

NEIL HARBISSE

A collection of essays





Neil Harbisson is a Catalan-raised, British-born contemporary artist and cyborg activist best known for having an antenna implanted in his skull and for being officially recognised as a cyborg by a government.

The antenna allows him to perceive visible and invisible colours via audible vibrations in his skull including infrareds and ultraviolets as well as receive colours from space, images, videos, music or phone calls directly into his head via internet connection.

Harbisson identifies himself both as a cyborg; he feels he is technology, and as a transpecies; he no longer feels 100% human. His artwork explores identity, human perception, the connection between sight and sound and the use of artistic expression via new sensory inputs.

In 2010 he co-founded the Cyborg Foundation with Moon Ribas, an international organisation that aims to help humans become cyborgs, defend cyborg rights and promote cyborg art. In 2017 he co-founded the Transpecies Society, an association that gives voice to people with non-human identities, defends the freedom of self-design and offers the creation of new senses and new organs in community.

THE RENAISSANCE OF OUR SPECIES:

By Neil Harbisson, February 2016

Taking an active part in our own biological evolution is no longer a theory, but an option. If we want to become a species that can survive in space we have to either change the extra-terrestrial environment or change ourselves.

Becoming a cyborg, becoming technology, instead of using or wearing technology, opens up the possibility of having additional organs and senses that could extend our perception of reality and increase our survival possibilities in space. We might be witnessing the start of our species' renaissance, a transformation that will help us explore our reality in depth and survive outside this planet.

The word "cyborg" was first coined in 1960 in an article called "Cyborgs and Space". It proposes solutions to the challenges faced by space travel and space survival. Some of the suggested solutions are no longer hypothetical but a possibility brought by new technological advances. This article is linked to the original definition of cyborg and summarizes which upgrades we would need in order to survive in space.

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Simple additions to our bodies such as night vision would have tremendous implications in the way we live and explore. The energy wasted in the creation of artificial light would be reduced and our current dependance on artificial light would disappear. It is a sense that would not only be useful in earth, it would be necessary in extraterrestrial environments where light is scarce.

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Enhancements to our bodies can have tremendous implications for the way we live without being all that complicated. This is what motivates grinders - people experimenting with do-it-yourself devices that will improve their bodies. This particular grinder implanted magnets in his ears to allow him to hear audio without the use of headphones.

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The addition of new organs and senses requires new ways to feed energy. The ideal and most practical solution is to use body energy to charge any new organs instead of using external energy. A useful solution would be to use blood circulation as a charger as it is constant and available all over the body.

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Finding the right biocompatible materials to create new sensory organs is one of the current challenges. Once you add a new sensory organ to your body there might be two types of rejection; the brain might reject the new sensory input or the body might reject the material implanted. The best solution to biocompatibility would be to 3D print the desired new body parts with our own DNA.

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The use of the internet to extend our senses to space is a parallel line of exploration. Instead of changing our bodies to physically go to space, we can send our senses to space while our body remains on Earth. By adding internet enabled senses to our bodies that connect to sensors placed in space, we can feel space.

In this interview with Mask Magazine, my partner Moon Ribas and I talk about feeling the seismic activity of the moon and perceiving colours from space by connecting the chip in my head to NASA's International Space Station. Having a sense in outer space could make us feel like astronauts, or rather, 'senstronauts'.

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COSMIC SENSES:

How the use of the internet as a sense, instead of the use of the internet as a tool, can allow us to extend our perception of nature and extend our senses to outer space.

By Neil Harbisson - September, 2015

Cats have tails that allow them to extend their sense of balance. Seals have whiskers that allow them to extend their sense of touch and some fish have lateral lines that allows them to extend their sense movement and presence. I have an antenna that allows me to extend my perception of light and sound beyond traditional senses and beyond earth.

The antenna – which is surgically implanted in my skull - picks up visible and invisible light waves – from infrared to ultraviolet – and transforms them into audible vibrations that travel through my skull. To me, colour perception is an independent from the sense of sight or the sense of hearing, colour is an entire new sense.

My head also has internet connection, which allows me to receive images or sounds directly into my skull from other parts of the world. Selected people – one from each continent - can send images or sounds to my head by using their mobile phone cameras or microphones. This separation of my body and my senses makes me feel as if I have an eye and ear in each continent. Sometimes I might be facing a boring brick wall yet be perceiving a beautiful sunset from my Australian eye. Or I might be having an extremely boring conversation with someone yet be receiving extremely funny jokes from my American ear.

The antenna is a new body part and the chip an extension of my brain. I don't feel I'm using technology, I don't feel I'm wearing technology, I feel I am technology. I feel I'm a cyborg.

The word cyborg comes from the union between two words: "cybernetics" and "organism" so depending on how we define the word "cybernetics", the word "organism" and the word "union" we can end up with endless definitions of the word cyborg.

I feel that I can define myself as a cyborg in three different ways:

I can define myself as a biological cyborg, someone whose body has physically changed due to cybernetics (I have a chip and an antenna surgically implanted in my head).

I can define myself as a neurological cyborg, someone whose brain has changed due to cybernetics. A new sense has been created in my brain due to the union between cybernetics and my body.

And I can also define myself as a psychological cyborg, someone whose sense of identity has changed due to cybernetics. I identify myself as a cyborg.

Psychological cyborgs don't necessarily need to be biological cyborgs. Someone might have no implants, no neurological modification and maybe even no contact whatsoever with technology yet identify oneself as a cyborg. In the same way that you might have the biological body of a man yet identify yourself as a woman.

People who feel cyborg and want to become biological cyborgs are today facing problems similar to the ones transsexuals were facing in the 1950s. Back then bioethical committees did not allow sex change operations for these reasons:

1. They thought the procedure was unnecessary
2. They thought it could be dangerous
3. They were worried about public opinion – "what would people think if someone came in our hospital as a man and came out as a woman".

Right now the reasons why many bioethical committees do not accept cyborg surgeries are exactly the same: (1) they find it unnecessary, (2) they think it might be dangerous and (3), in my case, they were worried about "what will people think if you come out of our hospital with an antenna sticking out of your head". My surgery was not accepted by the bioethical committee and had to be done underground.



Little by little more and more people will be facing this problem. Cause the amount of people that want to become technology is growing.

In a way we are ALL consciously or unconsciously in transition of becoming biological cyborgs, you can notice it in language. Before one would say "my mobile phone is running out of battery" now most people would say "I'm running out of battery" or "I have no reception" instead of "my mobile has no reception". We are already talking about technology as if we were technology.

And the fact that most people here today are wearing technology is also a clear sign of transition. In the same way that, if I identified as a woman, I would probably start by wearing women's clothes and then I would have surgery, some of the people who wear technology will eventually have surgery. You are all cyborg transvestites.

Becoming a cyborg will make us feel closer to nature and to other animal species. Perceiving ultraviolet and infrared makes me feel closer to animals that can sense these colours, having an antenna makes me feel closer to insects that have antennas too, and perceiving space makes me feel closer to nature and to the universe.

There are many senses in nature that we could benefit from electroreception, magnetoreception, night vision, ecolocalation... Sharks can feel where the north is, we could be like them by having a small compass implanted in our leg that vibrates everytime you face north.

But the fact of having internet connection in my head, the use of internet as a sense, allows me to go beyond colour. I can also connect my head to Satellites and to telescopes and perceive and extend my senses to space. Which is what is happening right now. I'm now here but my head is connected to NASA's International Space Station's live stream. So my body is here but my sense of colour is in space.

Our senses no longer need to be where our bodies are. I believe the next stage of human exploration is to investigate the disconnection between body and senses; and to start travelling without our bodies. Instead of going through the uncomfortable pain of traveling, we could send our senses to space, 3D print ourselves in other planets and explore space while lying in bed. In other words the best space ship is a comfortable bed.



THE ANTENNA

By Neil Harbisson - March, 2014

Antennae are sense organs located on the heads of certain insects, crustaceans, centipedes and millipedes. In most of them, they are organs of touch, smell, taste and hearing, in some of them, they act as respiratory organs or serve as organs of communication. Unfortunately, us humans are born with no antennae and can't really relate to the experience of having them, but imagine if we had.

We could probably use them to enhance our hearing; our ears are basically designed to hear sounds that are in front of us and only within a range from 20 to 20,000 hertz whereas antennae would allow us to perceive sounds all around us without having to move our head and if the antenna went directly into our skull we would be able to hear more than our current frequency range. Maybe we could also use them to breathe while swimming under water and perhaps most importantly we could use them to communicate with each other via unimaginable ways beyond traditional language.

In 2003, I started exploring the possibilities of sensory extensions via cybernetics with Adam Montandon. I met him at Dartington College of Arts, I was studying music composition and Adam came to the college to give a lecture on cybernetics. We started a project together with the aim to extend my senses. Being born completely colour-blind, my aim was to extend my colour perception to the level of other humans. Adam created a software that transposed colours to sound and I started wearing a camera attached to my head that connected to a 5 kilo computer that I wore in a backpack which ran the software. I then used a pair of headphones to hear the colours. At first, I had to memorise the sound of each colour, but after some time this information became subliminal, I didn't have to think about the notes, colour became a perception. And after some months, colour became a feeling, I started having favourite colours.

With the help of computer scientists I kept upgrading my sense of colour. Peter Kese added volume levels of sound in relation to the saturation levels of colour and upgraded the software to 360 notes for 360 hues.

I designed different headsets until I realised that an antenna like headset was what would work best, as it gave me the option of perceiving colours behind me by just moving the antenna. I also decided to stop using my ears to hear colour and to start using my bones. Bones are like wood, they can be used to conduct sound, so instead of using our skeleton for solely structure purposes we could all use it to extend our perception of sound by adding new audio inputs. I decided to use my skull as a sound amplifier and designed a crown with audio outputs. My head became a resonance box where the sound of colours vibrated around the skull. I later reduced the crown to a metal mould that was fitted at the back of my head.

By 2010 I was no longer using a computer to transpose light to sound, I was using a chip created by Matias Lizana that was attached at the back of my skull and which sent sound to my occipital bone. Visual sounds became clearly distinct from audio sounds.

My aim by then was to have the antenna drilled into my skull so that the bone and the antenna would merge. I tried to search for a surgeon that would be willing to operate me but that took me longer than expected. I presented the antenna implant proposal to a bioethical committee and the proposal was rejected. After almost two years I found a doctor willing to do the operation.

I decided where I wanted the antenna to be implanted: the upper occipital bone. It took over two months to heal and to get used to the new input but now the antenna and my bone have merged and my perception of colour has been enhanced to a higher quality level.

If someone touches the tip of the antenna I can feel it, as if someone was touching my teeth or my nails. My sense of balance has also been altered, I feel out of balance if the antenna is not straight and having had my head perforated has changed my sense of consciousness. I now believe in the effect of trepanning, as I can feel a change in my personal vision of life.



Being born without an antenna could make us all feel disabled; we all lack body parts and senses if we compare ourselves with other species. Missing a body part or missing a specific sense doesn't necessarily mean that we have to live without it for the rest of our lives. We could all grow our own body parts and extra senses during our lifetime if we wished. Human evolution no longer belongs to time alone, it also belongs to us. We can now evolve during our lifetime; we could grow tails, horns or even wings. We are focusing too much on extending our knowledge and ignoring the fact that we can also extend our body, senses and perception. New body parts could allow us to perceive reality better and could allow us to extend our senses to the level of other animal species which would consequently extend our knowledge.

My antenna is in constant evolution. The biggest upgrade I've had this year is that I can now connect myself to the vision of other people. The antenna can connect wirelessly to other cameras or antennas around the world. So if, for instance, I'm in an office in Europe and would like to connect my antenna to someone else's view, I could perhaps be experiencing a sunset in Australia while facing an office wall. The possibilities of wirelessly connecting the antennas allows us to share a sense, to share an experience other than just information.

My next step is to start using my own energy to charge the antenna. I don't want to depend on external energy. The use of electricity, batteries or solar energy makes no sense since our body is constantly creating energy. The antenna could be charged by the energy created by my own brain activity, by the energy of my breath, by kinetic energy or by adding a small turbine in a blood vessel. I'm interested in using blood circulation to charge the antenna and to make it work in a bidirectional way; the antenna should also be able to give energy to my body in case of emergency.

Connecting our cybernetic parts to our organism's energy means our diets will have to change. Today, according to most statistics, an active 19 year old man needs around 2,400 to 3,000 calories per day. This calculation would be different depending on how many cybernetic organs you have and how many calories these cybernetic organs need. Another change will be the negativity we project on ageing.

In theory, the older you get the more your body and senses degenerate. This theory is reversed if you become a cyborg. If you have cybernetic body parts, these will get better and better the older you get as your body parts will evolve together with the evolution of technology. I'm sure I'll be able to perceive even more colours when I'm older. This is a huge change in the way we perceive life. We might all look forward to being old in the future because we will all value the fact that the older we get the better sense and perception of reality we will have.

Becoming technology doesn't make me feel closer to machines or to robots, but quite the opposite. I now feel closer to nature and to other forms of life. Having an antenna makes me feel closer to insects and other creatures that have antennae; hearing through bone conduction makes me feel closer to dolphins and other marine species that perceive sound through their bones; having ultraviolet and infrared perception makes me feel closer to insects and mammals that perceive these colours. I feel a stronger connection with nature now than I ever did before. Technology can bring us back to nature.



CYBORG ART: THE ART OF EXTENDING OUR SENSES

By Neil Harbisson - July, 2013

Art also lies in the creation of our own senses. Our senses no longer need to be imprisoned, software can set them free. The use of software as an unlimited extension of our brain and senses aims for the cyborg effect. The moment when one stops noticing the difference between one's self and the software, the moment when cybernetics and organism become one.

I became a cyborg at night when I started to hear colours in my dreams. Hearing colour in my dreams was the moment when I stopped feeling the difference between my brain and the software. I started to conceive the antenna as a part of my body, as an organ. I no longer felt that I was using technology, I didn't feel that I was wearing technology, I felt that I had become technology.

I can hear a rainbow and I can hear someone's eyes. A glass of orange juice is a glass of F# and a glass of milk is a glass of silence. I now play music by looking at things. I give colour concerts instead of piano concerts. I don't need an instrument, I am the instrument. I connect myself to loudspeakers and I create music by looking at the audience's colours, or by looking at a set of coloured objects and I use a pedal to control which colours I want the audience to hear.

The secondary effect of hearing colour is that hearing sound also gives me colour perception. Radios are no longer in black and white, radios are in colour. Each song that I hear contains different notes that relate to specific colours. So I can paint the music that I hear and I can paint the colours of someone's voice.

I feel that my union with cybernetics has awakened all my other senses and has allowed me to explore creativity outside the limits of my natural perception. Perceiving infrared and ultraviolet means that I can create works that only bees can see. Hearing through bone conduction means I can create music that only dolphins can hear.

Cyborg Art is an art movement where artists create their own senses by merging cybernetics with their own organism. Creativity is a reflection of our experiences, therefore the more we allow ourselves to feel and sense the more we'll be able to reflect.





HEARING COLOUR

By Neil Harbisson - June, 2012

Since I started to hear colour, my life has changed dramatically. Art galleries have become concert halls; I can hear a Picasso or a Rothko.

I also found out that things I thought were colourless are not colourless at all: cities are not grey (Madrid is amber terracotta, Lisbon is yellow turquoise, and London is very golden red, ...)

Humans are not black and white, human skins range from light shades of orange to very dark shades of orange, we are never white or black. We are all orange.

Before, I used to dress in a way that looked good, now I dress in a way that sounds good. If I'm happy I dress in C major. If I'm sad I dress in a minor chord. So if I need to go to a funeral, I might dress in B minor (that's turquoise, purple and orange).

I don't look at food the same way either. Depending on how I display the food on a plate I can eat my favourite song. So, I hope to open a restaurant one day where you can have a menu with some Madonna songs as starters, some Rachmaninov piano concertos as main dishes, and some Bjork desserts. I would probably have some Paul McCartney songs, because I'm a vegetarian.

My sense of beauty has also changed. Someone might look very beautiful but sound terrible. Someone might sound very harmonious but look awful. Now I create sound portraits of people. Instead of drawing the shape of someone's face I write down the different notes I hear when I look at their eyes, hair, skin and lips and I create an mp3 of their face. Everyone sounds different.

I even give face concerts now, concerts where I play the audience faces. The good thing about doing this is that if the concert doesn't sound good, it's their fault.

After some time, an unexpected secondary effect appeared. I started to perceive normal sounds as colour too. Telephone tones started to sound green, the BBC pips became turquoise, and listening to Mozart became a yellow experience, even people's voices had dominant colours. So I started to paint the colours of music and the colours of voices.

There was a point when I was able to perceive 360 different colours, one for each degree of the colour wheel. I was able to perceive colours just as well as people with colour vision. Then I realized that the human visual system is very limited; you can't actually see colour very well; there are many more colours around us that the human eye can't detect. So I decided to continue extending my colour perception and included infrared and ultraviolet into the colour-to-sound scale.

So now I can also perceive infrared, which means I can hear if there are movement detectors in a room or if someone is pointing at me with a remote control. The good thing about hearing ultraviolet is that you can hear if it's a good day or a bad day to sunbathe. Ultraviolet is a dangerous colour, a colour that can kill us, so it would actually be useful for all of us to be able to perceive it.



For more information about
Neil Harbisson's, you can visit
the following websites:

www.cyborfoundation.com
www.transpeciessociety.com



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