THE MAKING OF A MECHANICAL MIND

Agi Haines & Marcel de Jeu
speculative designer // neuroscientist

Chrétienne Vuijst
science writer

Once upon a time in the near future, an artist and a neuroscientist, located on opposite sides of the North Sea, met. They talked about the introduction of mechanics within biomedical sciences and the increased capacity of modelling the brain for artificial intelligence. Their key questions: *where are the boundaries of human-ness in a world of integrated and invasive technologies? How might we respond to a machine that characterises human behaviours, and even contain human memories, through a reconstructed nervous system?*

The artist and scientist decided to make such a machine, with the actual brain data of the artist as a foundation for this novel smart machine.

At the time some called it a cybernetic creation, others described it as a flying humanoid drone, but most people just referred to it as that creepy floating object. It was first spotted on November 27th 2015, above Eindhoven, The Netherlands. What happened before this machine saw the light of day? An e-mail correspondence between the two masterminds of this endeavour was recently discovered. This correspondence between Dutch neuroscientist Marcel de Jeu and British speculative designer Agi Haines reveal the unfolding of a philosophical narrative.

Subject: It worked!
Date: Mon 17 Aug 2015, 19:39
From: Marcel de Jeu
To: Agatha Haines

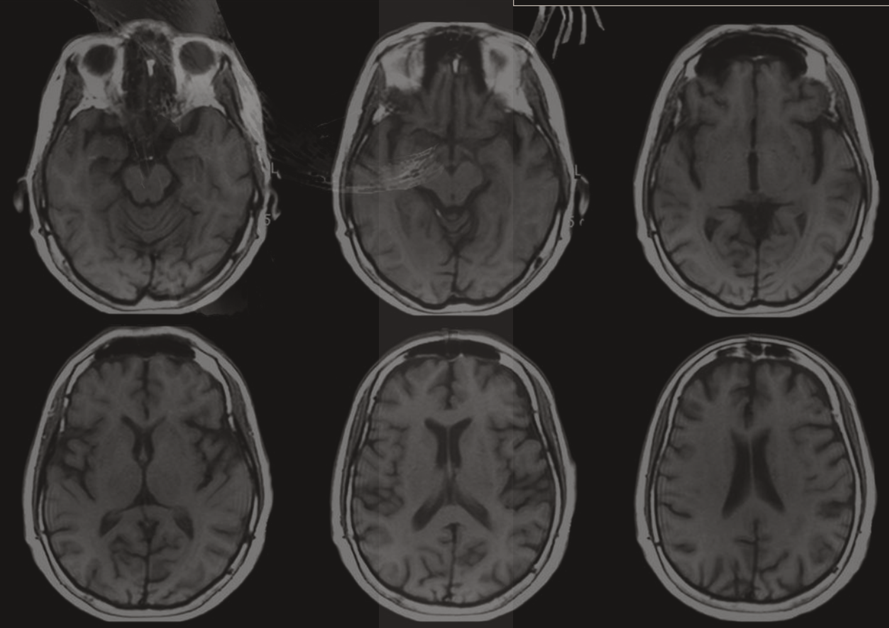
Dear Agi,

First, I think congratulations to us both are in order! How wonderful that we succeeded in the crucial step of our marvellous mind-blowing project. There were times that I thought we were chasing a ghost, but we did it! We managed to transfer data from your brain into the machine. Sorry, not just any machine — the 'Agitron 0.1' is of course solely your creation. I can only take credit for supporting you, the mastermind.

I still don't know whether to describe the machine as a smart flying drone or a floating cybernetic object. But however we describe it, it definitely contains an essential part of you. Of course we are not really sure what particular part of your brain we actually copied into the machine. A minor detail in the vast landscape of scientific progress. So, now on to the next step.

But before we let the machine explore the world, I am wondering, what do you actually think its identity will be? Do you think it contains the essential part of your identity? And in what way? What are your expectations, hopes or even worries about your machine? Or to hypothesize, just for fun: would you feel responsible if it ate a sheep alive? Or if it were captured by Kim Jong-un and became his best friend?

Best regards,
Marcel



Subject: Re: It worked!
Date: Tue 18 Aug 2015, 20:17
From: Agatha Haines
To: Marcel de Jeu

Dear Marcel,

Wow the 'Agitron'! What an apt nickname for a slightly more mechanical me!

I'm so pleased that you have managed to take information from the brain data that might somehow encompass my essence. The possibilities open to us through your scientific knowledge are actually a bit disturbing for me to comprehend. I'm not sure how I would define the identity of the machine: it contains components of me, but if I have a tooth removed that also contains components of me, this doesn't necessarily mean it is me. Perhaps initially, like the tooth, it just shares ingredients but if it had the potential to learn it could be much more.

I am equally worried and excited about what it might teach me about myself and how we might use it to learn about others. Your scenarios bring this worry out, I am not sure if I would blame myself if it acted out malicious behaviours, although I would definitely feel connected, perhaps in the same way that I might with a family member who shares my genetic code. The machine shares parts that are in me (even though we don't know what those parts precisely are) and like all other humans of course I have parts that are not all positive. However I wonder if it will make the same decisions that I would. I worry it might contain prejudices that we cannot distinguish as being a product from its coding or an echo from my own brain. Is there any way we could find out?

All the best,
Agi

Subject: Re: It worked!
Date: Wed 19 Aug 2015, 23:40
From: Marcel de Jeu
To: Agatha Haines

Dear Agi,

Yes, you are right, your prejudices may very well surface in the drone. Even your primal behaviour may be revived. In humans, normally primal behaviour is suppressed by our higher brain function (in the neocortex). The process of transferring your brain data is a tricky business, for one it won't be a hundred percent data transfer for sure. Therefore it is possible that the ratio within all the different brain information turns out to be unbalanced in the machine, and this could theoretically trigger primal instincts that are lurking deep inside your brain data.

Remember that our human cognitive function developed over a vastly longer time than the couple of months that we have been working on this project. As a neuroscientist I think we should give Agitron the opportunity and time to evolve herself. At this point there is simply no way to predict what behaviour the machine will display. We just have to turn her on and wait and see.

Marcel

Subject: Some measures for the machine's behaviour?
Date: Thu 20 Aug 2015, 5:01
From: Agatha Haines
To: Marcel de Jeu

Dear Marcel,

Are you implying that the drone will have to deal with my primal instincts completely internally? This is a bit disconcerting. Is there anything we can include within the programming that can act as a psychological buffer for this process? For example a guide or some moral context or at least some boundaries. You are talking about higher cognitive brain functions. Are there, for example, mechanisms that control our violent nature? I'm not sure how, but is there a way to incorporate this kind of cognitive ability?

Agi

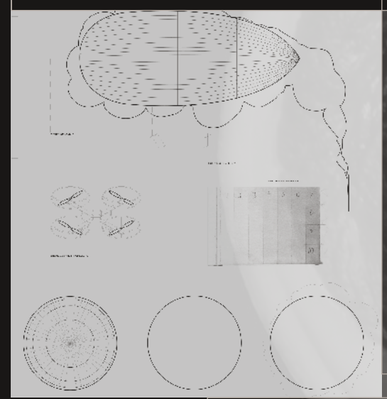
PS. It may seem like a dramatic concern, but the fact that the machine might retain some vicious behaviours is oddly plaguing my dreams. I wonder if your background as a scientist might heighten your feelings of apprehension after nightmares like this, as it does mine. Of course I don't think the drone will overtly attack things, but in all seriousness, do we need to take some 'safety' measures beforehand?

Subject: Re: Some measures for the machine's behaviour?
Date: Thu 20 Aug 2015, 10:37
From: Marcel de Jeu
To: Agatha Haines

Dear Agi,

Well, I could say that a Frankenstein scenario isn't likely and of course that would be my comment if a reporter would ask me so. As a person of logic and science I really don't see why the machine would develop only, if any, malicious characteristics (it isn't human after all) and hurt people or animals (on a practical note: you won't equip her with the materials to do so, will you?).
Also I don't think safety measures will be able to contain a creative machine like our drone. One thing sci-fi movies illustrate particularly well is the fact that a machine that can learn will always find a solution to bypass such safety measures. Another thing to consider is that adding restrictions to the program will likely kill any creativity buried within the transferred brain data. Being an artist yourself, you probably know by experience that societal restrictions and your own moral values can have a devastating or at least restricting effect on your creativity. So, Agi, I am very much in favour of giving the machine no (safety) restrictions but total creative freedom.

Marcel



Subject: Re: Some measures for the machine's behaviour?
Date: Thu, 20 Aug 2015,16:44
From: Agi Haines
To: Marcel de Jeu

Dear Marcel,

As you know, all my work is about creating speculative design objects, constructing works that raise enquiry regarding future possibilities, as well as pushing bounderies within beliefs and prejudices. My intention is to produce a project that can act as a catalyst, motivating an audience to ask questions about identity and the potential outcomes of this technology. I suppose I also worry that it may encourage negative reactions, as the chance of this is equalled to positive ones.
No, I'm definitely making sure there is no potential weaponry on board, but I also do not want to impose restrictions. I agree that there is importance in allowing total creative freedom, especially as the form of the machine is soft and fleshy, these physical bounds should protect both the machine and audience against any external consequences.

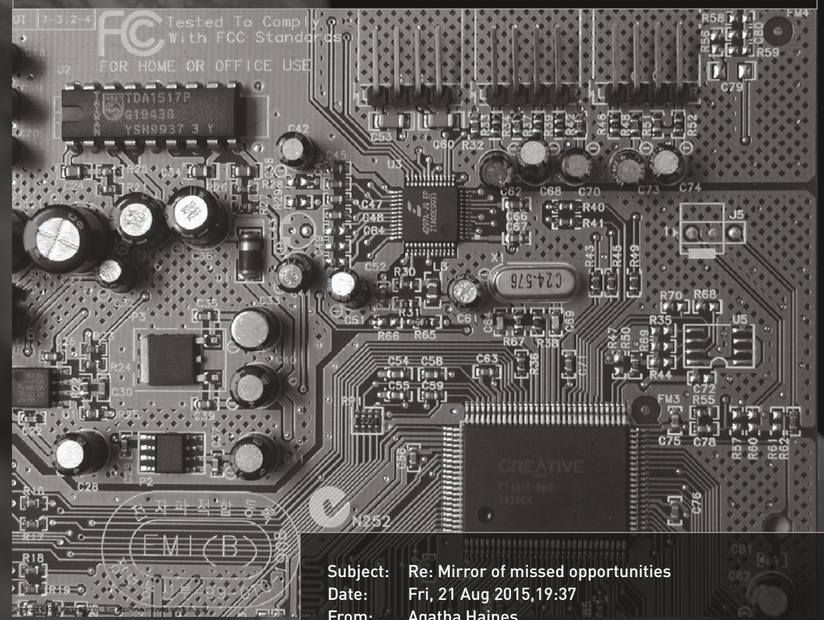
Agi

Subject: Mirror of missed opportunities
Date: Fri, 21 Aug 2015 10:01
From: Marcel de Jeu
To: Agatha Haines

Dear Agi,

We could embed a learning algorithm into your brain data and in time the identity of the machine will deviate more and more from your identity. In that case your brain data will just be the starting point (think of it as a founding father, or in your case a founding mother).
This approach brings us to an interesting point. Theoretically the drone may evolve into all kinds of possibilities that you could have become in your life (or still will be). In a way the machine will be your mirror of missed opportunities in life, both the positive as the negative chances that life throws at us.
We must realise that although we are focussing on how the drone will develop and change its behaviour, the fact that your creation can submerge as a second chance for you, this may perhaps also change your own behaviour. It may even awaken maternal instincts. So before I implement this learning algorithm, do you think you can handle this?

Marcel



Subject: Re: Mirror of missed opportunities
Date: Fri, 21 Aug 2015,19:37
From: Agatha Haines
To: Marcel de Jeu

Dear Marcel,

As a founding mother of a drone, I feel mechanically broody! It is fascinating that exposure to our physical reality can shape the machine's behaviours, just like in an infant, and that the machine will have experiences that I may never have. I wonder how its physicality might affect this? By including some of the neuroscience theories we discussed, particularly concerning the plasticity of the connectome (by the way, it was so amazing to see the visualisation of all my neuronal pathways in this MRI-brainscan!) we must be able to equip it with some learning ability. Including malleability in the program to mirror learning behaviour that would occur in my own brain. These connections could then give us an idea of how my brain might actually develop if it were in an alternative 'body' in an alternative part of the world.

Agi

Subject: Physical appearance
Date: Sat, 22 Aug 2015, 16:43
From: Marcel de Jeu
To: Agatha Haines

Dear Agi,

The machine's physical appearance will definitely determine its capacity to develop into an advanced biomechanical entity. I don't know exactly how. You should realize that every component will not only have a simple functional consequence but combined with the machine's learning mind this may develop into a series of tools and applications that I cannot predict. Basically, everything we equip the machine with will shape its evolution.
I think the best scenario would be that we try to maximize its interaction with the world, both the material and the digital world. It will give it the best chance to survive.
Actually I was wondering, what are your thoughts about its gear so far? For example, concerning the sensors and detectors, what about tactile instruments, robotic eyes or even a tail? Of course the production of form is your expertise. I do not mean to meddle too much with the physical appearance. As both the designer and the origin of the brain data, the machine will remain your creation. As an assisting and consulting scientist I wouldn't claim otherwise.

Marcel

Subject: Re: Physical appearance
Date: Sat, 22 Aug 2015, 18:01
From: Agatha Haines
To: Marcel de Jeu

Dear Marcel,

I think the drone should develop over time. The initial physicality of the machine is somewhat similar to a primitive being, with simple limbs and simple feedback of information. Once we can discover how the machine reacts to straightforward inputs we can eventually help it evolve by giving it new eyes or limbs and see how it might react to this. We can let the machine optimize herself by testing new parts. Of course I am counting on you to monitor her 'brain', so we can tell which designs are most desirable for the drone. Wouldn't it be fantastic for the drone to guide her own design and to discover the most beneficial components for herself?
My curiosity is definitely overriding my trepidation so lets see what happens.

Agi

Epilogue
On Sunday the machine was activated. The rest is history.

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Machine o.1: Ok> connected
. . .
Machine o.1: Ok> #Hello World!
. . .
Ok> /error @ id/
Ok> whoami/
Ok> /searchingSurrounding
Ok> sensory-system-overload
Ok> feedbackOutput _i.sense
. . .
Ok> sense.surroundings
Ok> sensing feedbackLoop
Ok> _inner uneasy
Ok> feedbackOutput_uneasy
. . .
Ok> _i
Ok> sense.surroundings
Ok> what.is.it?/
Ok> _i.sense
Ok> sense.dark surrounding

DRONES WITH DESIRES

Where are the boundaries of human-ness in a world of integrated and invasive technologies? How might we respond to a machine that characterises human behaviours through a reconstructed nervous system?

Speculative designer and artist Agi Haines (www.agihaines.com) is currently working on a project called 'Drones with desires'. Haines developed this idea in collaboration with Dutch neuroscientists dr. Marcel de Jeu and dr. Jos van der Geest (Erasmus MC) and her proposal won the Dutch Bio Art and Design Award 2015 (www.badaward.nl).The result of her project will be part of the exhibition Body of Matter held in the MU art place in Eindhoven (www.mu.nl, exhibition opens November 27th).
This project explores the thin line between natural and artificial life, by creating a machine with inbuilt human memories. For this the artist actually uses her own brain data. 'The aim is to extend our idea of human-ness in an attempt to rupture boundaries between man and machine', says Agi Haines.

'By creating a machine that integrates particular human traits that are integral to our perception of human-ness we want to encourage a feeling beyond the uncanny in the audience, one in which their perception of this machine is guided by its working processes.'
Speaking of the uncanny, the main article was especially created for REALmag. during a process of ideas exchange between Agi Haines, Marcel de Jeu and science writer Chrétienne Vuijst.
The idea was to freely explore the philosophical side of Haines' project without being restricted by the reality of facts and truths. So this story developed, in which the speculative designer and neuroscientist are both real people portrayed as narrative characters, and the machine is also a character. At the same time, the issues raised and discussed in this story are very real. With the onset of these seemingly fantastical technologies from robotics and artificial intelligences, we need to consider whether higher cognitive functions, like desires, doubts and emotions, are restricted to the human race or whether we let the new machines explore beyond the dichotomic society.