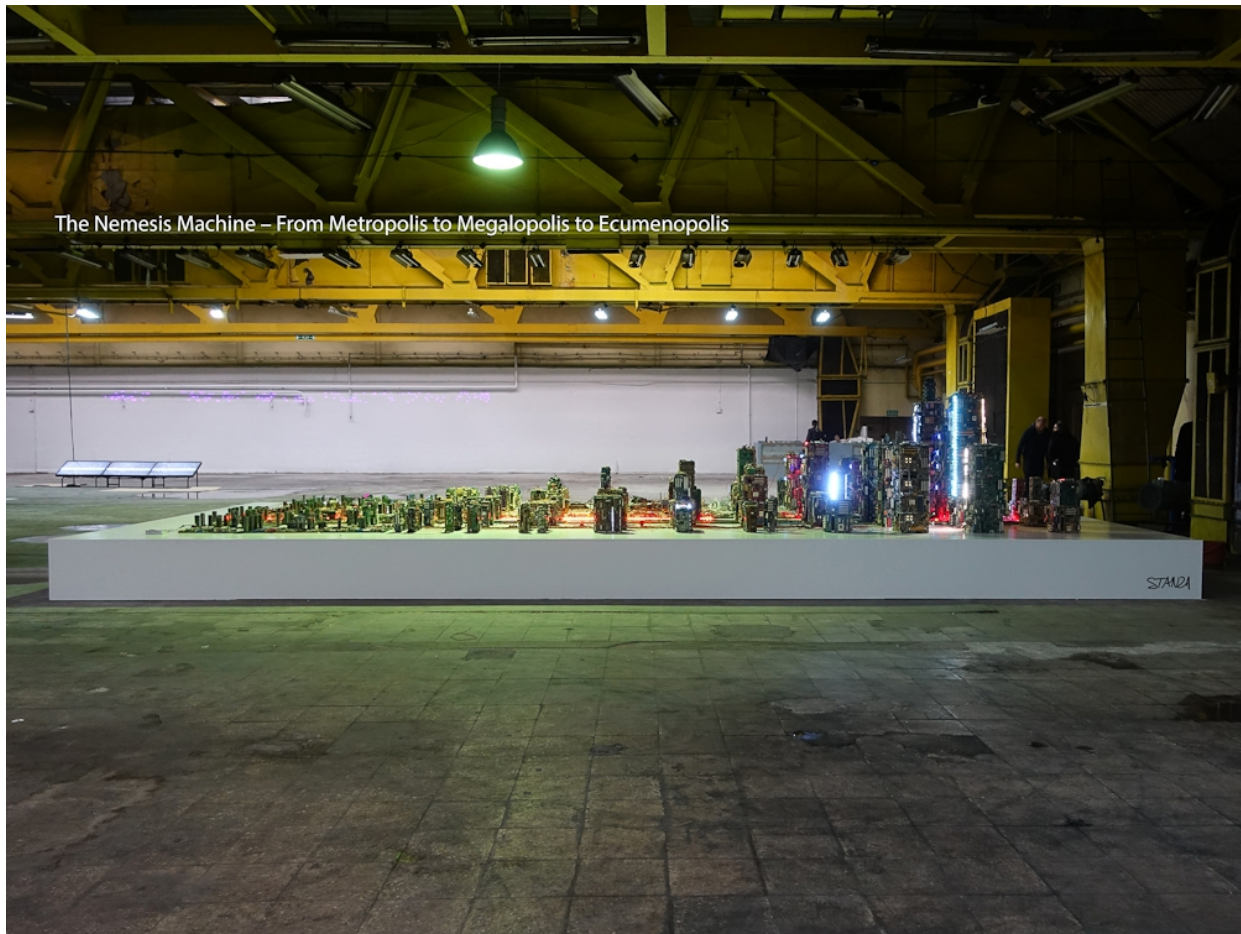
Therefore these intertwined environmental data layers and feeds embed further layers of mixed information and raise an important question about ethical accountability as to the right to the city and the consumption of this data as a material asset. In other words the suggestion is that these data and most types of data (logistics, people, tracking, quantitative behavior analysis) have turned themselves into financial commodity instruments to be bought and sold. Bruce Schneier (2017) puts it bluntly: 'Surveillance is the business model of the Internet'. This emphasis on the liquidity of the invisible world of flowing data is exemplified in this observation from Douglas Rushkoff in *The Guardian* in 2019. 'What happened to us in the 2010's wasn't just that we were being surveilled, but that all that data was being used to customize everything we saw and did online. We were being shaped into who the data said we were. The net you see and the one I see are different.' This describes an effect interrogated in the artwork *Urban Generation* (Stanza, 2002 - 2004) and *The World Is Watching* (2002), *Globals* (2004), *America Is Bleeding* (2005), *Supervigilantia* (2011), *The Parrallel Reality Series* (2006 2010), and later infused into *The Nemesis Machine* (Stanza, 2010 – 2017) et al.

This model where a technical platform is developed to collect data facilitates remediation which then allows for any display or output within any new context. These operations when used as an artistic methodology remain the core of my practice evidenced in all the artworks.

These artworks create new panoptic aesthetic experiences within this technological framework where we are actively engaged with surveillance not only through social media and through government agencies but also by our very agency in the system itself. Therefore the body in the data space cannot be separated from it; it is an entity of



the monitored that cannot be separated from the whole that moves under the umbrella term surveillance culture and as such is closer to some interlocking multi layered and morphing virus.



The Nemesis Machine in Warsaw Poland at Beyond The Seven. Real time smart city IoT Data. (Stanza, 2017)

In summary these artworks involves collecting data, remediating data and the display in some artistic form. Since this is no longer linear or restricted by the fixed asset database but operates in real time, then aspects of this temporality can also be located in relation to our usage activity and agency in contemporary globally embedded systems. This is a quality of data that refers to the carrying of mobile phones, being tracked via RFID, picking up tickets, being caught on CCTV and facial recognition, money transfer, spending habits etc.

These artworks as technological systems seek to unveil what is already there, putting together an assemblage of data forms and technical disciplines to produce a 'new kind of event' (Derrida, 1989). By doing so, they invent a new space, an overlapping virtual

data-space, i.e. the mixed virtual real-time layer exploited by the author in all the artistic and research outcomes. Art becomes possible through these technically enabled real-time systems, 'the impossibility of technologically processing data in real-time is the possibility of art' (Siegert, 1999, p.12).

As systems based artworks they tend to shift emphasis away from objects per se and to make visible the invisible mechanisms of institutions and the proliferation of real-time systems by increasingly abstracting the concrete materiality of things into information. This is reflected as dataflows and as systems observing systems, which is what the artworks are; mixing up things to see the ways in which landscape as an information system, and cities as information systems are fused into aesthetic infrastructures.

Jack Burnham in the early seventies saw systems aesthetics as a way to understand a layered connected socio-technical conditions, something that Benjamin Bratton in 2015 would refer to more recently as a stack, that is: interwoven, interlinking, meshed, embedded, not framed and constantly moving. These artworks have no boundaries of operation; they become a complex of components in interaction. They are therefore never independent but connected, always responsive and interactive.

These systems (the city) might be altered in time and space and embedded with monitoring devices (the sensors). Therefore the 'system aesthetic' has now become the panoptic aesthetic. My artworks are not closed off systems but open to continual feedback, change, and response. Systems are monitoring systems controlled by ever more sophisticated algorithms. The machine is intelligently controlling its own version of itself, performing in real-time (the avatar city) enabled through the means of research and production.

### **Data and the surveilled information age**

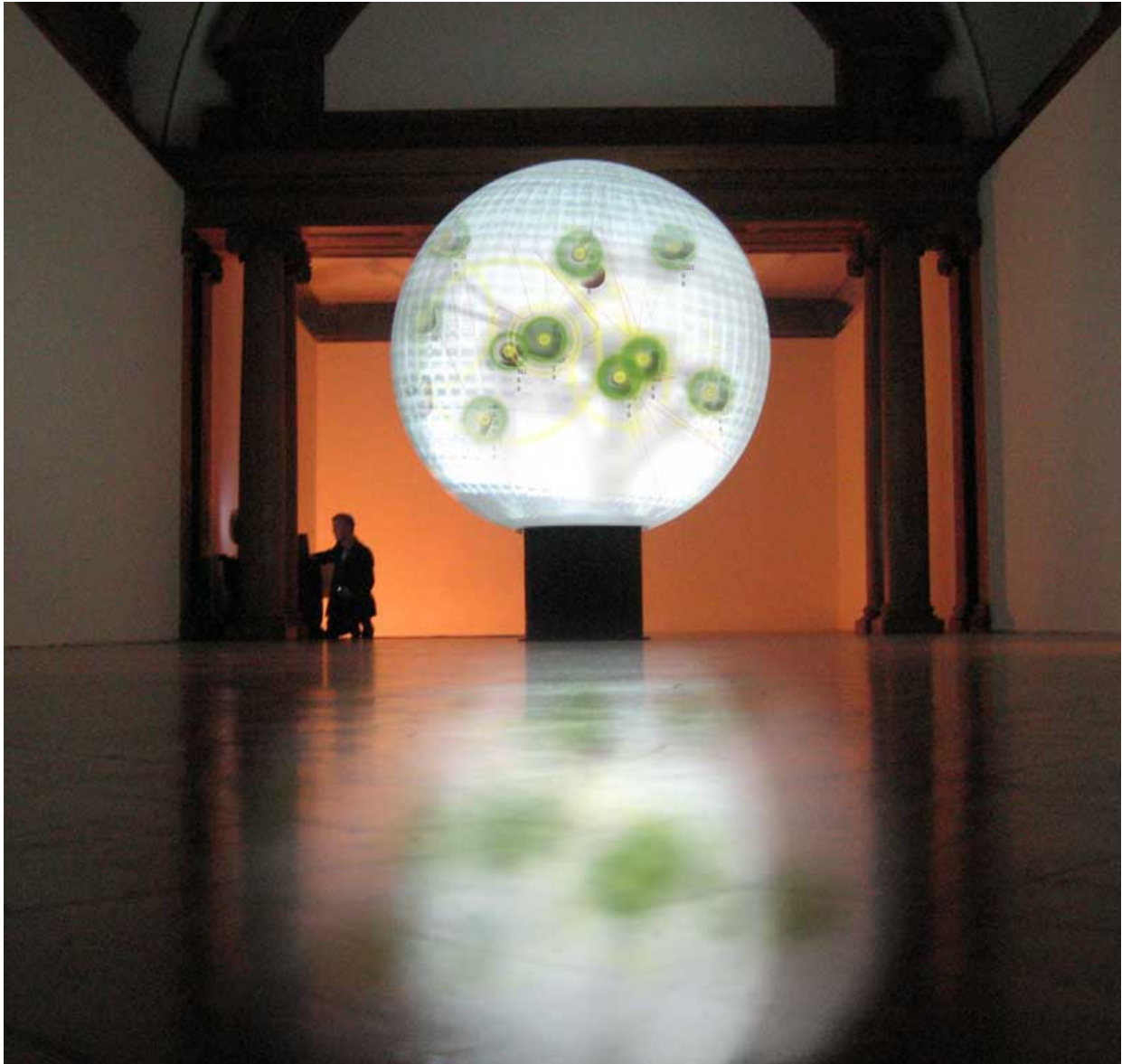
A number of artists have concerned themselves with this larger surveillance gaze relating to lens based media (as previously mentioned). More recently the range of

work in this field has expanded and it's worth listing some more of these artists to give a broader based context to the field. Names include Trevor Paglen, James Bridle, who often present the world that surveys us via other forms of evidence often photographic or textual. Hansen Elahi who surveys himself, creating a quantitative tapestry of self-observation such as in the artwork Thousand Little Brothers (2014), essentially a collage of his photographic self monitoring. Also embracing surveillance are artists Julian Oliver and Danja Vasiliev intercepting GSM via WiFi (2014) to show surveillance agency traffic and its presence in the wider networks. Other artists include Beatriz da Costa, Ben Rubin, Mark Hansen, Sheldon Brown, Chris Csikszentmihalyi, Heather Dewey-Hagborg all artists who consider the increasing the infiltration of dataveillance to our bodies in our environment.

Therefore from an artistic perspective my work does not exist in isolation from inquiry into data, surveillance or experiments with monitoring and communication technologies that relate to art and to the history of this arts practise. The prevalence of such numerous artistic data interventions suggests 'data has become the medium of the age' (Stanza, 2007).

### **Panoptic aesthetics and surveillance.**

Sensity (2004 - 2009) has been deployed in Paris, London, Porto, Copenhagen, Nottingham, Austin, Sau Paulo and exhibited in thirteen international media art festivals and art galleries between (2007 - 2018). The Sensity series of artworks are informed by methods and processes of live data exploring the monitoring of the city using my networked wireless motes sensors. It was my deliberate intention to suggest that by scattering the city using 'smart' sensor technology and by making novel platforms this observation becomes in itself panoptic.



Sensity at County Hall, London. Smart city IoT artwork. Environmental sensors, big data, software system, visualisation. (Stanza, 2006)

Therefore by actively deploying environmental mesh sensors in situ for each exhibition, the whole concept of the 'smart' city as a machine-like panopticon cannot be avoided. It is at its core a multi nodal mesh sensor IoT smart network collecting data from the city presenting it as an online feed and then using this data to make the artwork. What we see are spatially variable surfaces which are malleable and contain data about themselves. The panoptic aesthetic is fused with poetic interpretation. Lines that shift and move, that are organic and alive, disclose the invisible and make real what is



intangible. The algorithm interprets the data that creates visual experience that creates the artwork - an organism of city data alive and of itself.

The fluid / liquid data sets become performative agents reflecting the real-time social change, where space can be re-formed as monitored data space. This virtual performance can be analysed or visualised as it evolves in real-time; this gives an insight into its dynamic quality as data is always moving, changing, and shifting into the next expression of itself. The expression and experience of this concept suggest this aliveness. The city can thus be suggested to be an emergent or living organic entity.



The Nemesis Machine in Madrid Spain. Boards, screens, lot networks,sensors, custom electronics and custom software (Stanza)

*The Nemesis Machine – From Metropolis to Megalopolis to Ecumenopolis* (2010 – 2017) has been exhibited in over twenty three international settings in media festivals and art galleries including WRO arts centre Poland, Bruges Museum, TSSK Norway

etc. The installation has been supported by many curators that helped facilitate at these venues include:- Andrea Hawkins, Irini Papadimitriou, Emmanuel Cuisinier, Sarah Cook, Till-Holger Borchert, Ine Gevers, Ghislaine Boddington, Marco Mancuso, Piotr Krajewski, David Drake, Lucy Johnston, Christiane Paul, Richard Rinehart: and has appeared in fourteen different countries. It has grown from a six boxes to sixty boxes that need to be shipped and installed and it is variable in size and constructed to be different at each location. The Nemesis Machine is always evolving in concept and scale at each location.

The installation facilitated further the conversation about the real-time city-wide flow of data in the sphere now called liquid surveillance (Bauman, Lyon 2013) and surveillance capitalism (Zuboff, 2018) and it is timely and important to evaluate this artwork within these contexts which have now also become established in scholarly research.

The installation, was developed to reflect changes in our relationship with the digitised world, new technology, and our algorithmic society. This deliberately focuses the attention on surveillance, and networked space; and embeds panoptic aesthetic manipulations via data from the multi sensor networks as well as real-time feeds from CCTV cameras. It is at all times responsive to the live real-time environment via sensors and interactive with its embedded surveillance systems.

The aim of the installation was to go beyond simple single user interaction to monitor in real-time the whole city. The observed audience can no longer be considered hidden inside the crowd where we can be spotted and tracked. The panoptic impression that is implicit in the artwork becomes reinforced when the audience sees the small screens which show real-time pictures of the gallery visitors (via facial tracking) also being surveyed so that they also become part of the artwork. The audience are complicit in relationship to any data in the bigger system; the audience are now active ingredients in the flow and temporality of the artwork.

The Nemesis Machine operates to display these data layers from the algorithms and their manipulations inside the installation, but this only serves to double down the

suggestion that tactical approaches of transparency or sabotage are futile, because the overall impression is of a battle lost to the dystopian. This is witnessed in the Orwellian themes of surveillance which are embedded in the lens-based mass observation platforms we see today.

The city performs itself, in real-time, through its physical avatar or electronic double. The real world is made virtual and then made real again.

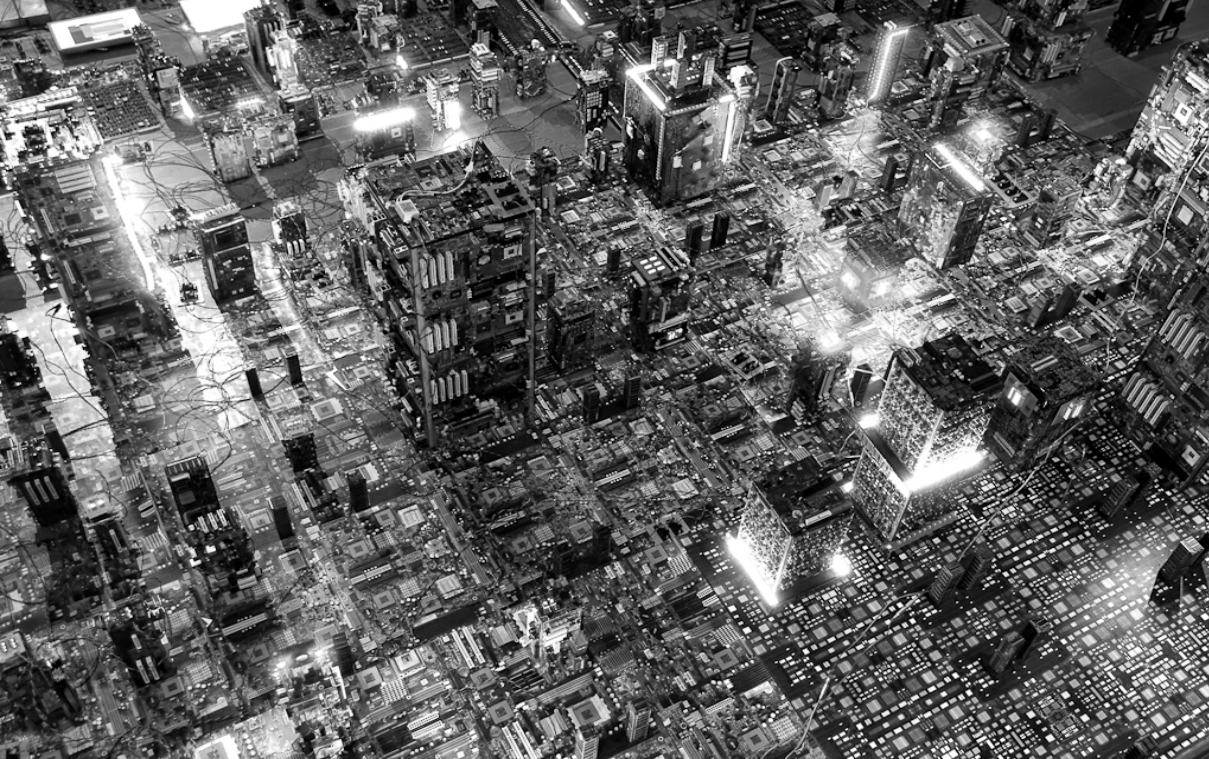
This artwork *The Nemesis Machine* raises further questions on whether technology may in future take over control of bodies and presence in the city. The sensor city can infringe upon citizens' privacy, and it can profile and socially sort people and enact forms of anticipatory governance, and control. This suggestion indicates the broader implication that smart city technology is eroding our rights and diluting democracy.

The city is presented as a system in this way to suggest that there is no privacy in the broader city any more, since all these new technologies interact to monitor everything. The inference is that this system of technology is all-encompassing, all seeing and all powerful and on a planetary scale.

The city machine has therefore become alive and of itself. This parsing of real-time data systems becomes a critique of liquid surveillance networks in that a whole city can be seen all at once from a variety of perspective lenses. The machine is both acting to liberate us through technology with overtures to open processes, while at the same time making us complicit in its restrictive rule of control. We have, by default, become complicit in the global surveillance machine that appropriates us the users by our agency as units of data to be harvested for some gain (either financial, or social). This notion has been a consuming theme in all of my artworks since 2000.

In appearance *The Nemesis Machine* is like *Big Brother* parsed through the lens of the Internet of Things, a stacked technological machine of observation. *The Nemesis Machine* appears to create a vision of a bleak future if warnings are not heeded, whereas *Visitors to A Gallery* demonstrated a complicit relation to the powers that

watch and control, and *The Global Dérive* (2017) sought to give power back to the collective to re-energise agency and collaborative engagement by sharing the data and the values embedded within.



The Emergent City exhibited at the Future Lab at the Goodwood Festival Of Speed. lot sensors, facial tracking, custom electronics (Stanza, 2019)

It can be argued that we not only become observed by the machine but are now governed by the machine. The Nemesis Machine acts to reflect the perspective of the city running the city, a machine running the city, creating a whole series of other more political questions about informatics that could be addressed through further work. The smartness in The Nemesis Machine lies in its ability to practise being itself. The code remediates the city, and the city remediates the code. The Nemesis Machine is a city computer system observing itself and observing the other city. It is a self-reflexive panoptic smart city governed and controlled by algorithms.

I now assert that the city is itself an art system. The Nemesis Machine simply acts to facilitate a series of multi-layered responses into the emergent growing city and a new

understanding of networks and flows. Furthermore, since this system will start analysing existing algorithms, the project is creating a machine learning intelligence which is directed back upon itself.

These technological devices can be used to interpret the city, to dislocate poetically the performative agency of the data as a series of controlled and monitored events which also create a tension or conflict concerning surveillance and privacy.

Inside the generative organic form that is the city, we need interfaces to parse the data, but what good will they be when they are parsed by a new algorithm that's continually and simultaneously shapeshifting between the utopian and dystopian. Will it serve or keep us servile? This question puts in place current artworks that are completely facilitated by the agency of their algorithmic systems.

The Nemesis Machine (the interface to the city system) becomes lucid in the space and time it occupies as an interpreter of the global data sphere of the allusory and anxious presence around dataveillance, geosurveillance and anticipatory governance. It anticipates a world of omnipotent surveyed governance where the person in the city is not only aware of the situation but has become complicit in it. We are at the start of a new big data era, and the flow and variety of urban data are only going to grow and diversify.

In creating an artwork as a system of monitoring systems The Nemesis Machine and Sensity and all the other artworks in The Emergent City series embrace head first the issue of data and ownership, namely that all these data are a valuable commodity. Therein lies the conundrum that The Nemesis Machine alludes to ....who will own this data and who will profit? Thus The Nemesis Machine becomes a political artwork whose leitmotif is ownership rights in the virtual world. Central to this is the further question: is this ethical? These telematic artworks themselves cannot escape the panoptic embrace.

By design we have created a ship of fools since we are all in this boat together, complicit at all times in feedback to the surveillance system. A further problem is

encountered because these data patterns are predetermined by the people who program them and the systems we interrogate for meaning. These systems are now so large that it is now impossible to mediate them, as by doing so they form into even more complex patterns so that there is a false sense of objectivity. A huge amount of analysis and storage are now needed just to keep up.

My artworks that used lens-based and data monitoring techniques sought to place the self and the body at the centre of a perspective of collaborative space and landscape. This fuels the despair of the monetized, observed self as data, which is stripped bare by the self-serving political economy. The relevance of the patterns inside these systems serves to demonstrate connections and relations thus casting light on the possibilities for change, by making known what was previously unknown. These changes could oscillate outside the realm of the state or corporate purview and somehow be more entangled within a collective embodied intelligence.

This theme was explored more recently in my software artwork *Dérive* (2017). The data visualisation created is an alternative perspective based on human machine interactions that are structured through codified behaviors inferring collective agency. This APP takes data from users' phones and recombine them into a collective collaborative data visualisation, where all the users are actively tracked ingredients in the final soup, the artwork. An artwork of remediation for the post pandemic age.

## **Conclusion**

Today everything has been laid bare and open in cloud computing systems, business documents, credit ratings, bank records, email and photos the connections inside these systems are endless, disclosing not only new knowledge but the experience of others and the wider world. This creates an argument for more thoughtful engagement with technology. The artistic systems are full of noise and interference and data, and seek to collapse time and space, provoking displacement and agency.

As Edward Snowden wrote in his email to Laura Poitras, 'Know every border that you

cross, every purchase you make, every cell you dial, every cell phone tower you pass, friend you keep, article you write, site you visit, subject line you type, and packet you route is in the hands of a system whose reach is unlimited but whose safeguard is not'. These are the emails Snowden sent to introduce his NSA leaks (Greenberg, 2013). It comes as no surprise that what was unsuspected but just not evidenced back in the public domain sounds remarkably similar to my earlier remark from 2004 at the start of this essay.

Critically, by experiencing my artworks in relation to surveillance and privacy, further reflection is needed since we have become directly enmeshed in the dispositional technological landscape we are now embedded within.

This is not a sublime data poetic landscape but a collective, conscious, politicised and attacked landscape of surveillance capital. The extremes to which these myriads of data flows create new meaning have only just started. These artworks suggest alternative ways to understand and experience the dual functionality of technologies that on the one hand seek to liberate us but on the other actually create more borders and divisions.

The purpose of all this aligns itself with these panoptic theories and by design now encompasses what the author describes as *'the spread to the edges of these systems'* which is referenced in *The Nemesis From Metropolis to Megapolis To Ecumenopolis*. The whole world is penned in by algorithmic functions from corporate systems like Amazon, Google and Facebook, to a newer total surveillance system in China that tracks everything as a social status system ranking people for all to see completely on stage and in public. Whether by design, intention, or desire, we have nonetheless brought ourselves to this position by our own agency.

What Jack Burnham, the pioneer of cybernetic art, called system aesthetics as far back as 1968 is today actually interwoven within panoptic aesthetics implicit in the exhibited plastic, sculptural and visual forms.

As David Lyon has also observed, 'billions of people will become instruments of surveillance and control' (Lyon, 2007, p.170). In this, the increasingly digitised city, Kitchen (2015) suggests that data is collected without people's knowledge, but really he means permission and Zuboff (2019) claimed we walked unknowingly into the age of surveillance capitalism. I believe both Kitchen and Zuboff claims are misplaced. These systems are planned and designed and the planners had insight into their own objectives. People are knowing and they are complicit but to the degree to which they openly acknowledge this is up for further debate and research. The Nemesis Machine and other artworks in The Emergent City series allude to this complicity, this coercion inside the invisible fabric that is drawn upon in the artworks. As such data could be considered the panoptic medium of the information age.

These technologies cannot be limited just to the practicalities of how things work as we are entangled with them. What is needed, therefore, is not new technology but verisimilitudes that challenge the limits of language through forms which are active, dynamic, and temporal. The media artworks are formed in this space to create a 'metalanguage' for describing the world that complex systems have wrought.

This landscape of monitored data is being observed via a new artwork Velocity (Stanza 2019) *a custom phone app* which tracks users in the city seeking participation and collaboration. Furthermore in light of Covid 19 tracking APPS it seems many of these speculations are indeed now reality. Velocity focuses on the idea that we are greater than the sum of our individual parts and by working together we become active agents for positive change. The purpose is to put the user in control of the data, creating a public engagement artwork within urban space, and create a new artistic context where such collaborations might lead to a new understanding of the shared networked technological landscape and our future relationship to it. Thus the process of engagement allows one to again become aware of one's actions in the system and the complicit nature of this monitored behaviour.

This leaves my artistic research in search of more questions: How can the collective body reclaim control over the data space using network technologies? How will artificial



intelligence (AI) and machine learning (ML) affect the governance of the urban landscape? How will the technologies of today remain of value to artists as these systems become obsolete?

In summary The Emergent City artworks argue that we are complicit in relation to these surveyed and monitored data-spaces and thus demonstrate that we have become entangled within the technological layers that the artworks are communicating. This establishes all of the Stanza artworks in its own category; panoptic aesthetics.

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1. Quoted from Stanza's essay published in Media Art and the Urban Environment: Engendering Public Engagement with Urban Ecology. Springer International Publishing (2015). Marchese, Francis T. (p.212)

2. It is worth noting that a generation has passed since Stanza started making netart in 1994 and from 9th April 2019 most of the online net art pieces will be obsolete as online specific experiences. Shockwave technology under most operating systems and all browsers is officially being made redundant and this was the main technology used by Stanza in exploring the internet as a medium for creative practice. In due course these links and online netart works will be replaced to show screenshots and videos and they will no longer be supported in the online net art context for which they were made.