

Title: Man, Versus Machine

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Summary:

Throughout this essay I will be focusing on the question ‘Why a harmonic symbiosis between man and machine should be created to better humanity in the future’. And will be explaining my design choices and inspirations whilst detailing matters of ethical implications and solutions to creating a fulfilling future with the use of ‘Biomechanical’ properties and enhancements.

Man, versus Machine Independent inquiry/Manifesto

Throughout this essay I will be focusing on the question 'Why a harmonic symbiosis between man and machine should be created to better humanity in the future' This question will be explored by using theories from Technologists and Transhumanists e.g. the Technological Singularity and exponential growth. Therefore, concluding how my design will create this 'Harmonic symbiosis' and hopefully create an exciting and evolved future in the automotive industry which may shape the world. I will also explore my chosen design, how it will be used in the future and create a better future, how it will create a new phase in transportation by eradicating autonomy and putting the user back in control yet without the need for physical input. How it may change the environment of the future and fit in. What ethical implications may arise from the altering of one's body using technology and I will explain my inspiration which will lead me to the certain futuristic aesthetics used. I will look at my own principles in design which will govern my visual choices and create a vehicle/design that is more personal to me. I will explain the materials and technology used in my design and the scenario in which it will be centred around and shape.

The Design

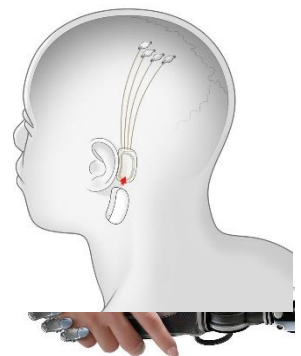
For my major project I am going to be designing an electric track/daily use car which can be controlled by ones brain using a Neurological link, the aim of the design is to preserve the driver experience and potentially create a new experience in the future by commanding full control of said vehicle without the need for physical or manual input. The brand I am using is Alfa Romeo who specialise in driver experience and would want to preserve this in the future without giving in to full automation which would indefinitely rid us of driving

enjoyment. The class of vehicle I will be designing is a track car with the ability of everyday use. It will be suitable for users who enjoy the thrill of being in control and the element of potential risk.

As the transportation industry is becoming fully autonomous, non - control and pure laziness will begin to set in, therefore eradicating any enjoyment we get through driving and rendering us nothing but mere passengers. My design aims to tackle this by creating a new and enjoyable driver experience which will push the boundaries of human potential and put those who want it back in control (Neurolink) My vehicle will be an extension of ones being, invigorating the synapses literally to create a whole new enjoyment in the automotive field.

Unlike potential autonomous track cars of the future, my design will not be boring to watch or be a part of, this is because the driver is mentally and telepathically controlling the vehicle. This preserves the thrill and potential risk when on the track because the driver is still pushing the limits and becoming better from practice which makes the whole experience exciting to spectate and envelope.

This neural link technology is being developed now for simple use like controlling a mobile phone with your brain etc. It works by first having an operation which is like Lasik, threads which are $1/10^{\text{th}}$ the diameter of a human hair are inserted into the brain using a specially developed machine which bypasses the blood vessels to prevent damage. These threads are also called electrodes and are placed extremely close to our brain's synapses, when our brains



stimulate the neurons this in turn sparks our synapses creating energy which then runs through the electrodes and creates algorithms for control. An external chip and interface will then maintain this electric field and then using certain technology in the phone or vehicle will allow us to mentally control it. The connectivity is like Bluetooth. You will be able to control the vehicle by using your own thoughts and brain power telepathically.

(Neuralink) (Winkler, n.d.)

Design principles

In order to keep my design relevant and intriguing in a visual aspect I will incorporate not only Alfa Romeos design language but a take on my own design principles to give the design depth and meaning. As a designer I want to be able to express something e.g. an emotion without the need for words, to be able to create a feeling or aspiration of life through each line and detail of my design. My vehicle can be more than just an object but have a story through the design which could be interpreted in many ways. I want to be able to simplify my design through phases without excessively reducing main features to maintain the spirit of the vehicle. In a literal sense linking to the man versus machine aspect I want my design to focus on technology whilst still embodying a human element to preserve the emotion and natural feeling of the vehicle thus creating a harmonic symbiosis between both cultures. This technology should only be used as a means of completing a certain task without being over controlling or afflicting and as this technology grows and evolves my design will follow suit and potentially become boundless. Although there is a risk of this evolving technology removing the core basis of my idea (like how automation is taking over manual driving) I feel

its potential is only added upon and not overwhelmed because the core idea is again, boundless.

Alfa Romeo design principles

Creating cars, not building them. Alfa Romeos design language and principles are derived from an Italian heritage and desire to create beautiful looking vehicles which contort to essential lines, quality of proportions and maintain a dynamic spirit. They aim to create cars which are simplified but still have the main aspect which make them Alfas. The trilobe at the front of every vehicle is the main focal point which instantly is recognisable as Alfa Romeo, the sides have a main line which is built around sculpted surfaces to accentuate the aerodynamic grace and the rear is partially muscled to show where the power is derived from. The surfacing is always harmonious and needed revealing an almost organic power, then meticulously refined to create weight saving and aerodynamics. This innovation, converging of aesthetics and power leads to focusing



on the human being and the product as one entity therefore relating to my question in hand and the future design of Alfa Romeo. 'The driver feels always at the centre of an unparalleled sensation: he is an essential component of the car and a perfect completion of it' This quote is one of Alfa Romeos design principles relating to the driver experience, this definitely shows that my future concept relates literally to this view because you will become one with the vehicle, working in unison to create this 'Harmonic symbiosis',

therefore I feel the brand Alfa Romeo would suit this futuristic approach and concept in 2050. (Collins)

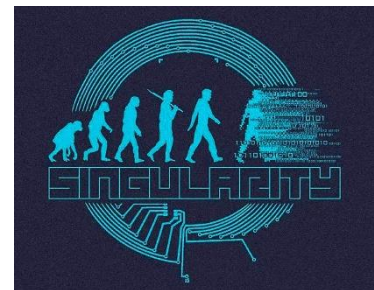
Technological Singularity

The technological singularity is the theory which describes how a nonbiological intelligence or super AI will become on par with our own intelligence in around 30 years. It will then surpass our own intelligence because of the never ending development of technologies and will keep getting smarter and smarter until it either takes over the world and destroys mankind (negative outcome) or works in unison with mankind to better our lives (positive outcome) My design focuses on the positive version of the technological singularity theory because it will be designed to better mankind after the singularity takes place.

There are many pros to the technological singularity if it is advantageous when it happens, these include ridding the world of poverty, reducing the amount of diseases, developing more technologies, the cleaning of our environment and having plentiful resources e.g. energy, food etc. These pros would be accomplished by this super AGI as its intelligence would be far more developed than ours and problem solving would be effortless. Another good point is the development of the transport industry, I feel my design could be a direct outcome of this positive version of the singularity and would only keep advancing. Although we cannot comprehend what version of vehicle will be created by this AGI, I feel my idea hypothesizes a potential avenue of technology and overall design which would benefit the next stage of



evolution. These advantages stated also aid in the production and feasibility of my Neural link track car, with more resources the technology and energy needed to create and run this vehicle will be plentiful. Cons of this singularity is the threat of an AI takeover, war and wrongdoing using this super intelligent technology. An AI takeover may occur if we do not give the AI morals and empathy towards humankind, it may see us as a lesser species that is only getting in the way. Our goal should be to create an omni benevolent AI which works with us to create a better future. Like my design which merges AI with man and therefore must work with one another to prevail in its task and improve our lives. (Kurzweil, 2005)



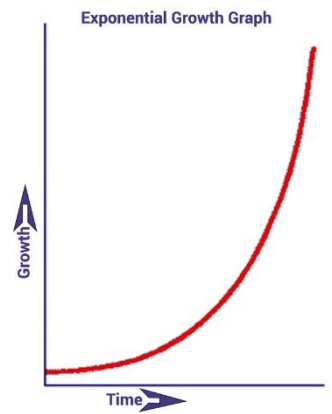
My design brings about the question, 'Will technology have supremacy over biological human beings and escalate out of our control in the future'

This potential technological singularity will have a major negative impact on our lives, the machines created to aid us may become greatly superior and take over therefore rendering us useless. However, this Neurological merge between man and machine (which is present in my design) may indeed be a catalyst for this singularity by enhancing our supremacy and power as to not become slaves, but to create a harmonious bond which works for one another. These processes we take soon may provide a failsafe to prevent the negative version of the mythical, technological singularity.

Technological Exponential growth

In terms of how far into the future my design is likely to be created and developed for relies on how technology is advancing exponentially. Technology has advanced massively over a very short time, in only 50 years we have developed many multicomplex systems to help us with our lives, this evolution will only get faster and faster. In 2015 Futurist Ray Kurzweil hypothesized that 'by 2029 computers will have all of the intellectual and emotional capabilities of humans' this quote is backed by Kurzweil's theory of exponential growth, the theory that technology will not evolve linearly but will keep evolving faster and faster at each step meaning this technological singularity is much closer than people may think. I feel that this quote and theory is a likely possibility as the worlds evolution so far has also exponentially evolved in leaps and bounds, each paradigm shift has become sooner and sooner therefore meaning that the next one may be a lot closer than people think, although I feel that a loop hole in this theory could be that this evolution of our world may come to a crescendo or limit and then the rate will massively slow down and stunt the progression. This may link in with the year my design may come about, meaning it may indeed be possible sooner and be even more advanced than initially thought (although this may hinder the design language of my design if the trend of design doesn't develop as quick as the technology) Another futurist and technologist named Ben Goertzel also has similar theories about the technological singularity, he too thinks that there is two outcomes of the singularity but mainly cares about the positive side by not only creating a super intelligence but making sure it is 'beneficial to humans and other life forms on the planet' My views on exponential growth are limited to what I have researched, although I feel it is very present and applicable to my design and the automotive industry in general. This is because as designers we constantly design for around 10 years into the future, as this future arrives, we

will then start designing vehicles for 20 years and then 50 years into the future therefore the rate this grows is exponential. (The Law of Accelerating Returns, n.d.)



Personally, I feel that this technological singularity is an exciting prospect which could be utilised in our favour to create a symbiotic bond in which it aids us instead of hindering us. I think this is what will happen as we begin to realise the negative side and as we develop this AI to be like us but more advanced. My design will express this view of a 'harmonious symbiosis' and a positive technological singularity.

Ethics of merging man and machine

There are many ethical implications relating to altering our natural forms and brainly functions. They mainly include health and safety, religious aspects and what may happen if we create this super AI (explained in previous paragraphs) or start turning ourselves into cyborgs. The distinction between man and machine may become blurred meaning how will the cut-off point between how we distinguish persons and non-persons be established. The body and mind may also be a moral implication, free will and responsibility may become non-existent e.g. when machinery and robotics are implanted into our brains how do we know that the government or manufacturers are not monitoring our movements and everything we do in life. They may also be able to control us directly from a brainly implant or give out information to third parties without our consent. In the early stages of the

development and testing of these brain enhancements, vulnerable test subjects may be advantageous for companies, this includes animal and human testing which also brings about informed consent issues and possibly the altering of personal identity.

Health and safety may become an issue if our bodies start to reject these neural implants, how do we know that these machines may eventually start to deteriorate our brains functionality or even replace them therefore eradicating the biological version of ourselves. Enhancing other bodily functions using developed robotics e.g. weaponizing humans and increasing attributes may cause health and safety issues for non-cyborg humans if altercations present themselves. This brings about another implication of war and using these cyborgs and robotics to enhance a countries arsenal in the weaponized industry (this will increase war death tolls and present even more moral implications within the sector) (Tripathi & Tiwari, 2016)

Religious implications include certain types of people (Christians) resenting this newfound technology because it may not suit a certain point of view within a community. In their eyes changing the way 'God' created us may be seen as blasphemy, "Do you not know that your body is a temple of the Holy spirit, who is in you, whom you have received from God" The Bible, 1 Corinthians 6:19. This quote from the bible directly shows why Christians may have this point of view, if we have 'received our bodies from God' changing them will undoubtedly go against his will. Other religions may also have this point of view depending on their morals and teachings e.g. Buddhism would strongly go against Neural alterations and enhancements because in their teachings our mind and natural thought processes are

the only things that make us human however some teachings of Buddhism state that the brain and the mind are two different entities and changing one may not change the other.

(L. Kovacs)

Neuroethics is a whole field of study which focuses on the ethical implications of our increasing understanding of the human brain and how we influence and alter it. It mainly focuses on why we should or shouldn't change the way our brain functions or behaves in any way, shape or form and what is right or wrong, good or bad when in this field. "Self-consciousness is, from a naturalistic point of view (in this case neurobiological) not more than a degree of sophistication of neural processes. The emergence of self-conscious states is not a drastic, extravagant, earth-shaking phenomenon". Istvan Aranyosi, *The Peripheral Mind: Philosophy of mind and the peripheral nervous system*. This quote mainly explains that self-consciousness is just a process of the brain, meaning it isn't as philosophical or 'extravagant' as it seems. In a Neuroethical point of view this quote supports a more scientific reasoning on how ethics can be applied to physical alterations of ourselves instead of worrying if or how a concept of consciousness may be affected. (Hill, 2015)



These ethical implications relate to my design in the sense of how I am going to justify creating a concept which can only be controlled if the user's brain is altered in a way which enhances their abilities and makes them compatible with the vehicle. This altering will not be



enticing for many people because of the feat undertaken, this however may change in the

year 2040 as many would have accepted new technology and see it as the norm. Also new ethical implications may arise in this era however my track car will be designed in a way which will try to negate some of these negative factors by looking at the implications of today and how they may project into the future.

Materials and tech

To keep my whole design current within the time period I have chosen, I will incorporate many different and advanced futuristic materials which are being developed today for the future. They will link to the neural aspect of my design by either having the correct properties or aesthetic advantages which can be associated with the future. These materials include, Cellulose Nano crystals, Nanocomposites, aerogel and a sustainable version of Carbon fibre, E textiles and Carbon Nanotubes.

Cellulose Nano crystals are one of the most sustainable, multi-use materials which can be used for many different things. They are based from plant matter (cellulose) and the properties can be radically changed to suit different needs. In my case these Nano crystals can either take the place of carbon fibre or be used together, they are much stronger and extremely light but may need a protective coating or paint to stop warping or changing of shape due to moisture. They are also biodegradable because they derive from plant matter. This material will be used in the exterior and interior of the vehicle and potentially create the monocoque tub. (Why wood pulp is world's new wonder material – tech – 23 August 2012, n.d.). Nanocomposites or polymer nanocomposites are a substitute to weaker forms

of plastic, these will be used for smaller components of my vehicle e.g. covers, coatings and trims, these nanocomposites also have many upgraded properties e.g. stronger, more aesthetically pleasing, higher electrical conductivity, flame retardancy, chemical resistance and optical clarity. (Paul & Robeson, 2008)

Aerogel is a synthetic and ultralightweight material which is a very good insulator, easily machined, has a high strength to weight ratio, easily bonded to other materials and durable. Therefore, this will line the cavities of my vehicle to provide warmth, sound dampening and an overall futuristic appeal. Carbon fibre will also still be used in my design, this is because in the future I feel a version will be created which ultimately will have a better strength to weight ratio and become more sustainable, recycled and cost efficient (About Aerogel, n.d.).

I also will use a version of E textiles which is a technology where visual, miniscule, interactive LEDS line certain fabrics and lighting systems, the interior of my design will incorporate this e.g. moving lighting in the seats and dashboard and also the exterior lights and potentially it could form a part of the infotainment display and speedometer.

Advantages of E textiles include: it being extremely flexible so it can be used for many different things, it has no wires which are non-aesthetically pleasing and can snag, has a large surface area which will aid in the use of sensing and is relatively cheap to manufacture (Zysset, Kinkeldei, Münzenrieder, Cherenack, & Tröster, 2012). Like E textiles I may choose to use a hologram device in the interior, this would be the main bulkhead of the information and displays you are getting in the vehicle, this provides another futuristic aspect and aids in interactivity and experience. Carbon Nano tubes are an extremely strong constructions of

carbon which take the form of tubes yet still are lightweight and have incredibly high electrical and thermal conductivity. These can be used for electronics, optics and other technologies in my design to provide a more futuristic all-round package. (Durairajan, Ananthakumar, & Yusuf, 2011)

As my neuro car will be electric, its drivetrain must fit the evolved scenario and concept of the vehicle, its infrastructure must also be developed and well established. It will use a 'skateboard' platform with motors in each wheel meaning the output of each motor can be adjusted to provide an enjoyable and more advanced driving experience, this will also provide more cabin space for the user and for technology which may be used to aid the overall experience of the vehicle. The batteries will be extremely fast charging due to the advancement which will occur in 2040 and potentially take only seconds. These batteries will be a blend of gold nanowire batteries which have no degradation through recharging meaning the batteries do not have to be swapped and Grabat graphene batteries which hold 500 miles of range in a single charge.

A feature my vehicle will have is the ability to charge the batteries by using electromagnetic waves and synaptic waves from our brains when in use. These electromagnetic waves will come from either the city or track it is driving in e.g. WIFI waves and will be harvested by a rectenna (an antenna which collects electromagnetic waves) The synaptic waves will be collected from our brain capacities using the Neural link connectivity when we are in full concentration, this synaptic activity and charging will increase on the track because of the

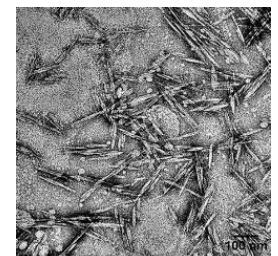
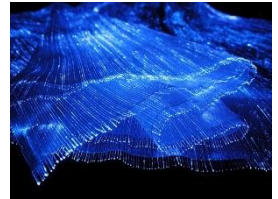
added concentration and therefore provide better performance for the vehicle and a larger range for on and off track use. (Future batteries)

The interior cabin of the vehicle will feel like a cocooning and safe, controlled environment.

The 'Neuro seat' will have body moulding technology which almost cocoons the occupant by fitting their body shape perfectly, this aids in stability and comfort when in full 'Neuro mode' The single seat will take up the main space of the interior and a fully integrated 'holoboard' will be present which is the heads up display which will mainly use holograms and lights to provide the information the user needs.

Another aspect of the design which partially relates to the technology side, is the ability to have a self-driving feature, this feature will work on the theory that your subconscious can drive the vehicle in the background without you knowing it. This links to the Neurological drive system as a sub control method but without a consciousness which tells the vehicle where to go, this subconscious system will scan road information at lighting speed and control the vehicle independently.

Once you determine a consciously programmed route or destination e.g. thinking where you want to go or exclaiming it, the vehicle will then subconsciously take you there without the need for conscious control or thought. This subconscious drive mode (SDM) will also 'store and receive data' from routes it has driven and your own consciousness and experiences have driven therefore working together by giving and receiving information about each route and different changes and scenarios



which may take place on these routes. This gives you a trustworthy self-driving system which is always up to date and can be relied upon.

As far as sustainability of these materials and technologies, the period whilst using them will be after the theory of the positive version of the technological singularity. Therefore, this super AI computer would have found many solutions to sustaining every material and manufacturing process used in my design due to its intellectual abilities.

Future environment/scenario

My vision of the future which my design will be a part of is mainly a stereotypical shared view of a technological biased world in 2040, where bright visuals and interactive displays overpopulate the cities and roadways. It will also be a big part of the raceways and track circuits my vehicle will race on; the film Blade Runner 2049 and the original are big inspirations to help me develop this vision. Leading up to the introduction of my vehicle into this scenario, the world is controlled by autonomous systems where no input is required, everyone has become slaves to an order of non-control and their sedentary habits. As this supercomputer AI is appointed 'leader' and controls every aspect of existence due to its vastly superior intellectual abilities, people's lives are not built upon a certain drive for betterment or betterment for the planet, they merely become used for processes which rely on zero thought (the brain becomes an almost non-essential organ) Therefore the introduction of my design or vehicle will act as some sort of catalyst for these events



and create a stepping stone for an uprising of taking back control, a merge where technology and biological life work together and to help prevent the downfall of our mental and neurological abilities.. The cities and landscapes will also have very organic and fluid forms e.g. buildings, roadways etc, this will mean there will be a coherence between the vehicle and environment therefore the design will merge perfectly within the environment yet stand out in the right way through its aesthetics and technology. The track environment which my car will be racing on is similar to the daily use real world scenario, the tracks and centres will be extremely advanced technologically, they will have bright neon lights and visuals which may help the driver to get the best driving line or lap time etc, new rules may have been passed on the track to benefit the new mode of driving and aid in this new era of experience. Although this scenario in 2040 may seem to soon I have taken into consideration the theory of exponential growth and therefore I feel it may happen way sooner.

Transhumanism is also an aspect which relates to my design and scenario, it is a movement of people who believe in using machines to enhance their bodies so that they can live longer, these people will be part of my target audience as they want to envelope themselves within every part of life which can be enhanced by machines. ‘If a reasoning human being loves and values life, they will want to live as long as possible – the desire to be immortal’ this quote from the novel *The Transhumanist Wager* by Zoltan Istvan directly depicts enhancing one’s self with machines/technology and why someone would



want to do this. The opposition to 'Transhumanists' are called the 'Bioconservatives', these people are very sceptical when it comes to technological development especially when modifying human beings. These two sub-categories of people will help build and shape my scenario of the future because a conflict may provide more meaning and purpose for my Neurological track car and shape the world in which it resides. My design sides with the Transhumanists because of its technology-based systems and merge, therefore they are the main target audience. Their experience of my Neuro link track car will produce many newfound emotions when in the cockpit and help re-establish their views on enhancing mankind. (Istvan)

Inspiration

My inspiration for this design has mainly derived from fluid and organic forms which have added segmentation and developed edges to provide more of a futuristic aesthetic. The main inspiration for me are specific sculptures designed and created by Sophie - Elizabeth Thompson, her sculptures 'Reflect the essence of form found in both natural and manmade objects and their physical relationship to each other in life' (quote from soforbis.com – Her own website). This design thinking and the physical sculptures relate to my vehicle in the sense of merging natural and manmade or mechanic ideals together to form a single design. Her sculptures convey a sense of fluidity and tranquillity which are partially interrupted by a negative space or sharper line which may add tension and a subtle change in emotion, these conflicting forms blend surprisingly well together and create a whole new viewing experience, I personally want to convey this message within



parts of my design which will not only aid in the visual appeal but the whole experience of owning this vehicle or witnessing it in use. “For me a work must first have a vitality of its own.....a work can have in it a pent- up energy, an intense life of its own, independent of the object it may present.” Henry Moore ‘The Sculpture Speaks’. This quote also directly relates to my design’s philosophy and goals, although my design may not show a whole new driving experience from the exterior its interior will undoubtedly release this ‘pent – up energy’ once revealed to the user.

Also, the interior may represent a different feeling which is independent from the exterior and therefore create multiple experiences within one entity of travel. Another view of my design which comes directly from this quote is that it can have ‘an intense life of its own, independent of the object it may present’ This is a strong message of which I am trying to convey through the design of my Neuro link track car, this ‘life’ my design can possess is an underlining point in which this revolutionary new experience will be portrayed and hopefully create almost a whole new meaning of life. It will deliver more than just a monotonous feeling of a dull A to B autonomous slab, but communicate a feeling of freedom, power, control, knowledge and an overwhelming essence of knowing who you are and where you want to be in a world full of delirious ‘automated zombies’. Another influence has come from nature, fluid shapes and curves which have been formed or eroded by elements e.g. water, wind, fire etc. These forms are like Sophie-Elizabeth Thompson’s sculptures but are formed by nature and therefore have smoother and more aerodynamic appearances and surfaces. The main influences are water eroded, shaped stones and rocks,



these may be singular or a larger body of mass e.g. the Antelope Canyon flash flood eroded sandstone caves and the Kannesteinan rock. The sandstone caves are formed in a very fluid motion which include perfectly curved surfaces and patterns, there is seamless flow throughout which convey feelings of peace and astonishment (something I want to show in my design) The Kannesteinan rock is a singular free standing rock which is eroded by the sea in a circular fashion, it has created a very interesting shape with a larger mass on top and a smooth almost cylindrical pinch point below. This pinch point is a valuable piece of inspiration which I may try to add to the form of my designs side view which will give the impression that it is also formed by nature. This aesthetic of nature may induce a different feeling of relief as the futuristic industrialisation of my 2040-50 scenario may have taken its toll on the target audience and therefore this naturistic feeling would also aid the development of this new driving experience.

Modern architecture has also inspired me to create a structuralised form which is again fluid and organic. Zaha Hadid is an architect who specialises in creating extremely futuristic and fluid designs which have



a sense of biomimicry. Her work redefined architecture for the 21st century, this was done by incorporating many new materials and construction innovations. “Her buildings are beautiful – and beauty may account for their seductive urban presence, for their hold on the eye – but the beauty and virtuosity within her work is married to meaning” This quote from Zaha-



hadid.com describes a view which shows that everything can have a meaning behind it, the

building can be more than just an object or space but incorporate many feelings and views which may be conveyed differently for each person. (Zaha Hadid Architects, 2010)

These expectations of modern architectural design will be transferred to my automotive design as well as some of the physical features and aspects of the buildings Hadid has created. A series of railway stations she created called the Nordpark Railway stations will be one of the main inspirations from her work that I will look at, they show a unique design language of fluidity which is inspired by ice formations. These are lightweight, organic structures which create their own distinctive horizon lines and landscapes through movement and a flowing form. This organic design language will heavily be present in my design to help link the two worlds together (man and machine). Another design Hadid created was the Mobile Chanel contemporary art container, this was a pop-up centre for an exhibition by Chanel the brand, it was a singular pavilion which had distinctive layering and organic curves which channelled to a cohesive point or whole. This is again a design which inspires me greatly and I wish to convey this within my Neural link vehicle, this converging point in the pavilion is a very similar feature that I may incorporate within the whole body form of my design, this creates a feeling of speed and purpose which aids in the interior form and concept to create a cocooning and safe feeling which still has an essence of speed and control which comes from the drivers own being. Hadid's sculptural forms link perfectly to the concept of neurological control and prowess, this is because of the futuristic aesthetics and moulds which may not initially be comprehensible by the human eye, but once fully explored create a whole feeling which exploits control and a bond between biological structures and manmade structures. (Zaha Hadid Architects, 2010)

Summary

This futuristic, Neurological car is going to help create a merging of two separate entities in the year 2050, by helping to form this 'harmonic bond' between biological and mechanical life and change the way we see transportation, technology and potentially a whole new era of our evolution, the vehicle will not only represent an object for single use but hopefully spark a 'revolution' which fights off the world of autonomy, laziness and minimal brain function to create the next step of awakening/control and therefore shape society for the betterment of the human race.



If these morals and views on advanced technology are the main instigator for the creation of new systems, then this theory of a 'technological singularity' will only turn out to be a positive event. One lifeform will not surpass the other but stay on a balanced level which evolves together by supporting each other. Eventually creating this 'Harmonic Symbiosis'. My design will be a catalyst for combining biological and technological forms together so that one doesn't destroy the other.

This new, revolutionary automotive experience will not only shape Alfa Romeo's brand and design language but create a new trend for many brands to follow, it will help shape the industry in 2040 and the world around it. And I feel Alfa Romeo is the perfect brand because

of their drive for creating cars for the driver experience. Alfa Romeo designs every car with organic and flowing forms, these properties are my inspiration and will help me find a form which will suit my design in the future and suit the concept of this developing symbiosis and the scenario around it. My design will also do this by focusing on technology whilst still embodying a human element to preserve the emotion and natural feeling of the vehicle thus creating a harmonic symbiosis between both cultures.

Originally I wanted my design to 'Only be used as a means of completing a certain task without being over controlling or afflicting' however through developing my concept and this essay I feel that this is not the case anymore, my design will 'shape the world around it' in an afflicting fashion which will only improve our lives and cancel out other forms of transport e.g. versions of autonomy, to create a new phase of travel.

References

About Aerogel. (n.d.). Retrieved 11 21, 2019, from ASPEN AEROGELS, INC.:
<http://www.aerogel.com/resources/about-aerogel/>

Berglund, L. (2005). *Natural fibers, biopolymers and biocomposites*. (A. Mohanty, M. Misra, & L. Drzal, Eds.) CRC Press. Retrieved 11 21, 2019

- Collins, P. (n.d.). *Alfa Romeo 155/156/147 Competition Touring Cars: The Development and Racing History*. Veloce Publishing Ltd. Retrieved 11 21, 2019, from https://books.google.com/books?id=bpxID9TWDS8C&pg=PA17&lpg=PA17&dq=Alfa+Romeo+Group+C&source=bl&ots=Dn2cFmwnEO&sig=zsgWVMk2lyC5HFQqEHWcDnw_hps&hl=en&sa=X&ei=lzofU8W0lcLd7Qb40YCYDw&ved=0CC0Q6AEwADgK#v=onepage&q=Alfa%20Romeo%20Group%20C&f=false
- Durairajan, A., Ananthakumar, S., & Yusuf, M. M. (2011). *Reducing the emissions from the automobiles by using carbon nano tubes (Nano Technology)*. Retrieved 11 21, 2019, from <http://yadda.icm.edu.pl/yadda/element/bwmeta1.element.ieee-000006167967>
- Hill, C. S. (2015). The Peripheral Mind , by István Aranyosi. *Mind*, 124(493), 312-317. Retrieved 11 21, 2019, from <https://academic.oup.com/mind/article/124/493/312/2606049>
- Istvan, Z. (n.d.). *The Transhumanist Wager*. Futurity Imagine Media. Retrieved 11 21, 2019
- Kurzweil, R. C. (2005). *The Singularity Is Near*. Retrieved 11 21, 2019, from <https://amazon.com/singularity-near-humans-transcend-biology/dp/0143037889>
- L. Kovacs, J. (n.d.). *The Church's Bible (1 Corinthians)*. Wm. B. Eerdmans Publishing. Retrieved 12 8, 2019
- Max More and Ray Kurzweil on the Singularity*. (n.d.). Retrieved 11 21, 2019, from KurzweilAI: <http://www.kurzweilai.net/max-more-and-ray-kurzweil-on-the-singularity-2>
- Paul, D. R., & Robeson, L. M. (2008). Polymer nanotechnology: Nanocomposites. *Polymer*, 49(15), 3187-3204. Retrieved 11 21, 2019, from <https://sciencedirect.com/science/article/pii/S0032386108003157>
- The Law of Accelerating Returns*. (n.d.). Retrieved 11 21, 2019, from <http://www.kurzweilai.net/the-law-of-accelerating-returns>
- Tripathi, K. M., & Tiwari, R. (2016). Man Machine Interface: Moral and Ethical Implications. *Social Science Research Network*. Retrieved 12 8, 2019, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2920948
- Why wood pulp is world's new wonder material – tech – 23 August 2012*. (n.d.). Retrieved 11 21, 2019, from New Scientist: <https://www.newscientist.com/article/mg21528786.100-why-wood-pulp-is-worlds-new-wonder-material.html>
- Winkler, R. (n.d.). *Elon Musk Launches Neuralink to Connect Brains With Computers*. Retrieved 11 21, 2019, from <https://www.wsj.com/articles/elon-musk-launches-neuralink-to-connect-brains-with-computers-1490642652>
- Zaha Hadid Architects*. (2010). Retrieved 11 21, 2019, from [zaha-hadid.com](http://www.zaha-hadid.com): <http://www.zaha-hadid.com>

Zysset, C., Kinkeldei, T., Münzenrieder, N., Cherenack, K., & Tröster, G. (2012). Integration Method for Electronics in Woven Textiles. *IEEE Transactions on Components, Packaging and Manufacturing Technology*, 2(7), 1107-1117. Retrieved 11 21, 2019, from <http://sro.sussex.ac.uk/id/eprint/52837>

"Future batteries, coming soon: Charge in seconds, last" 15 Nov. 2019.

Images used:

https://car-images.bauersecure.com/pagefiles/86729/alfa_romeo_tonale_050.jpg

https://www.bing.com/images/search?view=detailV2&id=E34BF41D6C50C729DCDAD7E5EE2025C81662589D&thid=OIP.TpEJntppb_22i7r7DTkUOAHaEP&exph=350&expw=610&q=neu+ra+link&selectedindex=24&ajaxhist=0&vt=0&eim=0,1,2,3,4,6,8,10

<https://cdn0.tnwcdn.com/wp-content/blogs.dir/1/files/2015/12/wall-e.jpg>

<http://www.arch2o.com/wp-content/uploads/2013/12/Arch2o-Nordpark-Railway-Station-Zaha-Hadid-Architects-13.jpg>

<http://the189.com/wordpress/wp-content/uploads/2014/11/The-Work-and-Studio-of-Sculptor-Sophie-Elizabeth-Thompson-3.jpg>

<https://www.travelguideline.net/wp-content/uploads/Kannesteinen-580x466.jpg>

http://4.bp.blogspot.com/-V6IS5Vni9oo/T_WajPgHiQI/AAAAAAAAAaY/M57SflvnQzc/s1600/future+car+designs-19.jpg

<https://www.slashfilm.com/wp/wp-content/images/Blade-Runner-2049-trailer-breakdown-37.jpg>

<https://i.pinimg.com/736x/15/8c/a2/158ca2ab925963cb113fe19a157dd8f2--e-textiles-smart-textiles.jpg>

<https://media.techeblog.com/images/aerogel-ultralight-material-mars.jpg>

<http://www.auricmedia.net/wp-content/uploads/2015/01/MindControl-672x372.jpg>

<https://davidamerland.com/images/tips2013/Exponential-Growth-Graph.jpg>

http://66.media.tumblr.com/tumblr_m6gyIvWlnA1rra1j7o1_400.jpg

<https://i0.wp.com/www.toks.tech/wp-content/uploads/2019/02/AI.jpg?resize=647%2C450&ssl=1>

<http://psipunk.com/wp-content/uploads/2010/03/alfa-romeo-pandion-futuristic-sportcar-01.jpg>

<https://z6mag.com/wp-content/uploads/2019/07/1000x-1.jpg>

<http://simbiosisgroup.net/wp-content/uploads/2011/06/264.jpg>

[http://www.hdwallpaperslife.com/wp-content/uploads/2018/07/blade runner 2049.jpg](http://www.hdwallpaperslife.com/wp-content/uploads/2018/07/blade_runner_2049.jpg)

<https://www.bing.com/images/search?view=detailV2&id=9AABD8852A42DACD8F1F5CE7C007B72BFEA42134&thid=OIP.wbN8RvqClK1GomvCtzbFmwAAAA&mediaurl=http%3A%2F%2Feditorial.3dprint.com%2Fwp-content%2Fuploads%2F2017%2F06%2Fcellulose-ink-cellulose.png&exph=435&expw=435&q=cellulose+nano+crystal&selectedIndex=15&ajaxhist=0&vt=0&eim=0,1,2,3,4,6,8,10>

<https://hypnosisvancouver.files.wordpress.com/2013/10/crypto-performs-mind-control-on-cow.jpg>

<https://fabiusmaximus.files.wordpress.com/2016/12/singularity.jpg>

<https://media.shellypalmer.com/wp-content/images/2017/04/manmachinehandshake.jpg>