The Society of Intelligent Veillance

Marvin Minsky, Ray Kurzweil, and Steve Mann

Society of Mind

The Society of Mind is the theory, emerging in the 1970s, that natural intelligence arises from the interactions of numerous simple agents, each of which, taken individually, is "mindless", but, collectively, give rise to intelligence:

> "*What magical trick makes us intelligent? The trick is that there is no trick. The power of intelligence stems from our vast diversity, not from any single, perfect principle.*" [Minsky 1988]

In many ways, *Society of Mind* has guided, or at least predicted, the direction modern computing has taken ---- distributed computing, GPGPU (General-Purpose Graphics Processing Units) [Fung. etal. 2002], the Internet, and cloud-based computing (which fulfills the Sun Microsystems slogan, "The network is the computer.").

The Society of Mind is inextricably intertwined with concepts like consciousness, free will, and mastery over one's own destiny and self-determination. As such it is as much a philosophy as it is a theory.

The Age of Intelligent Machines is finally upon us. We take, as a given, that a computer program could exhibit human-level intelligence if it were technically advanced to the degree made possible by present-day computing hardware. [Kurzweil 1990]

Division by Zero: The Computational Singularity

By the year 2020 computers will outpace the human mind and brain in computational hardware and by 2029 in software capability. [Kurzweil 1999, 2005]

This condition is called the "technological Singularity" and is the result of the "law of accelerating returns" [Kurzweil 2005]. It denotes the point in technological progress where technological progress itself is sufficiently rapid as to outstrip our ability to comprehend it, and at some point, around the year 2045, machine intelligence will be billions of times more powerful than the entirety of human intelligence combined [Kurzweil 2005].

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This “superintelligence” will be difficult or impossible for the unaided human mind, brain, and body (i.e. the "non-cyborg") to comprehend.

The “Sensularity” (Sensory Singularity)

The technological singularity as defined by Vernor Vinge, Ray Kurzweil, and many others, refers to computational advancements, so let us refer to this as the “computational singularity”, to distinguish it from another singularity, which we shall refer to as the “sensory singularity” or “sensor singularity”.

By “sensor(y) singularity” we mean the point in technological progress at which the sensory intelligence of machines surpasses human sensor intelligence.

The Society of Intelligent Veillance

We refer to this sensory intelligence as “veillance” from the French word “veiller”, which means “to watch”.

“Surveillance” is a well-known phenomenon in modern society. The word is French in origin, and derives from the prefix “sur” which means “over”, “above”, or “on top of”, as, for example, in the words “surtitles” and “surcharge”.

Surveillance is defined as follows:
sur-veil-lance [ser-vey-luh ns] noun
1) “a watch kept over a person, group, etc., especially over a suspect, prisoner, or the like: The suspects were under police surveillance.”
[Random House Dictionary, 2013.]

Surveillance requires the existence of a higher authority (such as a police officer, security guard, or the like) watching over a person of lower authority. But we’re seeing a technological shift from technologies of centralized control, along with the the “democratization of technology” in a distributed global community, through the “law of accelerting returns”. [Kurzweil 2012]

This distributed nature of intelligence is manifest in projects like Wikipedia (e.g. when Watson acquired intelligence to play on Jeopardy). [Kurzweil 2012]
(Watch also http://fora.tv/2012/10/13/Ray_Kurzweil_How_to_Create_a_Mind)

If and when machines become truly intelligent, they will not necessarily be subservient to (under) human intelligence, and may therefore not necessarily be under the control of governments, police, or security guards, or any other centralized control. Instead we’ll see a democratization of the technology through distributed Wikipedia-like decentralized commons.

More generally, over the past 50 years or so, we've been moving toward a “Surveillance Society” [Lyon 2001], but now we are beginning to see other Veillances, not just Surveillance! Examples include Sousveillance, also known as *Inverse-Surveillance* [Mann 2002], Equiveillance (ratio of surveillance to sousveillance, also known as Omniveillance [Bailey and Kerr 2007]), Dataveillance [Clarke 1988], and Uberveillance [Michael *et. al.*, 2006].

This “Veillance Society” is replacing the otherwise one-sided gaze of the Surveillance Society. In a Veillance Society we have both surveillance (cameras operated by authorities) and sousveillance (cameras operated by ordinary people). Typically surveillance cameras (and other sensors) are the cameras (and other sensors) mounted on buildings and lamp posts (i.e. an “Internet of Things”), whereas “sousveillance” refers to sensing worn by, carried by, or on people (i.e. an “Internet of People” or, more generally, an “Internet of Places, Persons, and Things” not just “Things”).

With the proliferation of smartphones, we are already starting to see that the number of sensors (e.g. cameras, microphones, etc.) carried or worn by ordinary people is approaching or exceeding the number of sensors operated by governments, police, and security guards.

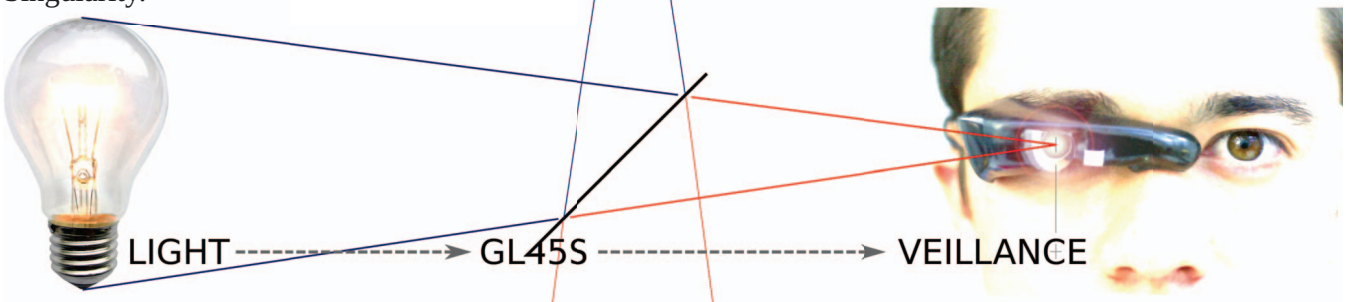
And as we enter the “cyborg age” of wearable computing, we’re going to see a new kind of intelligence emerge == Humanistic Intelligence [Mann 1998, 2012]. **Humanistic Intelligence is intelligence that arises because of a human being in the feedback loop of a computational process, where the human and computer are inextricably intertwined. When a wearable computer embodies HI and becomes so technologically advanced that its intelligence matches our own biological brain, something much more powerful emerges from this synergy that gives rise to superhuman intelligence within the single “cyborg” being.**

This may be our only hope of managing the technological (computational) singularity.

What if the Sensory Singularity could be in your **eye**?

Then perhaps, as a human “cyborg”, you'd become a highly advanced computational AND sensory being.

We call this the “veillance age”, the point-in-time when veillance loses its top-down “police-watching-suspects” gaze, and instead, we have a *society of interconnected minds* that share in creating a collective intelligence and sensory capacity that comes closer to that of the “superintelligence” suggested by the Singularity.



Seen Through the Glass, Lightly: EyeTap Digital Eye Glass, originally developed as “Digital Welding Glass”, uses a glass shade set at a 45° angle (denoted “GL45”) to divert light into a camera connected to a wearable computer that processes the scene for display onto a device called an “aremac”. The aremac has infinite depth-of-focus, giving zero eyestrain (image remains in focus no matter where the eye is focused). [Mann 2013] (Lightbulb image: Wikimedia Commons, KMJ)

The Sensing Singularity will happen before the Computational Singularity ---- it is already happening now! And it carries with it a tremendous number of unanswered social, sociopolitical, and socioeconomic questions that remain unanswered. The IEEE is the world's largest technical society, and its slogan ("tagline") is "Advancing Technology for Humanity". In this spirit, much work needs to be done to "Advance Technology" for Humanity.

This will be done through the field of Augmediated Reality. Augmediated Reality is the sensing, processing, and re-rendering of everyday sensory data using a Reality Augmediator. A Reality Augmediator consists of the following:

- A sensor, typically an image sensor (camera);
- A processor that processes data from the sensor;
- An effector, such as an image display, that presents the processed data to a user.

In summary: Augmediated Reality = "WearCam" (wearable camera) + "WearComp" (wearable computer) + "WearDisp" (wearable display).

Examples include Google Glass, the EyeTap digital eye glass device, and Meta. Such devices serve an intermediary role much like shoes and clothing, between us and the world around us. Collecting or processing data/information/knowledge/wisdom from such devices is sousveillance, rather than surveillance, and thus creates a host of important new fields of study: "Sousveillance Studies" or "Veillance Studies" for example. We'll all be wearing cameras soon and we'll have to learn how to deal with it...
The Sensularity is Near!

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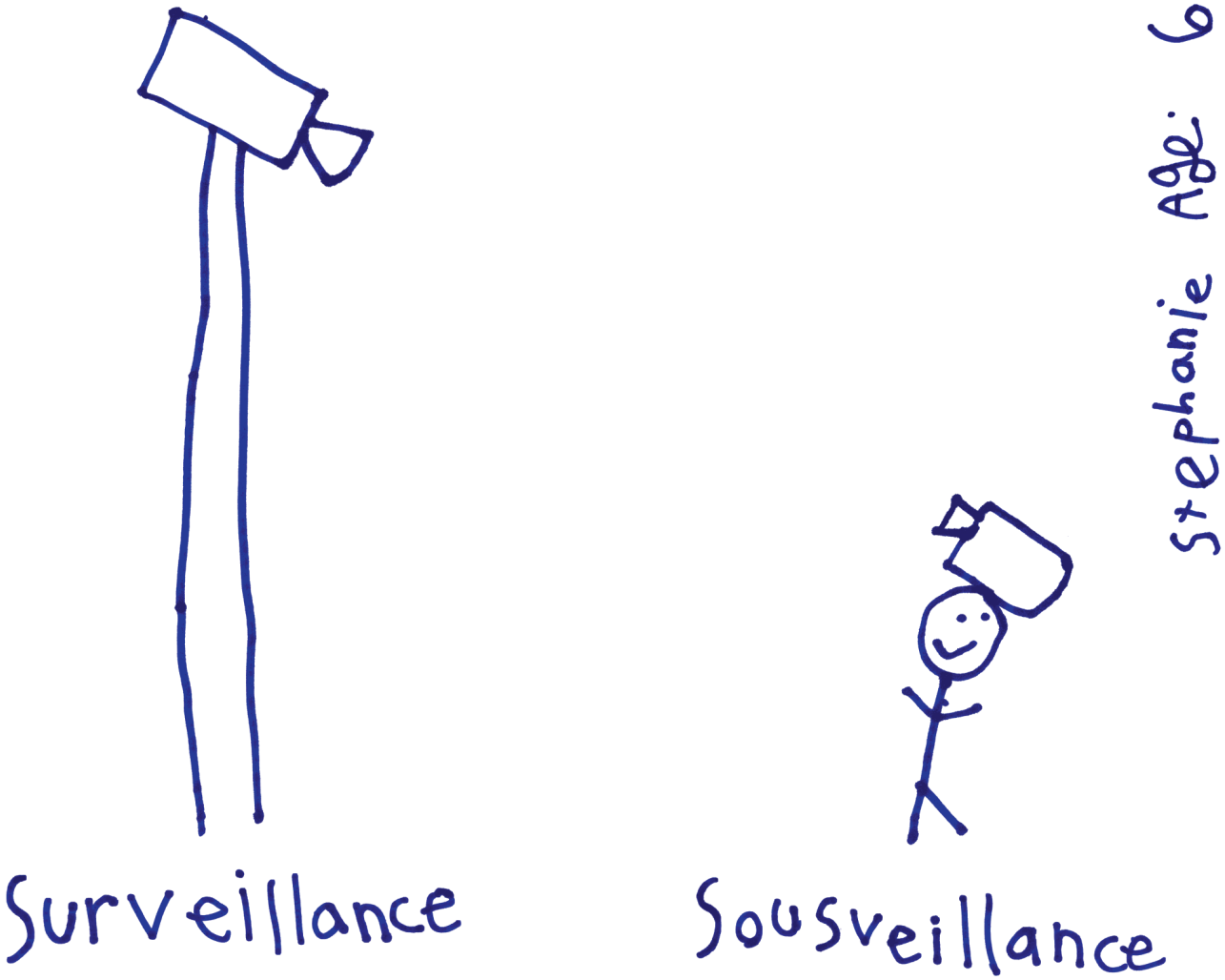

A six-year-old’s interpretation of the Veillances: “Surveillance” is a French word that means “watching from above” (i.e. as police “watch over” suspects). Its opposite, “sousveillance” means watching from below (i.e. crowdsourced watching down at eye-level). With the widespread adoption of sousevillance (e.g. wearable cameras, wearable computing, and Augmediated Reality) we no longer live in a surveillance-only society. **We now live in a *Veillance Society* -- The Society of Intelligent Veillance.**

Title design and the drawing in the title (“~~Surv~~Veillance”) was by Stephanie Mann, Age 6. In the title, the words “The Society of” were borrowed from Minksy's book [Minsky 1988], and the word “Intelligent” from Kurzweil's book [Kurzweil 1990].