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This is Where We Are - Collectively Living, Working and Being, with and through Predictive Algorithms.

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'This is Where We Are' - collectively living, working and being, with and through predictive algorithms

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'This Is Where We Are' (TIWWA) was an immersive and interactive algorithmic sculpture fuelled by the data we collectively generate. This collaborative work was created for the opening of the new Tate Modern Switch house in London in June 2016 by the i-DAT Research and Design Collective, Tate Collective London and Intercity. This technological fusion of interactive light and sound asked audiences to consider the data they generate and the algorithmic systems that increasingly mediate their reality and influence their behaviour.

The creation of the sculptural artefacts and the digital systems driving them, were forged through interplay between data, algorithms and people. The activity of the human crowd was mirrored just below the opaque surface in the behaviour of TIWWA's swarms. The flocking entities became conduits for collective social emotions, expressing anger, joy and fear in their playful interactions with visitors. With one swarm mirroring another it gradually became apparent that the algorithmic entities swimming just below the surface were doing more than reflecting our mood. They were affecting it, slowly becoming entangled with the way we feel, increasingly tangible and solid, a presence in the room. Something hiding in the illuminated shadows, imagining our near future for us.

Speculative Futures. Algorithmic Systems. Data-Driven Interventions. Artificial Intelligence

1. LIVING WITH AND THROUGH ALGORITHMIC SYSTEMS

We are in the midst of a conflux of sophisticated personal, wearable and interconnected technologies, 'Big [and small] Data' and powerful computational and analytical systems (Hof, 2013). Intelligent systems capable of learning, anticipating and predicting human behaviour and thoughts are emerging which mediates the construction of our individual and subjective realties. These developments propose new symbiotic relationships between humans and artificial systems emerging from "…the convergence of the digital, biological and spiritual" (Ascott, 2000, p.4). This process involves '…artificial and human intelligence in non-linear processes of emergence, construction and transformation' (ibid). These intimate relationships are being reinforced through the immediacy, ubiquity and authenticity of intelligent systems, with an increasing potency facilitated by nascent natural language interfaces.

By mediating human experience of the world these systems increasingly inform, modify and reconstruct our subjective realities. Such integration transposes the discrete reality of artificial augmentation into the reality of everyday life by superimposing it over the latter. The intimate 'guidance' generated by these artificial systems, sourced from pools of our transactional, emotive and social data, are based on 'objective' truths (existing independently of the mind) rather than faith. However, as the complexity and power of these systems expand beyond human comprehension, faith is reinstated. A symbiotic relationship emerges with and through the persuasive and anticipatory whispers of these intelligent systems, interjecting human cognitive functions and reconstructing imagined realities. These are no longer futuristic visions imagined through science fiction, but imminent possibilities, bringing new cognitive dimensions and artificially augmented realities. These considerations informed the development of TIWWA (figure 1).
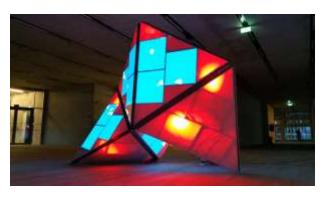
Figure 1: TIWWA, Tate Modern Switch House, (i-DAT et al., 2016)

2. HUMAN-COMPUTER SYMBIOSIS

Between us there are millions of versions of imagined realities sourced from our autobiographical experiences and patterns of behaviour. Increasingly, these imagined realities are influenced by digital systems that tweak our behaviour and modify our memoires. These artificially augmented mental constructs in turn influence our collective dreams of potential futures. With a frightening accuracy, our futures are being sourced from an algorithmic mining past, present (real-time) and predictive data. Licklider (1960) predictions of a "…cooperative interaction between men and electronic computers" have never been so tangible. Expressed as a 'man-computer symbiosis' the co-evolution of computer and human where computers would learn to manipulate human language as an interface is an emergent property of human consciousness.

The notion of artificially (or technologically) augmenting human intellect was further developed by Douglas Engelbart in his research paper 'Augmenting Human Intellect: A Conceptual Framework' (1962). He described this as: "…increasing the capability of a man to approach a complex problem situation, to gain comprehension to suit his particular needs, and to derive solutions to problems". Engelbart was not just talking about making humans smarter, but proposing a new way in which we would interact with and live through technology.

3. DESIRE ENGINES

Connolly (2017) describes the history of personal computing as:

> '…the continual removal of layers of abstraction between machines and people; the progression from inscrutable punch cards, to arcane command line, to mouse pointer to multi-touch. In each

change, the interface became less couched in the native language of the machine and more accessible to the human using it. The next step is for machines to extend and adapt themselves to how we naturally communicate.'

The density and potency of natural language interfaces and the resulting influence mediated through such systems will be dependent on the perceived authority and depth of the emergent relationships. With the emergence of intelligent conversational systems and their ubiquitous integration with our lived experience, it is reasonable to speculate that artificial-biological relationships will impact on the constructions of subjective present and future realities. This triggers "new modalities of human-technology relations' and offers new dimensions to "..the physical and cognitive substance of human body" (Uğur, 2013, pp.22-23). In this milieu, it is pertinent to ask whose desires are dreaming this future? Human subjective desires, the desires of those designing these systems, or by emergent desires of artificial intelligence of semi-sentient entities themselves.

The pervasiveness and authority of the data inputs that modify and shape our individual and collective hopes and beliefs about the future are far more influential than mere Fake News. It is spun from invisible data collected from every action mediated through our personal as well as public digital devices. These reconstructed future realities are formed from a confluence of dry data inputs with moist memory fragments, shared through artificial whispers to create new subjective and intersubjective realities.

The pervasive tide of artificial augmentation blurs the distinction between artificially guided and independent thoughts and actions. The notion of free will itself slowly submerges. These systems are so autonomous, transparent in their seamless incorporation in our lives that they feel like second nature, like a companion or confessors (Margalit, 2016). The intelligent algorithms powering these systems are neither good nor evil, it is their application and our carelessness that carries the potential. When did the consumer adopt such a passive role in in designing of near future? Mensvoort (2013, p.14) states in his proposition of the 'Pyramid of Technology': "If we are to set out a course towards a desirable technological future, it is important to develop a more profound understanding of how technology develops and what role it plays in our existence".

Have we already delegated this responsibility to artificial systems?

4. BAD BEHAVIOURS

How to engage the user in a speculation around their desire for future technologies the subsequent human consequences? Anthony Dunne and Fiona Raby (2013, p.6) state in their seminal 'Speculative Everything':

> "…that by speculating more, at all levels of society, and exploring alternative scenarios, reality will become more malleable and, although the future cannot be predicted, we can help set in place today factors that will increase the probability of more desirable futures happening."

TIWWA is situated in a framework of speculating about a near [technological] future by extrapolating from today's behaviours. Focused on co-designing persuasive and data-driven experiences with intelligent and adaptive conversational systems it attempts to examine the impact these new forms can have on human behaviour. With most these systems being developed for commercial gain, there are important questions to answer in terms of how they influence the formation of individuals' subjective realities and related thoughts, actions, and behaviours. As they transcend previous human-machine relationships there is an urgency to explore what the transactions of intimate biobehavioural data means in terms of being individually and collectively mediated through digital technologies.

Figure 2: *Roaming Robotic Fragments. TIWWA, Tate Modern Switch House, (i-DAT et al., 2016)*

TIWWA harvested and re-represented environmental, behavioural and social media data in real time as a dynamic swarm of entities. It invited audiences to play with these entities, seducing them to interact whilst simultaneously harvesting and learning, predicting and attempting to influence their behaviour. Roaming robotic sculptural fragments (figure 2) also engaged audiences in a data dance as algorithmic extensions of the system, effecting the behaviour and movement of people in the gallery space. The huge audience numbers (97,000) engaging with the system during the week-long installation in the Tate Modern Switch House provided an intensity of interaction and data generation and harvesting. It is clear from the feedback that audiences were highly motivated to engage with work, especially as it challenged the normal gallery experience.

The physical 6x4m structure (34 .5m LED screens, metal substructure framework, polypropylene semi-transparent skin, 14 LED lights, 7 speaker system, 3 kinect's, 5 windows/OSX machines and a raspberry Pi) was powered by a software networked brain (Unity 3D swarm model, processing controlled vision tracking, Pure Data spatial sound patch, Node-Red data harvester, bespoke network) and linked to autonomous roaming robots (powered by an Arduino controlled sensor, sound and lighting system). All of this was feeding on live social media data analytics through IBM's Watson, conversations with the TIWWA.me AI bot and the behavioural interactions with the live audience. This generated around 2 gigs of data (through IBM Watson Tone Analysis including Tweets and Messages to the bot, and around 150,000 tweets processed

This parallel world of data analytics created feeding frenzy for the algorithmic entities that fluidly moved below the surface of the structure. The acoustic environment echoed with electronic howls and wails of data compression and sonic analytics. i-DAT has always seen data as its primary medium/material, source of research and inquiry and form of engagement with its audiences. TIWWA was in many ways the perfect manifestation of these processes - through the incorporation of algorithmic processes, the playful mechanisms for interacting with significant members of the public, the visual manifestation of the real-time data and the physical installation/fabrication processes used. Built around i-DAT's Quorum project TIWWA builds on research strengths in cultural computation, ludic data and playful experimentation with creative technology. Quorum creates playful synergies between audience behaviours, interactive media environments, physical objects (or things) and modern integrative, sub-symbolic, computational techniques.

5. PRECOGNITION

The intervention's pulsating materiality offered a point of contact with speculation around artificially augmented and data driven predictive living. Through a subtle ambiguity and ludic engagement with the audience's perception of data and the algorithmic systems that drove it, the speculative design prototype attempted to provoke a speculation about a 'near future tomorrow, extrapolated from today' (Bleecker: 2009). This was

done by holding up a digital mirror image of human behaviour.

TIWWA's engagement with the Tate at such a significant time in its evolution has been a considerable learning experience. Positioned at the launch of the Exchange by Sir Nicholas Serota, "a combination of the Open University, art school, TED talks, and Guardian debates, all wrapped into one." (Wainwright, O 2016) as the first example of this new curatorial approach is both humbling and, after many years (like most digital practitioners) of feeling on the periphery, encouraging. It gives hope that a significant cultural organisation is attempting to address art forms that are challenging to traditional curatorial, material, engagement and measuring processes. As Rebecca Sinker Tate Digital Learning/Exchange comments, "TIWWA was a great opportunity to make a piece of work that actively engages with audiences. But there is also a kind of ecology of creativity around a piece of work like this that involves not only artists but computer programmers, architects, roboticists and sonic artists, t's really interesting mix of skills and indicates a way of making art in the future."

A future perhaps already imagined by a predictive algorithm?

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