Table Of Contents

Triptych -- three cornerstones to answer the question: How evil I am?

Alexander Solschenizyn - The Gulag Archipelago Karl Marx - Capital. A Critique of Political Economy Hannah Arendt - The Origins of Totalitarianism

This is probably not a typical book review. For the first, it's not about one book but about three. For the second, it's less about the content, even though the content of the books is tremendously important. It is more about the (not just) intellectual journey I had because of them. It's about deeply ingrained questions and worries about myself, society, and my place in it. A lot of this has probably to do with the society I grew up in -- Germany, East Germany to be precise (the wall came down when I was 9). The advantage of growing up in Germany is that one is taught about the role(s) of our country in history; at least if one chooses to listen. Anyway, I'm telling this to give some background why the topics I dwell upon below are so important to me.

In addition am I a physicist and have no academic background in any of the topics of the books, neiter history, nor economics, sociology, psychology or literature/language. So if I'm not able to explain something precisely enough it is most likely because of that lack of knowledge and in no way because of the books being bad our not clear enough about the topics discussed therein. This is also one of the reasons why I try to abstain from pure summaries of the books/chapters whenever possible. I simply don't have the necessary background knowledge to put it into a proper (modern) perspective. However, such abstracts can be found on Wikipedia. In addition have I never wanted to watch a movie, read a comic, listen to a CD etc. pp. because of abstracts of the content.

First I'll try to give a bit of background to each book and how it relates to the question in the title. Afterwards, I'll try to outline how the topics of the three works are connected with each other.

And finally before I start: yes, I am aware that none of the authors were perfect. I'm also aware that science (and possibly society) has moved onwards since those books were written. None of that changes the fact that these works document and analyze important issues.

Triptych I – The Gulag Archipelago

Despite the events, incidents and hard to digest monstrosities documented in this book was it very difficult for me to put it aside. I took it everywhere with me, just because I could read, while waiting for the bus. It felt enormously important to read that book whenever possible.

The seven parts of this book try to document different aspects of the Gulag system in the former USSR. It is approx. 10 years ago since I'v read it, but I remember vividly that the first two parts ("The Prison Industry" and "Perpetual Motion") made the strongest impression on me which lasts up to this day. These two parts are about how to "arrive" at the Archipelago and how one is "broken in" (quite literally) this new life that was chosen for you by someone else. This required the most interaction with (still) non-inhabitants (using Solschenizyns words for the Gulag prisoners). Later chapters are about life in the Gulag itself and afterwards (if there was an afterwards).

The reason why especially the first two parts made such an imporession upon me might be because I grew up in Germany. I was (and still am) well aware of the shortest 1000 years in history and the atrocities, crimes and barbarisms committed by the german people (!) of that time. Despite the time gap and at least one innocent generation inbetween is this relevant and necessary to reflect upon, also today. And as long as I can remember I've asked myself if I would have done the same the Nazis (and the bystanders) did? But that question is already too abstract, one can easily dismiss it and carry on with everyday life. This question is just a veil over the actual question I was too afraid to ask myself. Solschenizyn's work ripped that veil off and blatently confronted me with myself and the deeply rooted question one usually doesn't dare to ask: how evil am I? NOT "How evil could I be under very stressing circumstances?". Because THAT is answered quite clearly and without leaving any doubts in this book. It's also another question easy to dismiss and hide behind. NOT "What would I do if I would have been a prisoner in this situation?"; dito. NOT "Am I a good person?" because one is by definition good, even Heinrich Himmler thought so of himself while planning the industrial extermination of humans.

You see how I mix references to Nazism in Germany with a book that actually is about the "labour" camp system under (not just) Stalin in the former USSR? That has nothing to do with the old trope "one evil, two faces" ... and yet, it has everything to do with "one evil". In a way I could feel that while reading through "The Gulag Archipelago". But I had to wait until Hannah Arendt to understand what this means.

Triptych II – Capital. A Critique of Political Economy

Three things have to be said. 1.: Experiencing the effects of a (so called "socialist") dictatorship firsthand, made me rather immune against admiring communism. Yes, I was young when the wall came down, but the behaviour of the people around me (my parents, neighbours, teachers etc.) that lived their whole life in said dictatorship and had to watch every word they said, doesn't change over night. I vividly remember one incident when I was 7 or 8 (still believing that the

(now former) GDR will exist forever). I made a childs-joke about the capital of West-Germany. My mother's was rather startled by it and told me quite clearly that I'm not old enough for such jokes and should refrain from it in the future. That stuck with me until today. 2.: Everybody who went to university in the former GDR had to read Capital. There were mandatory courses about it. Thus, Everybody I talked to hated it.

These two things biased me immensely against Marx work. But I always had the feeling that I should read it and around 2016 this feeling became so strong that I started with it. Interestingly enough was it shortly after that somebody else expressed said feeling in very precise words:

> The more evil you think someone is, the greater should be your concern to ensure there is not the slightest chance they understand something better than you.

3.: I haven't read anything else by Marx. Not even the communist manifesto. I've also read just the first volume. So it is possible that I totally misinterpret everything.

But Oh Boy! Have I been wrong about this book! I never knew a definite answer on the question which book I would take with me on an island in case I get stranded. That difficulty was not for the lack of books. After I started reading Capital I had my answer. There is a reason why it is one of the most cited books ever (according to Wikipedia).

In a way it is very different to Solschenizyn's book because it took me approx. 5 years to be finished with it. Well, that doesn't sound good but it doesn't do the book wrong. Marx is a quite formidable writer, intellectually and language-wise; and despite one of the two topics of the book being a rather dry topic (a fundamental examination of economics) I often really wanted to continue reading. The second topic is a detailed description of what life of the common people was like in England during the industrial revolution. Since Marx was a contemporary are said descriptions almost alive. And even though he wrote an academic work I could easily understand why he was so upset. In addition comes that I finally understood why we call the historical workers movement "Arbeitskampf" in Germany. "Arbeit" means work and "Kampf" means fight (like when your life is at risk); something that certainly isn't conveyed in the english translation "labour dispute" (which is curious because the english and american "labour disputes" were equally brutal and about the same things). Thinking about it, in a way manages Marx to find a synthesis between "seeing like a state" while still seeing the local repercussions that has. But I'm not qualified to speculate about that.

The themes discussed in this book made my brain work. Almost at all times was I comparing the economic/social/work-related conditions and processes with the world and time we are living in. And that is quite wonderfull, isn't it! A book that makes you think (hard). But because of that didn't I manage to read many pages at a time. But one page of an intellectual feast is still quite nourishing for the gray matter :) .

What has all this to do with the question regarding how evil I am, well, I'm getting back to that below.

Triptych III – The Origins of Totalitarianism

The centerpiece, the heart of the Triptych, that holds everything together and lets you see how truly great and important all three of the works are is Hannah Arendt's "The Origins of Totalitarianism"!

As far back as I can remember have I always aspired to understand what it means to be a *human*. And during all those years I've been aware that this olymp of the human intellect exists. And what I just wrote is absolutely NOT an exaggeration! I always felt that I had (!) to read it if I wanted to make significant progress in my understanding. But I never came around buying or borrowing it in the library. My laziness is partly to blame for that. But last summer I stumbled over it in an antiquarian bookshop. I started reading it the same day and couldn't put it away before I was finished with it. Please don't misunderstand this. Yes, this book is a pageturner but for very different reasons than this description usually is used for. The topics of that books are very complex, with regards to the content itself but also language-wise. Hannah Arendts writing however, exerts an intellectually, attractional force that was (almost) inescapable.

Thinking about it seems the quality of the written word to be a distinctive mark of the really important works in human history. But, due to said complexity, I have to admit that I had to read many sentences and paragraphs several times (which was also the case while reading Capital). The Information density of the text is very high. I usually value that even if it means that I progress slowly through a book. In addition comes that a lot (likely most) of the topics Hannah Arendt writes about never have been presented to me under the perspective she is discussing them. Thus, my brain was at all times confronted with new ideas and it tried to integrate them into the already existing information network.

And all of this leads to the fact that reading this work felt to me like an epiphany.

I can't count how often I had to stop because my mind was bewildered because of the clarity with which this fantastic woman answered questions which I had since decades! I'll come back to that below.

But I see that I've talked so much about this book without saying what it is about. Well, in this work Hannah Arendt is analysing how it could come to the largest catastrophy in human history -- the industrial extermination of humans in East and West. And why that happened despite the fact that the usual currents which determine the history of the world (vulgo: capitalism) generally (but not necessarily in specific cases) "work" against such developments.

To end this section I'd like to say that despite my enthusiasm are the topics of this book grave (unfortunately quite literally). Not the least because of their relevance for our times and our society right now. The same mechanisms are still (and by no means again (!)) effective (and used). Time and again I sat there and couldn't stop but see the parallels to players in the present-day political sphere. However, reading that book never let me despair. Because at the same time one can see how civil society is different from 100 years ago. That doesn't mean that

everything will be alright just by itself, but it does mean that a similar catastrophy not necessarily has to happen again!

We are not cursed to repeat history! But knowledge about the same is crucial. And this work is probably the best starting point to become familiar with some very important things -- especially how certain people try to extinguish our immanent humanity, the flame of humaneness we are all born with, to make us their accomplice. If you have the time to read just one book this year, please read this one. Don't make the same mistake I did and wait until you stumble over it.

So far to the first part, a short presentation of the books themself. In the following I'll try to show how these works connect with each other and with the question that I was struggling with for many years.

How evil am I?

In a way was is this a question I had for as long as I can remember. And I fear I have to talk about that to show how this connects to Solschenizyn's book.

After the wall came down it was natural for me to say that _ I _ never would have been a member of the (so called) socialist party and that _ I _ for sure would have been send to Bautzen (where an infamous Stasi-prison for political dissidents was located). But I realized fast (as fast as it is possible for a teenager) that this sounded suspiciously similar to all the "good germans" that suddenly came "out of hiding" after the war was lost, declaring that they have been "members of the resistance".

Around that time I started to get really interested in the time the nazis reigned. Their atrocities distressed me very much (and still do). That does not just include the extermination- and concentration-camps (of which their existed more than 1000!) but everything the people had to suffer before they were even send there. I can't really "process" this. How can people be so cruel to other people? This has little to do with feelings of guilt but a lot with above question.

To this rather emotional aspect with respect to the crimes of the nazis came later another, a bit more reflected question. How could the probably best educated nation (at that time) fall for such an ideology so fast? This is of course just a variation of the first question but this variation is important. Because in its answer lies the weal and woe of a potential mechanism to prevent such catastrophies in the future -- Education. This second question has also a personal aspect since I'm clinging very much to my own education and intelligence ... but Goebbels had also studied at a university. He even had a doctoral degree and one can for sure not argue that he was uneducated. So this mechanism seems (at least in specific cases) not to help. I'm afraid because of that and it leads me right back to the initial question: How evil am I?

Talking about all of that, it has to be said, that it is possible that a definite answer may not exist.

Anwyay, while I'm writing in this and the next section on the first two parts of the triptych do I already need to use terms and insights I got from Hannah Arendts book. But this is not bad, it's even volitional, since this part of the book review shall be used to weave these works together.

No matter how much I tried to get informed (about the above) -- not just with (school) books but also by going to exhibitions, reading eyewitness accounts and interviews, watching movies and documentaries etc. -- I never really found a satisfying answer to the above questions. However, during this process (which by no means is finished) I've learned two important things. Firstly, this is not a "german problem" but one all of humanity faces. Beside the concentration camps of the nazis stood especially the industrial extermination of so called "dying classes" in so called "labour" camps out during the reign of the Bolschewiks in the former USSR. That this stands out is because it is another (yet the same) expression of the same problem during the same time. But again I have to put this off until I come to Hannah Arendts book.

Secondly, in retrospect such things are (almost) always portrayed in a way that just some few persons are "guilty" and certainly never oneself. "Hitler has seduced the people!" or "Stalin did that!" or " The SS did it!" oder "I have just followed orders to not be shot but I am not personally accountable!". Well, I have to admit that sometimes more honest approaches exist (the movie Schindlers List comes to mind or some parts in exhibitions and such things). One could say "well, of course" but it isn't! Because it is normal to imagine oneself as being a "good person". And if one is socialized since birth with the "somebody else is responsible" it's really hard to break out of these thinking-patterns. I needed an incredible long amount of time in which I read, heared, saw "crumbs" of different opinions here and there until I finally realized that something is fundamentally wrong with the prevailing narrative.

The books of the triptych take pivotal roles in this very long process.

Solschenizyn confronts extremely directly the question regarding the viciousness in every single human being in his work. He's doing this by documenting how people that can be your neighbours, how people that are the husbands and wifes and the mothers and fathers and the brothers and sisters to other people are becoming butchers (again: quite literally). As I said above did this have a heavy impression upon me especially in the first two parts. In those he portrays in detail the processes in the torture cellars of the Lubyanka, where the NKWD (which later became the KGB) was residing. Of course not all inhabitants of the Archipelago went through the Lubyanka. But as Hannah Arendt so brilliantly analyzes does the specific location not matter because the terror is everywhere since it is an integral component of such systems. Undirected, unjustified and everyday terror is actually one of the defining components of a totalitarian state. Because of this the terror continues in the camps and even afterwards. An inhabitant of the Archipelago never ceases to be an inhabitant; not even after a release. The terror is not just brought upon the prisoners by the guards but also by other inmates; encouraged by the whole system. Solschenizyn documents this in the remaining parts of the book.

Reading his work enabled me to actually get insight into the modus operandi of a totalitarian system. His documentation is not removed from the subject by academic reasoning, abstraction

or setting things into a wider perspective. And one sentence is still stuck with me (approximate translation from the german version):

> The streams need to flow.

With that he means humans being processed (!) by the vast industral Gulag system of terror. This got stuck in my head because it is a concrete, visual expression of what defines a totalitarian system. At that time I didn't know this but Hannah Arendt put that into clear words.

At this point I'd like to mention the doctoral thesis of Paul Martin Neurath: "The Society of Terror: Inside the Dachau and Buchenwald Concentration Camps". No worries, it is written like a book and in it the author documents (and partly analysis) in detail his own experiences in said concentration camps. While this is not the topic of this review it shows the connection between these two totalitarian systems which by many people are still seen as two completely different things. The terror-system of the nazis and the terror-system of the Bolschewiks are basically one and the same.

It shall also be mentioned that Solschenizyn isn't really giving explanations for said terror of the system. It is what it is -- the streams need to flow. I had the impression that this was not the purpose why he wrote his book. It shall just be a dedicated to the documentation of the atrocities of said system.

Finally I have to say that this work left me (until recently) with a frosty fear deep in my bones. Because reading it made it possible to answer the above question very palpable for myself: I could and would be very evil :(That put a heavy weight into my shoulders and thus, despite having an answer, did this whole topic not leave me. But from there on I've tried to find another answer, an answer how I can make sure NOT to fall for my own evilness. It needed Hannah Arendt to show me a way out of this dilemma. Or rather, to show me that I've been all the years already on a path so that this situation, which is immanent for every human, does not become a (personal) dilemma in the first place.

Why seems education not to help?

Above I've asked:

> How could the probably best educated nation (at that time) fall for such an ideology so fast?

I didn't answer that but mentioned the (high and good) education of one of the most powerful and ideological commited nazis -- Goebbels.

This should be kept at the back of the mind in the following. Even though Marx doesn't answer this question *directly* in "Capital" so is he providing the backgrund knowledge regarding how all of what happened could happen (despite education).

Marx could write just partly "after the fact" since the processes and phenomena he used to write about in Capital -- the industrialisation of (western) society (and how these shapes society) -- were still ongoing. So (like Solschenizyn) he needed to write about what was in front of his eyes. Nonetheless, all he writes about is thoroughly analyzed (especially of course within his theory of economics).

"Capital" is so important within the Triptych, because it delivers a lot ... wait ... let me say that again: A LOT general background knowledge about the economical and social circumstances of that time. This is necessary to analyze said circumstances which, less than 100 years after Marx, will lead to the industral extermination of human life.

Relativly clear is the presentation of the capitalistic conditions of production and how their "evolution" leads to imperialism. Hannah Arendt builds upon that. She's discussing and analyzing in detail that the (not just monetary) "foreign adventures" (with all the atrocities and butchery that included) were unavoidable in a capitalistic society. The reason is that at one point the capital can't continue to grow in the respective countries and thus, needs to act abroad. This has of course repurcussions back upon said nations and everything contributes so that totalitarian ideas could gain ground among the people. What I just wrote is of course an improper summary and simplification! So please read these books for the full picture because Karl Marx and Hannah Arendt analyze the mentioned aspects spot on in their respective books.

However, more important are the testimonials Marx could give (as a contemporary) regarding the advancing industrialisation und the many atrocities against humans that went along with it. This is one of the two most important things I got out of reading Capital -- many history lessons that were NOT sugar coated and were about topics usually not told to you by anyone. The other thing is a *MASSIVELY* (!) better understanding of the economical conditions and circumstances that are the basis of our society. And Marx writes in a way that makes reading about this almost exciting.

Anyway, one could make oneself comfortabel and simply use aforesaid atrocities during industrialization as the reason why the people first fell for antisemitism and afterwards the nazi ideology: the people needed a scapegoat. But THIS is fundamentally (while not necessarily in specific cases) completely wrong ... and one of the most important things I've learned by reading "The Origins of Totalitarianism". The (actual) underlying reason is rather, that the prevailing economical and social system removed the "meaning of life" from the people. Hannah Arendt describes this process as

> [...] [the] transformation of classes into masses [...]

... and Marx documented very precisely how it came to this process due to the mode of action of capitalism. A sidenote: this transformation, or rather the effect the transformation had upon the peopple by making (transformed) masses out of them, is a very important (if not the central) point in Hannah Arendts analysis (beside the everyday, unpredictable terror as the distinctive mark of totalitarian systems).

However, the above might be too abstract, thus, please let me cite Friedrich Nietzsche. His expression ...

> God is dead

... is both, a lament of this "abandoned" state of humanity, the "aloneness" of the humans in the masses, but also a recognition, yes, appreciation of the possibilities that follow from that for the future human race. Even though this expression is usually taken from his (probably) most famous work "Thus Spoke Zarathustra", so do I believe that the lamentations of the madman in the third book of "The Gay Science" is decisive:

> [...] "Where is God?" he [the madman] cried; "I'll tel1 you! We have killed him -- you and I! We are all his murderers. But how did we do this? How were we able to drink up the sea? Who gave us the sponge to wipe away the entire horizon? What were we doing when we unchained this earth from its sun? Where is it moving to now? Where are we moving to? Away from all suns? Are we not continually falling? And backwards, sidewards, forwards, in all directions? Is there still an up and a down? Aren't we straying as though through an infinite nothing? Isn't empty space breathing at us? Hasn't it got colder? Isn't night and more night coming again and again? Don't lanterns have to be lit in the morning? Do we still hear nothing of the noise of the grave-diggers who are burying God? Do we still smell nothing of the divine decomposition? -- Gods, too, decompose! God is dead! God remains dead! And we have killed him! How can we console ourselves, the murderers of all murderersl The holiest and the mightiest thing the world has ever possessed has bled to death under our knives: who will wipe this blood from us? With what water could we clean ourselves? What festivals of atonement, what holy games will we have to invent for ourselves? Is the magnitude of this deed not too great for us? Do we not ourselves have to become gods merely to appear worthy of it? There was never a greater deed -- and whoever is born after us will on account of this deed belong to a higher history than all history up to now!"

The despair that is expressed herein because of the aim- and meaninglessness of modern life is almost physical. Of course this has to be seen within the time it was written, the same time Marx wrote Capital. In addition need the circumstances of this time to be compared with the conditions before the industrialisation started. And the final remarks in this quote are of course directed towards the "Ubermensch", the supermen. But by NO MEANS AT ALL in the perverted form the nazis defiled Nietzsches work with their crackbrained "interpretation"! It rather has to be seen in an interpretation that the modern human finally will be able to eradicate pestilence, misery, hunger and will be able to land on the moon. And all of that because humanity is free from the former shackles and can decide by him- or herself which direction life shall take. Nonetheless, all these glorious things need time, while the "transformation of classes into masses" was up and running with full speed.

I wrote all that because this positive outlook among all the misery is what also characterizes the triptych. But I'll come back to that at the end.

Reading Marx makes (more than 150 years later) clear, why it didn't matter that Germany probably was the best educated country of the world when the totalitarian ideology became popular among the european nations. If the majority of the people are in as miserable conditions as described in Capital (or maybe a bit but not much better), it doesn't make any difference if the average education is higher or if a (so called) educated middle class exists. The humans that went through the transformation into masses could easily be used by evil people to further their goals. See Goebbels above because this is the direct connection to The Gulag Archipelago since the latter answers the question how evil individuals can be. And if this can take place an educated middle class doesn't matter if it doesn't take personal (!) responsibility!

The same happened among the Bolschewiks. They didn't use a perverted interpretation of Darwins theory of evolution (vulgo: race) as the fundament of their ideology but a perverted interpretation of Marx theories -- "dying classes" and the ever changing definition of what the same means because "the streams had to flow". Btw. Hannah Arendt absolutely acknowledged Marx achievements, but she was also one of the first who pointed to the fact that the same ideas are abused by the Bolschewiks. She did that already in a time when many intellectuals saw the former Soviet Union still as something to aspire to (that was before Solschenizyn published his book). Naturally she didn't make many friends because of that.

So far regarding the Capital in the Triptych. There is no direct connection to the questions that distress me since it was written before the catastrophies that spured said questions even happened. But Marx provides very important background knowledge which is necessary to be able to locate and place the questions (and the answers) in the correct frame. In a way the knowledge I got from reading Capital is the "substrate" which enabled a serious dealing with the topics I talk about and how I am "located" in them. It also helped to better understand the world (and the prevailing circumstances).

Anyway, the above insight that education doesn't make a difference, as long as personal responsibility is lacking, reinforced the fear in my bones ... until (I've said it before) Hannah Arendt came along.

Epiphany and Hope

I wrote that "The Origins of Totalitarianism" is

> [t]he centerpiece, the heart of the Triptych, that holds everything together and lets you see how truly great and important all three of the works are [...].

This is the reason why I've used some of the results of Hannah Arendts analysis in the last two sections. Otherwise it wouldn't have been possible for me to describe the relevance the works of Marx and Solschenizyn had regarding the two very personal and distressing questions: how evil am I and why seems education not to help?

Almost all educational efforts regarding the industrial extermination of humans are usually just parts of a (horrible) overall picture. Be it in school, exhibitions, many books about the relevant

issues, eyewitness reports etc. Over the years I've encountered some few sources that "step back" and allow to see more of the human condition with respect to these themes. Karl Marx and Alexander Solschenizyn's books stand especially out since these look upon whole portions of these interlocked topics.

To be able to undertake her analysis Hannah Arendt needs to provide a lot of background knowledge. This is centered around two topics. The first is about the development of the (european) Jews and the (political) antisemitism. The second is about the emergence and attributes of imperialism. Arendts observations contain not a shred of unnecessary information. And most of what she's writing was complementary to what I already knew. Well, actually I knew the broad strokes of a lot of the things she's writing about, but the perspective (and additional knowledge) she provides does not fall under the canon of knowledge non-specialists usually encounter.

While writing I realize how self-censorship starts to set in. Am I allowed to write "the jews" knowing what Hannah Arendt means when she writes it the same way, but also knowing that I'm absolutely not able to convey that? Thus, I decided to abstain from giving a short summary of how I understand the first part of her book. This would just get misinterpreted and taken out of context and I don't want Scott to get in trouble for that (in case this gets published). This situation is somewhat surreal, because it is exactly what Hannah Arendt talks about ... well, dear reader, I guess you have to read it for yourself.

@Scott: The following paragraphs are what I'm talking about. In case you think this book review is worth publishing, please decide for yourself if it is worth possibly (likely?) getting in trouble for it. If you think it is, please remove the above paragraph and just keep this in here.

If Hannah Arendt writes "the jews" she means a culturally relatively homogenoues group that, through the course of centuries, never really got integrated (as a group) into the european nations as citizens of the same. The reasons are external and internal. When I write in the following "the jews" I use this term in the same meaning Hannah Arendt uses it.

Regarding the first topic she's retracing how fundamentally important the jews had been for the functioning of the european feudal states. The reason is that the jews supplied the money for the rulers of the feudal small states. Very descriptive is this fact in the role if the so called Court Jews. Being that close to the sovereign means they had potentially (!) an incredible amount of political power in their hands. I write "potentially" because the jews have NEVER really used that power. With the one exception that they've tried to get some protection for themself (in the form of protective laws). Since pogroms against the jews were common in these days this is understandable.

The problem developed in two ways. Firstly, the importance of financing the state was dwindling rapidly in more modern times. The reason is, that (other) private banks took over this role. This however was a result of the industrialization und the evolution of capitalism in both of which the jews didn't show any interest. They simply (and quite consciously) didn't want to become factory owners even though they had plenty opportunities. Thus, the private capital gained massvily in

importance. Not the least because of how the effects of imperialism were acting back upon the politics and societies of the european states. Thus, the jews lost the above mentioned protection since it was (more or less) directly connected to being useful to the sovereign. Secondly, the (other) citizens still believed that the jews had an incredible power and were steering the nations from the shadows. Yes, quite literally this old conspiracy theory ... sounds eerily curent, doesn't it *sigh*. That had (and has) absolutely NO factual basis since the jews had at that time already lost the potential power they've had in the centuries before that and while they had it they've never used it (see above). This (wrong) believe however became the tail hook used by the antisemitic associations to give the (transformed) masses (and the actions of the latter) direction (and probably (imagined) meaning of life).

Thus, we arrive at the foundation if the nazi-regime: a race-ideologie (which, as I've mentioned already above, is a perversion and abuse if ideas laid out by Darwin). Concrete, the imagination that "inferior elements" exist that needs to be eradicated and the everyday terror that goes hand in hand with this. Said this it is EXTREMELY IMPORTANT to understand, that the jews were ment to be just the first to be erased from the face of the earth since the nazis build upon the historical antisemitism (altering it for their needs into a political antisemitism). But principally everybody fell under the definition of "inferior elements". This is why they've killed disabled people and persons with hereditary diseases. This is why they had already started to set everything in motion to eradicate the polish and ukrainian people once all the jews would have been murdered. They just couldn't proceed with their plans because they fortunately lost the war. But "inferior elements" were also priests, free thinkers, of course political opponents (which didn't really play a significant role during the nazi-regime), parents that got denigrated by their children and generally every human being. Because (as I've mentioned several times alread) the everyday terror (e.g. because of not knowing why your neighbour was arrested and when it will be your turn) is *the* characteristic of a totalitarian regime. Or to say it again with Solschenizyns words: the streams need to flow.

It wasn't much different with the Bolschewiks. They used a class ideology (instead of race) which was a perversion of the ideas of Marx. The definition of "dying classes" which need to be eradicated was also changing all the time. Be it the members of the bourgeoisie, combatants that have been too long in foreign countries (because they had to follow orders), the victims of the regular purges in the public administration etc. pp. Again, the everyday terror as the defining characteristic of totalitarian rule.

But terror always needs to be executed by humans. Be it agents of the NKWD, member of the SS, the butchers in the torture cellars, physicians willingly giving poison to patients, ideologically raised youth that get other people hanged and so on and so on and so on. And all of this gets me back to the evilness in me and in how far education might enable an upbringing that allows to develop a sense for personal responsibility.

Above I mention two topics to which Hannah Arendt provides background knowledge. The role of the jews, antisemitism and the race-ideology of the nazis developed from it (respectively the almost identical class ideology of the Bolschewiks) was just the first topic. The other is the development of imperialism.

@Scott: Here ends the maybe too controversial part.

I've mentioned already that certain aspects of the development of imperialism were acting back upon the countries the capital was coming from. This includes all the societal currents of these nations (including antisemitic prejudices). Marx has shown that the raison d'être of capital is to increase. This is done by expanding its sphere of influence. At one time this isn't possible any longer within a country and the activities of the capital are relocated abroad. And thus we have imperialism. ... Whew! That is a gross simnplification of this issue, but I'm afraid it has to be enough.

The point is, that from the mode of action of capitalism follows that there never can be a stagnation of this expansion process. At least not before the whole world is conquered. Hannah Arendt uses the words of Cecil Rhodes to make this point clear:

> I would annex the planets if I could [...].

This however was (once again) combined with an infinite amount of horrible crimes against other humans. See for example the atrocities of the Belgians in Congo, or of the Britains in their colonies, the genocide of the indigenous people (no matter which country) and so on. Throughout all of (relatively) modern (not just western) history the abyss of the evilness of (supposedly) educated humans is starring back at us. Nonetheless, without euphemizing said atrocities, presents Hannah Arendt the reasons why these crimes are of a fundamentally different character than the everyday terror of the nazis (despite the same result) adn why a differentiation is important. Mainly, because the former are directed against clearly defined groups of humans, while the latter is directed towards everybody.

This fundamental difference is also because the modes of action of capitalism prohibit the latter. One may not believe this, thinking about all the industrial "partners" supporting the Nazis (now and then). But capitalists need workers because it is them that are creating surplus value (and as cosumers, too). The economic balance of the concentration camps and the gulags was disastrous. Taking the circumstances of these camps into account this makes sense. Due to the everyday terror a prisoner was at all times at risk being murdered, no matter if he or she worked well. But than again, the economic balance wasn't even taken into account by the totalitarian systems because the industrial murder of humans is part of the ideology and an instrument to execute said everday terror. Thus it doesn't matter how inefficient it is in economical terms because the camps (even the so called "labour" camps) have a completely different meaning and reason why they exist in the first place.

The link between imperialism and totalitarianism is now in the following. Capitalistic expansion can't end before everything is conquered; the terror can't end before every "inferior element" is destroyed. The war was a (quite literal) aspect of this perpetual "expansion" and a consequence of the totalitarian nazi ideology. For the bolschewiks it was the proclaimed "everlasting revolution" inside the borders of the former soviet union. Imperialism had shaped the politics and society of the nations for decades. Thus, it was normal for the people when a new group (nazis/bolschewiks) they were cheering for also proclaimed "perpetual expansions" that never

could reach an end. And why should anyone take personal responsibility if the circumstances as they are now supposedly won't ever change?

This was a very long (und improper shortened) detour into some of the features of Hannah Arendts analysis. A very important thing is, that she has realized that Hitlers and Stalins speeches and pamphletes were to be taken LITERALLY! Both of them did (or honestly tried to do) everything they said they are going to do. No mellowing in office, no growing into the role of being a statesman ... again ... that sounds eerily familiar, doesn't it.

To come to an end I'd like to say by reading Hannah Ahrendt book I managed to finally find answers to the two above questions that gnawed away what I consider is me. This happened in a very unexpected manner, because her analysis is "coming from unforeseen direction". Maybe that is the reason why her analysis finally managed to untie the "knot" in me. Which is a more important reason (of several) why this book was such an epiphany to me.

So the essence of her book is (for me) the following. If I earnestly try to be honest to myself and face the painful question regarding my own evilness, I can recognize the "mechanisms" inside of me that lead in its final consequences to the catastrophies of the 20th century. Sounds simple and probably everybody else has realized this already, but well, here I am, needing a proper anlysis. Anywway, being aware of this AND if I'm able to connect this with myself, NOT as feeling of guilt, but as honesty towards myself, than there is at least a chance that I'll recognize if somebody wants make me to an accomplice to (not just industrial, most likely even just indirectly) murder. And THAN I can do something against it. THIS is the personal respnsibilty I was talking about so often. This is NOT Hitlers responsibility! Because it is the sum of refusal of individual responsibility that leads to disaster.

But in here lies also the the inherent hope und the beauty (not just intellectually) of the Triptych. The topics these three books are examining are grave, and often terrible. But still a fundamental believe is expressed in the writing of these books: humanity as a whole, in form of the individuals constituting it, actually is able to take upon this personal responsibility. A similar catastrophy in the future is NOT an inescapable fate, but we have it in our own hands to avoid it.

I think that these three authors were convinced that history does NOT have to repeat itself, that humans actually are able to learn from past experiences. Otherwise their books would not have needed to be written.

This positivity, despite the hard to digest topics, this fundamental believe in the intrinsic possibilities of humanity, that is able to oppose the evil in oneself with good, is the reason why these three works had such a tremendous influence upon me and will likely have so for the reminder of my life.

And well, to finish this review I'd like to say that everything Hannah Arendt, Karl Marx und Alexander Solschenizyn write about is what we've seen the last couple of years (and still see) in the political sphere. We are not damned to blindly stumble through the fog of events unfolding around us. We can understand these events because we can stand on the shoulders of these

three giants. And this enables us this time to change the course of society before it might be too late.

On The Origin Of The Human Mind

On The Origin Of The Human Mind, Second Edition by Andrey Vyshedskiy, Ph. D.

About 60,000 years ago, something fundamental seems to have shifted in the human mind. Before that point, you have artifacts-- stone spear points, notches on antlers, burial of the dead-- but very little progress or invention. Early Homo Sapiens was better at making spear points than Homo Neandertalensis, who was better than Homo Erectus, but in each case the shift came with the evolution of the species, and then stayed unchanged for tens of thousands of years. But after this point in time, everything changes. People spread quickly into every part of the globe, including places only reachable by boat. Artwork appears everywhere: creative, imaginative, fantastic. New tools of every kind begin to appear. New ways of organizing society pop up. People are able to organize into larger and larger groups. We either woke up, or we first began to dream.

So what changed? Looking at skeletons, there is no difference between members of our species before and after the change. We already had the ability to speak, to control our hands finely, to walk upright, to craft spears, to communicate to others. What must have changed is some more subtle evolution in how the brain is organized.

Until I read Sean Carroll's *Endless Forms Most Beautiful*, I didn't understand that evolution mainly works its changes to the body by modifying the timing and extent of developmental processes. A giraffe grows longer legs because a mutation or genetic recombination causes the "keep growing" signals to persist a little longer; and its longer legs enable it to reach more leaves and cover more distance in each step, so it is able to pass on those genes which control how long that development process persists. Vyshedskiy proposes that something similar happened to the development of one part of the prefrontal cortex. The juvenile period, where those neurons are able to grow and adapt, lasted a little longer, long enough that individuals would have already had time to learn a large vocabulary when a myelination process took place, allowing these controlling neural signals to reach parts of the brain already associated with memories. The growth of the prefrontal cortex enabled what Vyshedskiy calls "mental synthesis." It is the process of bringing into alignment the sychronous neural firing of one memory with the firing of another memory to form a new concept that is a combination of both.

This change, he claims, made all the difference. Before, it was possible to learn hundreds or thousands of words and associated concepts. But with the ability to

recombine concepts to create new ones, people gained the ability to form an unlimited number of new propositions. Before the change, people were very good at dealing with situations that had happened before, because they had excellent memories and were able to learn the skills of their parents through direct observation. But after the change, people were able to imagine new situations that had never occurred. They could invent new tools (like needles with holes for thread) and new ways of hunting (like using long, narrowing V's made of stone walls to chase game into) and communicate these complex ideas without direct demonstration to others who had the ability to understand from only hearing something described.

The ability to use prepositions (over, under, next to), recursive grammar, and other features of human language missing from all animal languages seems to be associated with the proper development of this part of the prefrontal cortex in the right kind of environment. When children grow up past the age of six without being exposed to language with these features, they are never able to learn them-- it is a permanent disability. However, when a group of children invent a language without being exposed to other languages (as has happened several times with communities of deaf children, for instance) it includes these features. It seems that whenever you have a community of people who want to communicate, they will spontaneously invent language in its full richness. But without that, the children are not only unable to learn key features of language, their ability to perform many other skills that require imagination are also impaired. They can't solve problems they haven't already seen solved. They can't understand the difference between the idea of a snake biting a dog or a dog biting a snake: they will always tend to confuse the two, because their brain is just creating a kind of stew of the idea of a dog, the idea of a snake, and the idea of biting, rather than creating the idea of a snake biting a dog or vice versa. His theory includes a detailed model of how this process works in the brain. When they descended from the trees onto the savannah, people needed to be better at putting together visual clues to the presence of predators into the notion of what kind of predator they were facing. So over millenia, the visual system devloped the ability to entertain hypotheses and combine ideas by changing the firing patterns of two disconnected ideas to bring them in synch and turn them into one idea. This was able to occur due to changes in the myelination of long neural connections, which slowed down or sped up the rate at which signals traveled in order to bring them in synch. This ability to form new concepts visually would extend to the ability to form new concepts linguistically, to talk about not just a tree and a bear, but a bear in a tree.

So if you have to have a community for language to develop, but it only occurs due to a mutation, how could language ever have occurred? Vyshedskiy imagines a very specific event happening in one family: an unusual pair of identical twins are born. They are slow to develop: they don't avoid danger at the age of two like the other children. But

they invent their own way of communicating between themselves, and as they get older begin to lead the community to do things that have never been done before. They are successful, the tribe prospers, and within a few generations the genes have spread throughout the population. It's a beautiful theory, incorporating evolutionary theory, neuroscience, child development, art history, and many other threads. Vyshedskiy provides a long list of predictions and ways his theory could be falsified. This is as solid science as has ever been done when dealing with these kinds of questions.

Still, I have my doubts. Here are three issues that he didn't discuss which pose difficulties for the theory:

1. What about aphantasia? Vyshedskiy spends a lot of the book talking about the development of the primate visual system, because he sees mental synthesis as happening in the visual system. It is, quite literally, imagination: the ability to form a mental image of something one has never seen by combining things one has seen. But some people completely lack this imagination ability, yet are able to perform without difficulty in everyday life. He presents a list of six questions that he claims cannot be solved without the ability to visualize something you've never seen:

   Question 1. Mary is taller than Julia. Jennifer is taller than Mary. Therefore, Julia is the shortest girl. Answer: True / False
   Question 2. A round wall clock that has been rotated until it is hanging upside down will have a minute hand that points to your right when it is two forty. Answer: True / False
   Question 3. If the word, “BOM,” is written under the word, “PRY,” and the word, “KOK,” is written under “BOM,” then the word, “POK,” is formed diagonally. Answer: True / False
   Question 4. Six identical triangles can be formed by drawing two straight lines through an octagon’s center point. Answer: True / False
   Question 5. If a doughnut shaped house has two doors to the outside and three doors to the inner courtyard, then it’s possible to end up back at your starting place by walking through all five doors of the house without ever walking through the same door twice. Answer: True / False
   Question 6. The angle formed by the two hands of a clock is larger than 90 degrees when the time is 6:20. Answer: True / False"

   I posed these questions to an acquaintance with aphantasia, and he solved all of the problems using logical reasoning:

   True. It's just a logical puzzle. No visualization needed. Consider replacing height

with age.
True. It's just math. From the top, 40 minutes is about 270 degrees. Rotate 180 degrees and it's 90 degrees. 90 degrees is left.
True. Order all 3 words. Then take the first letter of the first word, the second letter of the second word, and the third letter of the third word. POK.
False. Dividing a convex polygon with a line creates at most 2 polygons. Dividing it with 2 lines creates at most 4 polygons. There can't be 6 triangles if there are only 4 polygons.
False. Again, it's purely logical. You can't go back to the start by crossing an odd number of times (3 inner doors). It's like asking if flipping a switch 3 times will turn it back to its initial state.
True. Two hands of a clock always form 2 angles whose total is 360. Hence one of them has to be greater than 90 degrees. From the top, 6 hours is 180 degrees and 20 minutes is a bit over 90 degrees (let's say 91). The angles would be 180-91 (89) and 91-180 (271). These questions require no visualization, and I'm surprised people without aphantasia would feel the need to visualize them.

While I solved them using visualzation, if I had to program a computer to solve them, I would have used the techniques my friend described in order to encode them in a way the computer could solve. I don't feel this is a knock-down argument, though. Vyshedskiy makes it very clear that he is talking about an ability that underlies both visual imagination AND language. So if my friend can solve them through language and math, he could still be using this ability in some way, creating results available to other parts of his brain, but somehow not reaching the parts associated with conscious perception.

2. What about less extreme creativity? One example Vyshedskiy gives of recombination is an early sculpture of a man with a lions' head. This is clearly a result of imagination, in no uncertain terms. But other situations , much less dramatic, also seem to involve conceptual combination. Suppose a young fox finds itself in a kind of field it has never seen before, covered with cold, white stuff. It plays in the field a while, getting a sense for how the snow behaves. Now it sees a young rabbit in the snow. It has chased rabbits before, but never in the snow. In order to chase the rabbit, it needs to somehow combine the ideas of "chasing rabbit" with "running through snow." Just because this is a more commonplace occurance, doesn't mean that the same kind of thing, combination of ideas, hasn't taken place. Vyshedskiy tries to head this off in specific cases, showing that what seems to be creative thought in animal experiments could actually be a result of instincts and learning from experience, but it isn't convincing in general. I think there would need to be a lot more experiements

with animal creativity and problem solving before we could really delineate what they can and can't do.

3. What about Machine Learning neural language models? I've been working for the last few years with neural network language models trained on vast text corpora. The most recent of these can do some pretty incredible things. For example, given a prompt that puts some popular fictional character in a situation that character has never been in (like Tony Stark baking a cake) the model can do a half-decent job of continuing the story, including elements of both Tony Stark's life (e.g. his assistant Jarvis) and the process of making a cake (pouring flour, etc.) This is clearly the combination of two unrelated concepts in the neural network state that is used to generate the probabilities for each next word in the story. But though the language model is able to do this, it can't form long term plans, or even maintain any real consistency over more than a few sentences. So I think Vyshedskiy is lumping multiple abilities, all of which people have to have to be able to do the actions he wants to explain, into one ability of "mental synthesis." Without other skills (which apes may already have?) mental synthesis alone is not able to do all the work he wants it to do.

   I highly recommend the book, but if you want a shorter read, his recent paper on the topic ("Language Evolution to Revolution") covers all the same material with fewer examples and less background material, and includes an essentially "historical fiction" account of the twin-brothers hypothesis, which I enjoyed. The digital version of both the book and the paper are available for free on the web.

Essay On Man

Prologue (things this review is not about)

There’s a common theme in all modern philosophical debates: Their struggle for relevance.

In 2019, the pop intellectuals Jordan Peterson and Slavoj Žižek met in Toronto for a debate on their philosophies. For the thousands in the live audience, it must have felt like “the debate of the century”, but as this Guardian article notes, it likely was not. If you haven’t heard of the debate before, rest assured: you don’t have to look it up, as it probably won’t be of lasting importance.

In 1971, the philosophers Noam Chomsky and Michel Foucault met in Eindhoven for a debate on their philosophies. This one is much more significant: While we would probably be at mostly the same point today had the 1971 debate not taken place, it's the perfect studying object for understanding Chomsky, Foucault and the impact their schools of thought have had on the present. But judging by YouTube views and Wikipedia article size, today there's a lot less interest in the 1971 debate than the 2019 one and I'm one of the viewers who learned of it because of the Peterson-Žižek debate.

In 1929, the philosophers Ernst Cassirer and Martin Heidegger met in Davos for a debate on their philosophies. Today even the Wikipedia article on the Peterson-Žižek debate directly references it. But until 1973, no manuscript was published and the public reception completely ignored that it even took place. If you haven't heard of the debate before, this is a shame, as it really is significant: While we would probably be at mostly the same point today had the 1929 debate not taken place, it's the perfect studying object for understanding almost everything that happened in philosophy and western society in the 20th century.

I learned about the 1929 debate and Ernst Cassirer when reading Wolfram Eilenberger's 2019 book "Zeit der Zauberer" (time of the magicians) in which he follows the four philosophers Wittgenstein, Benjamin, Heidegger and Cassirer through the years 1919 to '29, with Cassirer the only one I hadn't even heard of before (I can highly recommend the book, but unfortunately, this review is not about it). As much as I personally dislike Heidegger for later siding with the Nazi party (I should clarify that I don't know enough for a solid moral judgement and this review is not about Heidegger anyways), I admire Cassirer for being historically right many times and the amount of personal suffering this caused for him. He was in a bad position for many reasons: for being a Jewish philosopher in the 1920's Germany, for defending the Weimar Republic democracy and after fleeing Germany in the 1930s first to England, then Sweden, then the US, he unexpectedly died of a heart attack in April 1945 (so in case you were wondering why he was almost forgotten, you now have a few hints).

Cassirer's philosophy started a strange pull and fascination for me. If you divide people into hedgehogs and foxes, Cassirer is as foxy as one can get. He spent an insane amount of time researching various topics way outside of what you would consider "conventional philosophy", including a book he wrote on Einstein's then-newly-published theory of general relativity. And he spent years researching myth and language in Aby Warburgs library in Hamburg (again something this review is unfortunately not about – if you haven't heard of it, you really might want to follow this link). There's a ~4000 word summary of Cassirer's cultural philosophy on the German Wikipedia (most of which is suspiciously absent from the English-speaking internet, so your best shot is either to learn German, use an automated translation or simply read on) and reading it, I was

hoping that Cassirer could shed a light on a few current topics, including polarization and the crisis of media / communication / science / (insert whatever else sound appropriate to you). This may seem a little bit obscure, but in the Wikipedia article linked above, there's a good deal of discussion of different views of the world that are non-reducible to each other. Given the number of futile arguments I've spent recently where I cannot find common ground at all, both online and offline, it seems that reading Cassirer might be able to help. It couldn't hurt.

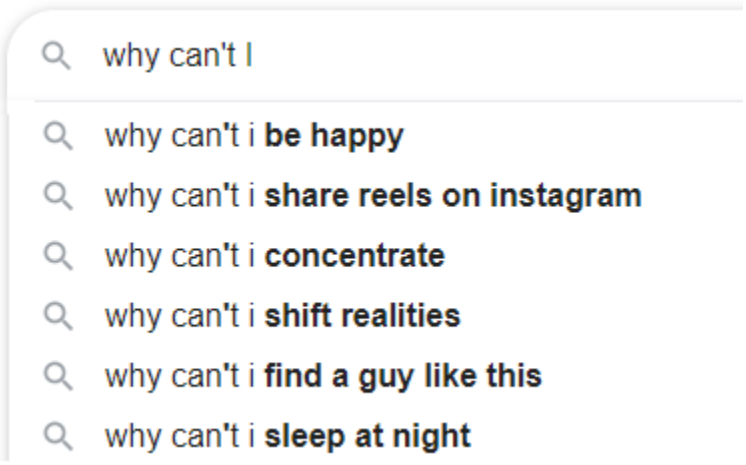
Cassirer's philosophy of symbolic forms is a 3-volume monster, but shortly before his death, he published a condensed version in english, "an essay on man", commenting on his reasons against simply translating the then 25-year-old volumes:

> Since that time the author has continued his study on the subject. He has learned many new facts and he has been confronted with new problems. Even the old problems are seen by him from a different angle and appear in a new light. For all these reasons I decided to make a fresh start and to write an entirely new book. This book had to be much shorter than the first one. "A big book," said Lessing, "is a big evil." (Introduction to an essay on man / page 11)

Reading 250 condensed and updated pages instead of 1200 outdated ones sounds like a good deal, so let's see what we can get out of it.

Part 1: What is man?

It might really be good to understand our own nature – or at least, this is the question Cassirer starts with. He frames it in the philosophical impetus "know thyself", but a 21st century view of the question might be all of these combined:



He starts with a 60-page summary of why philosophy failed at this question so far. This makes sense: assuming your question is universally important, why hasn't anyone already answered it? Unfortunately it's complicated. Cassirer starts with classical philosophy:

> We cannot discover the nature of man in the same way that we can detect the nature of physical things. Physical things may be described in terms of their objective properties, but man may be described and defined only in terms of his consciousness. (…) Man is declared to be that creature who is constantly in search of himself – a creature who in every moment of his existence must examine and scrutinize the conditions of his existence. (…) "A life which is unexamined" says Socrates in his Apology, "is not worth living". (page20- 21)

… moving on to religion:

> Religion shows us that there is a double man – the man before and after the fall. Man was destined for the highest goal, but he forfeited his position. By the fall he lost his power, and his reason and will were perverted. The classical maxim, "Know thyself," when understood in its philosophic sense, in the sense of Socrates, Epictetus, or Marcus Aurelius, is therefore not only ineffectual, it is misleading and erroneous. Man cannot confide in himself and listen to himself. He has to silence himself in order to hear a higher and truer voice. (page 28)

… enlightenment:

> Modern philosophy and modern science had to accept the challenge contained in these words. They had to prove that the new cosmology, far from enfeebling or obstructing the power of human reason, establishes and confirms this power. Such was the task of the combined efforts of the metaphysical systems of the sixteenth and seventeenth centuries. These systems go different ways, but they are all directed toward one and the same end. They strive, so to speak, to turn the apparent curse of the new cosmology into a blessing. (page 32)
> Every great thinker – Galileo, Descartes, Leibniz, Spinoza – has his special share in the solution of this problem. Galileo asserts that in the field of mathematics man reaches the climax of all possible knowledge – a knowledge which is not inferior to that of the divine intellect. (…) Descartes begins with his universal doubt which seems to enclose man within the limits of his own consciousness. (…) Leibniz combines this metaphysical proof with a new scientific proof. (…) Mathematical reason is the bond between

> man and the universe, it permits us to pass freely from the one to the other. Mathematical reason is the key to a true understanding of the cosmic and the moral order. (page 33-34)

… evolution and modern empiricism:

> Modern thinkers have held that, after the innumerable fruitless attempts of former times, they have definitely succeeded in accounting for organic life as a mere product of chance. (page 36, on “the Origin of the Species”)
> All these philosophers are determined empiricists: they would show us the facts and nothing but the facts. But their interpretation of the empirical evidence contains from the very outset an arbitrary assumption – and this arbitrariness becomes more and more obvious as the theory proceeds and takes on a more elaborate and sophisticated aspect. Nietzsche proclaims the will to power, Freud signalizes the sexual instinct, Marx enthrones the economic instinct. Each theory becomes a Procrustean bed on which the empirical facts are stretched to fit a preconceived pattern. (page 39)

… rationality (you didn’t see this coming, did you?):

> Rationality is indeed an inherent feature of all human activities. (…)
> Language has often been identified with reason, or with the very source of reason. But it is easy to see that this definition fails to cover the whole field. (…) For side by side with conceptual language there is an emotional language; side by side with logical or scientific language there is a language of poetic imagination. Primarily language does not express thoughts or ideas, but feelings and affections. And even a religion “within the limits of pure reason” as conceived and worked out by Kant is no more than a mere abstraction. (page 44)

… and while Cassirer is at it, he also presents an overview of human perception of space and time. I’ll skip that one, as I’ve already included a lot of quotes above. It took several read-throughs to pick them, as Cassirer’s writing turns out to be extremely dense and ambivalent. Remember the comment in the beginning on Cassirer being as foxy as one can get? His writing shows exactly this, being a long stream of considerations, weightings and comments piled on comments.

So in summary, we made progress along the way, but we’re still screwed, hence the google autocomplete suggestions in 2021 I started with (wait, what? But really, Cassirer provides accurate comments):

> Such is the strange situation in which modern philosophy finds itself. No former age was ever in such a favorable position with regard to the sources of our knowledge of human nature. Psychology, ethnology, anthropology, and history have amassed an astoundingly rich and constantly increasing body of facts. Our technical instruments for observation and experimentation have been immensely improved, and our analyses have become sharper and more penetrating. We appear, nevertheless, not yet to have found a method for the mastery and organization of this material. When compared with our own abundance the past may seem very poor. But our wealth of facts is not necessarily a wealth of thoughts. (page 40)

Part 1.5 (sorta)

Actually, there's more to the first part: aside from setting the stage, the historical rundown and why it failed, Cassirer also outlines his approach to how we *should* think about human nature. Frustratingly, all these parts are mixed together in no particular order, but for brevity, I'll present his approach separated from the rest (instead of bits spread over chapters 2, 4 and the beginning of part 2 without a clear connection between them).

Since all the previous attempts to understand human nature failed, Cassirer proposes a three-part solution instead:

A) Man is a "symbolic animal"

He presents this spread out over several chapters, but as his point has become absorbed in the water and we can read philosophy backwards, here's a simpler introduction: Have a look at René Magritte's picture of a pipe, saying "ceci n'est pas une pipe" (this is not a pipe) and watch your brain screaming "oh yes it is".

> The famous pipe. How people reproached me for it! And yet, could you stuff my pipe? No, it's just a representation, is it not? So if I had written on my picture "This is a pipe", I'd have been lying! (René Magritte, quote from the Wikipedia article linked above)

The same magic happens when you watch yourself handling your lover's letters as if they were delicate objects instead of sheets of paper, or watch children play with bricks and pretend they are animals / cars / houses or whatever else they decide on. While we haven't figured out yet how symbolic representation in the brain works (21st century reference), for whatever it is, it's obviously a really important thing about human nature:

> Reason is a very inadequate term with which to comprehend the forms of man's cultural life in all their richness and variety. But all these forms are symbolic forms. Hence, instead of defining man as an animal rationale, we should define him as an animal symbolicum. (page 44)

B) We posed the wrong question from the beginning

The first part extensively argued that we don't really have a good clue on human's nature. But rejoice – there is hope! Instead of studying individuals, we could look at the hive mind humanity has become: culture.

> Man cannot escape his own achievement. He cannot but adopt the conditions of his own life. No longer in a merely physical universe, man lives in a symbolic universe. Language, myth, art, and religion are parts of this universe. They are the varied threads which weave the symbolic net, the tangled web of human experience. (…) Physical reality seems to recede in proportion as man's symbolic activity advances. Instead of dealing with the things themselves man is in a sense constantly conversing with himself. (page 43)
> The principle of symbolism, with its universality, validity, and general applicability, is the magic word, the Open Sesame! giving access to the specifically human world, to the world of human culture. Once man is in possession of this magic key further progress is assured. (page 55, in a discussion of Hellen Keller and Laura Bridgman, both born deaf and blind, learning words by gestures on their hand palms)

I don't claim to fully understand this, but I think Cassirer's reasoning goes like this: humans interact with all things as if they were symbols, so we can do an epistemic inversion: by studying the symbols, we can study humanity. And the best shots we have are the areas that have proven of lasting importance to humans: If it has kept us going over centuries, it's probably something that mirrors our own nature – not perfectly, but good enough to get a glimpse of what's underneath. Do this from enough perspectives repeatedly, and you have a chance to complete the picture.

If my summary sounds far-fetched: I wrote the paragraph above before quote-mining part 2 and found this at the beginning:

> After this brief survey of the different methods that have hitherto been employed in answering the question: What is man? We now come to our central issue. Are these methods sufficient and exhaustive? Or is there still another approach to an anthropological philosophy? (…) I have endeavored to discover such an alternative approach in my Philosophy of Symbolic

> Forms. (…) Man's outstanding characteristic, his distinguishing mark, is not his metaphysical or physical nature – but his work. It is this, it is the system of human activities, which defines and determines the cycle of "humanity". Language, myth, religion, art, science, history are the constituents, the various sectors of this circle. A "philosophy of man" would therefore be a philosophy which would give us insight into the fundamental structure of each of these human activities, and which at the same time would enable us to understand them as an organic whole. (page 93)

C) Let's throw everything we have at it

The problem is really hard and Cassirer really wants to solve it, so he will do whatever it takes. In his case, this means thirty years of elaborate study of all disciplines he can master:

> It is obvious that in the performance of this task we cannot neglect any possible source of information. We must examine all the available empirical evidence, and utilize all the methods of introspection, biological observation, and historical inquiry. These older methods are not to be eliminated but referred to a new intellectual center, and hence seen from a new angle. (page 93)

This finally brings us to part 2.

Part 2: Man and Culture

Part 2 continues with a detailed discussion of the areas of study Cassirer has identified: Myth, religion, language, art, history, science. This is again him being as foxy as possible; if there is a big idea he has to sell, it's the one we've already discussed and now we're in for a deep dive into the various disciplines. The book's reviews and discussions I've read stop at this point. But this is one of the reasons I ended up reading the book instead of the summaries, so I'll pick a few parts I found particularly interesting and comment on them. This selection is highly subjective and if other parts are more interesting to you, I can only direct you to the book itself.

In the chapter on myth, Cassirer argues against discarding myth as superstitious and instead considers it as a universal human trait:

> There is no natural phenomenon and no phenomenon of human life that is not capable of a mythical interpretation, and which does not call for such an interpretation. All the attempts of the various schools of comparative mythology to unify the mythological ideas, to reduce them to a certain

> uniform type were bound to end in complete failure. Yet (….) Anthropologists and ethnologists were often very much surprised to find the same elementary thoughts spread over the whole world and under quite different social and cultural conditions. The same holds good for the history of religion. (…) Even the ethical ideals of different religions are widely divergent and scarcely reconcilable with each other. Yet all this does not affect the specific form of religions feeling and the inner unity of religious thought. (page 98)

To provide a simple example: A few years ago, I learned about the epic of Gilgamesh, one of the oldest stories still available to us today. It's not intended to be read but to be told, so I can highly recommend listening to a spoken version (I liked this version here, but feel free to pick another one that works for you). Listening to it, I couldn't shake of a clear resemblance to modern epic storytelling in say Marvel movies. Cassirer would argue this is no coincidence – mythical stories are directly relevant to our human nature. The same applies for emotions, which cannot be reduced to a purely objective description:

> If we are under the strain of a violent emotion we have still this dramatic conception of all things. (…) In the new light of science mythical perception has to fade away. But that does not mean that the data of our physiognomic experience as such are destroyed and annihilated. (…) In our human world we cannot deny them and we cannot miss them; they maintain their place and their significance. In social life, in our daily intercourse with men, we cannot efface these data. (page 103)
> "Empirically," says Dewey, "things are poignant, tragic, beautiful, humorous, settled, disturbed, comfortable, annoying, barren, harsh, consoling, splendid, fearful; are such immediately and in their own right and behalf." (page 104)

Cassirer suggests that we should not look down on the mythic approach to reality (compared to a post-enlightenment, rational-objective approach):

> It is a mistake to assume that, at an early stage of development, man lived in a confused world, where the real and the unreal formed a medley, where mysticism and reason were as interchangeable as forged and real coin in a disorganized country. (…) In his ritual of magic or religion, man attempts to enact miracles, not because he ignores the limitations of his mental powers, but, on the contrary, because he is fully cognizant of them. (page 107, quoting Malinowski)
> Myth and primitive religion are by no means entirely incoherent, they are not bereft of sense or reason. But their coherence depends much more upon

> unity of feeling than upon logical rules. This unity is one of the strongest and most profound impulses of primitive thought. If scientific thought wishes to describe and explain reality it is bound to us its general method, which is that of classification and systematization. (…) But the primitive mind ignores and rejects them all. Its view of life is a synthetic, not an analytical one. Life is not divided into classes and subclasses. It is felt as an unbroken continuous whole which does not admit of any clean-cut and trenchant distinctions. (page 108)

I don't really know how much weight to assign to this. But parts of Cassirer's reasoning remind me of the SSC review of Joseph Heinrich's "the secret of our success" that aligns very well with quotes like this:

> The animal drawings and paintings that we find in the lowest stages of human culture, in Paleolithic art, have often been admired for their naturalistic character. They show an astounding knowledge of all sorts of animal forms. The whole existence of primitive man depends in great part upon his gifts of observation and discrimination. If he is a hunter he must be familiar with the smallest details of animal life; he must be able to distinguish the traces of various animals. All this is scarcely in keeping with the assumption that the primitive mind, by its very nature and essence, is undifferentiated or confused, a prelogical or mystical mind. (page 109)

Next follows a detailed discussion of death rites in primary structures, of magical rites, ethical rules resulting from them and the transition from myth to religion. He further expounds on religions, including making a distinction between static and dynamic religions. I'll skip all those and jump back into the book on the role of taboos, which I found particularly interesting. Cassirer argues that taboos served as a way of maintaining social order within emerging cultures, but they slowly turned into a curse as rules pile upon previous rules:

> The more the taboo system develops the more it threatens to congeal the life of man to a complete passivity. He cannot eat or drink, he cannot stay or walk. Even speech becomes irksome; in every word man is threatened by unknown dangers. (…) It was here that religion, in its progress, found a new task. But the problem that it had to confront was extremely difficult, and in a certain sense it seemed to be insoluble. In spite of all its obvious defects the taboo system was the only system of social restriction and obligation that had been discovered by man. It was the cornerstone of the whole social order. There was no part of the social system that was not regulated and governed by special taboos. The relation between rulers and subjects,

> political life, sexual life, family life, possessed no other and no more sacred bond. The same holds for the whole economic life. (…) It was impossible for religion to abrogate this complex system of interdictions. To suppress it would have meant complete anarchy. Yet the great religions teachers of mankind found a new impulse by which, henceforward, the whole life of man was led to a new direction. They discovered in themselves a positive power, a power not of inhibition, but of inspiration and aspiration. They turned passive obedience into an active religious feeling. (page 141)

Cassirer examples include Polynesian tribe culture, Zoroastrianism and Judaism, but the obvious connection for me is today's reluctance of religions (e.g. conservative Christianity) to overcome previous taboos, (e.g. rules of sexual purity in the wake of better birth control). Cassirer might have argued that dynamic religion could overcome a static religion's insistence on keeping previous taboos (but he's not available for comment and I can't claim any definitive authority on this matter). To me, Cassirer's attitude looks like an appreciation of various ways of encoding knowledge combined with extreme sympathy for everyone's honest position. This respect for Chesterton's fence, combined with a humility towards all, might be a good attitude to discussing any current controversy.

Next up are language, art and history. Unfortunately, these are way outside my normal area of expertise, so I'll skip ahead to science. If these topics interest you, I encourage you to read them yourself.

Cassirer treats science as a way to make sense of the world, of reducing the world to understandable and predictable patterns:

> That there is a regularity, a certain uniformity, in natural events – in the movements of the planets, in the rise of the sun or the moon, in the change of the seasons – is one of the first great experiences of mankind. (…) Here we meet with the first traces of the idea of a general order of nature. (…) Mythical and mathematical language interpenetrate each other in a very curious way in the first systems of Babylonian strology which we can trace back to as early a period as about 3800 B.C. (page 265)

He goes on to discuss how knowledge, mathematics and beauty relate to each other and how we have struggled over the centuries to align abstract concepts (e.g. irrational numbers) with reality. You can think of this as a constant struggle between "intuitively correct" and "scientifically correct" that went on over the centuries:

> Quantum mechanics is in a sense the true renaissance, the renovation and confirmation of the classical Pythagorean ideal. But here too it was

> necessary to introduce a much more abstract symbolic language. When Democritus described the structure of his atoms he had recourse to analogies taken from the world of our sense experience. (…) In Bohr's model of the atom there is none of this picturesque language. Science no longer speaks the language of common sense-experience; it speaks the Pythagorean language. The pure symbolism of number supersedes and obliterates the symbolism of common speech. (page 270)

I think the example from physics works best, but he adds an analogous discussion of Chemistry and Biology. He then generalizes this to the history of science in general, and that's it. I'm a little bit disappointed, as this is a harsh contrast to the earlier chapters which I found very rewarding. Maybe there's just too much that has happened since the 1940s (genetics, computer science, artificial intelligence, the replication crisis, …) and if you're interested in a philosophy of science, I'd rather recommend e.g. what Paul Meehl had to say on this in the 1980s. So it's probably good the part on science is so short, as it restricts itself to a framework of how to think about everything that is still to come.

Cassirer closes with a short discussion of what to do with our growing scientific knowledge:

> The work of all the great natural scientists – of Galileo and Newton, of Maxwell and Helmholtz, of Planck and Einstein – was not mere fact collecting; it was theoretical, and that means constructive, work. This spontaneity and productivity is the very center of all human activities. It is man's highest power and it designates at the same time the natural boundary of our human world. In language, in religion, in art, in science, man can do no more than to build up his own universe – a symbolic universe that enables him to understand and interpret, to articulate and organize, to synthesize and universalize his human experience. (page 278)

Here's my interpretation: After the enlightenment and with increasing scientific knowledge, man has lost his perceived status as "center of the universe". We are no longer in a special position, rulers of magical power and elevated by the gods. This sucks, but we gained something instead: now that we understand the laws of physics, we can also use our knowledge to harness this material universe that we are subject to. Instead of using magic to fly, we can use technology and instead of living in a world full of mystic creatures, we can discover the actual universe. It reminds me very much of Clarke's third law, "Any sufficiently advanced technology is indistinguishable from magic", but infused with the proposition to be the ones who create this magic (ideally in the best way possible, but you could also argue we've mostly been good at creating black magic in the last century).

(When I read this last paragraph, it sounds full of pathos, something I didn't have in mind when I wrote it. So please don't read this in the style of a superhero narrative but with the dry voice of a German philosopher in mind)

Summary

So, should you read this book? The answer is that I can't tell.

I started because I really liked Cassirer and because there was a book review coming up. And for me, reading it and writing this review was definitely worth the effort: I got a good rundown of 2000 years of philosophy and cultural history combined with a new sense on how to integrate these topics into a broadly correct and reasonably nuanced picture.

On the other hand, I had to read the book several times to arrive at this point and had it not been for this review, I probably would have given up. Cassirer's insights have aged amazingly well, with most of his analysis still relevant today, but his price for being right all along is being mind-numbingly ambivalent and obscure in many places. Even as it was written for a general audience, it was a German philosopher's impression of what a general audience should read in the 1940s. So it's no easy read and if, say, Andy Clark's "surfing uncertainty" puts you off, this one will as well.

My main takeaway from the book remains the idea of non-reducible worldviews: The idea that different perspectives cannot be reduced to each other is potentially a powerful one and – while not necessarily unique to Cassirer any more – this might actually help us have more productive debates. I'd argue that this insight spreads to far more areas than those on Cassirer's list (I could e.g. imagine a more sensible debate on the right COVID pandemic response by acknowledging first that economic, medical and psychological impacts are irreducible to each other).

There's a lot of good stuff here, once you get past the difficult writing. But to be fair, I might have achieved a similar result by instead reading one of Cassirer's philosophical colleagues like Heidegger, Wittgenstein or Benjamin, just in a different flavor.

For now, I'm waiting till next year's book review.

Postscript: All page numbers and quotes from "an essay on man" are from the edition available on archive.org. I'd like to thank Chandler Burke for providing feedback on early drafts of this review.

The Beginning Of Infinity

Huraki Murakami said if you only read the books that everyone else is reading, you can only think what everyone else is thinking. In the case of this book, that may not be a bad thing. A decade after its publication, *The Beginning of Infinity* (*The BoI*) feels timeless. Its a book to savour; with deep, hopeful, and far-reaching ideas; containing a philosophy perhaps still underrated. *The BoI* unpacks the ideas of an exceptional thinker, David Deutsch, a physicist and non-stipendiary professor at the Centre for Quantum Computation at the University of Oxford. Building on the work of Karl Popper, Deutsch may well be today's pre-eminent philosopher of science.

In *The BoI*, creativity and explanations are primary. Deutsch recasts the role of science in society, and promotes the pursuit of new knowledge as a creative equal to the arts. He dispels the misconception that science is about fact-checking (or induction or empiricism) in set frameworks. Science is the quest for better (and new) explanations. In a bold take, Deutsch outlines how explanations fuel progress of all description: technological, moral, political, aesthetic, economic. With crisp language and careful examples Deutsch sketches an optimistic future: one pregnant with possibility. In Deutsch's view, our capacity to create and synthesise explanatory knowledge makes the human species special. With unbounded potential, better and better explanations change the world.

> Any physical transformation not forbidden by the laws of nature is achievable, with the right knowledge

In the 1980s Deutsch proved his intellectual mettle by demonstrating the universality of quantum computers. Inspired by thinkers from Turing to Feynman, Deutsch pioneers fundamental explanations: how and why transformations of matter occur. Part meta-physicist, Deutsch is currently exploring a new mode of explanation in fundamental physics: which transformations are possible versus those that are impossible and why? Working with Marli Chiavetti at Oxford, their work is titled 'Constructor Theory'. Entropy-reversing things like cells, stars, and brains are termed constructors. The research has promise and scope, but the jury is out: criticism ongoing.

A decade before *The BoI* was published in 2011, Deutsch authored another book, *The Fabric of Reality*, a precursor to *The BoI*. *The Fabric of Reality* grandly outlines four strands of theory that Deutsch considers fundamental:

(1) Quantum mechanics in the many-worlds theory,

(2) Evolution via neo-Darwinian natural selection,

(3) Turing's theory of computation extended to the universality of certain programmable constructors, and

(4) Popper's epistemology, and the role of explanatory knowledge.

…Deutsch has the confidence to riff on the big questions, you may find this delightfully enlightening or border-line arrogant; I'm with the former.

The Bol, while journeying "through virtually every fundamental field of science and philosophy", focusses on Deutsch's fourth strand of reality: epistemology (how humans create and wield knowledge). In a view that has become unfashionable, Deutsch restores *people* back into a starring cosmic role. Contrasted with most of the known universe (either too-hot for structure, or rather-cold emptiness); Deutsch marks the forms of complexity, biology, and intelligence on Earth as special. Throughout the book Deutsch supports this claim by citing examples of human ingenuity based on improving explanations of reality, such as our ability to harness energy (artificial temperatures on Earth can range from almost absolute zero to nuclear hot). Our ability to understand and build is a fundamental feature that demands emergent explanation. According to Deutsch, our special powers arise from a capacity to create explanatory knowledge. Science (*scientia,* latin for knowledge, and with this meaning in mind) has unshackled human potential from genes and culture, and in the right conditions, promises unbounded progress.

I. *A Beginning*

Deutsch builds up to this claim, but I'll give the big spoiler to start things off. What makes humans different from other species? Making a thrilling argument, Deutsch answers this age-old question in one word: **creativity**. Self-awareness, emotional thinking, tool-use, these are all downstream in Deutsch's view: consequences of creative minds. Creativity is defined here as our ability to trial and error memes (Deutsch frequently references *The Meme Machine* by Susan Blackmore). Meme variation and selection allows us to enact the full spectrum of possible behaviours, trying on various mental processes to achieve outcomes, and allowing us to run software like language and mathematics. It is Deutsch's guess that our creativity evolved first to more faithfully replicate memes for selective advantages. Then as is so often the case with evolution, our creativity evolved reach beyond its initial purpose. The adaptation crossed a threshold point. Not only could we faithfully replicate memes and behaviour, we could imagine anew. (More on memes later)

Then a tragedy occurs, a cosmic joke. For tens to hundreds of thousands of years (rather perversely after the momentous creative shift) these brilliant creative brains went to waste. For most of human civilisation, we ran the wrong mimetic software. From the

old ages through antiquity: we actively and creatively conserved the memes that prevented progress; stifling new knowledge and practices with parochialism, dogmatism, tribalism: hence a history of stasis and ruin. Deutsch cites various false starts to infinity: mini-enlightenments such as 3500BCE Mesopotamia, 400BCE Athens, and 1400s Florence.

But creative liberation was inevitable as long we managed to survive. Around the Renaissance, we fostered a scientific revolution, a practical unleashing of our creative potential. It is Deutsch's claim (and not his alone) that the Western Enlightenment uncovered the conditions necessary for an engine of ever-better explanations. The reason? No period before modernity has witnessed today's level of cumulative progress in knowledge-creation because no period before was able to sustain rational memes effectively. Perhaps it was the Protestant push for literacy, and the printing press, but technology and ideology changed rapidly. Deutsch offers the scientific method, underpinned by a new Enlightenment tradition of criticism and free exchange of ideas, as the spark that ignited modernity. Open societies – with science, reason, and freedom (for some) – marked the beginning of infinity.

In many ways, *The BoI* contains the philosophical heart of Steven Pinker's recent book *Enlightenment Now* (Pinker opens with a *BoI* quote, and repeatedly references Deutsch). Whereas Pinker supports his assertions of progress with sound-but-controvertible graphing – Deutsch uses more fundamental, and thus more convincing, forms of argument. Deutsch thinks about humanity over a period of hundreds of thousands of years. With a physicist's disposition, Deutsch thinks hyper-analytically, from first-principles, with a long-term view. When considering societies on shorter timelines, parochial issues of cultural preservation, comfort conservation, and resource allocation are front of mind. Our pesky short-termism echoes the thinking that prevented modernity for so long: a memetic hangover. Deutsch repeatedly lambasts us for our parochialism (silly humans). At first, it's a rather unsettling way to think; but in the right doses, its liberating.

II. *The Reach of Explanations*

Once creativity is harnessed for new and rational memes, societies seek explanations in earnest and a philosophy of science is required. For Deutsch, science is about explaining reality as best we can. Good explanations explain what they purport, by using details which are hard to vary. This is very different than reverting to the simplest explanation. The explanation of 'magic' – when asked to explain a conjuring trick – is simple, but also does little to specify the explanation to the problem. Indeed, 'magic' can be applied to any number of problems. It's a bad explanation.

Deutsch extols the reach of our greatest explanations. Explanations are constrained by existing knowledge, thus the best explanations cohere to the rest of reality. Deutsch repeatedly talks about *The Selfish Gene* version of genes and replication. Genetics as an explanation about the mechanism of natural selection fits the bill of both reach and hard-to-vary-ness. Every living thing as we know it must have cells with specific strings of DNA. The different coding and expression of genes explains life's variety. Cells and genes are essential to understanding biology, and if we removed any of the details in our explanations about genetic mutation and inheritance, we could not explain evolution. Just-sufficient details often create elegant explanations, thus far-reaching hard-to-vary explanations are often elegant, but Deutsch says they need not be.

Another important theme spanning across Deutsch's writing is the concept of universality. Universality in explanations refers to the programming potential of certain transformations in a certain domain. Deutsch gives examples such as written language, mathematics, quantum Turing machines (a stronger form compared to the classic computer), human brains, and potentially, DNA in cells. The universality of written language is that it evolved to be able to express any combinations of syllables in our phonetic range. Anything we can verbalise can be captured in universal alphabets. Computers can be programmed to make any type of virtual reality. Certain things, in biological life and human technology, have made this jump to universality. Computational universality is a property of hardware; explanatory universality is a property of software. The most interesting case of universal machines are human brains (hardware and software), with the capacity for all forms of creative knowledge – Deutsch calls us universal explainers.

[LINK: https://twitter.com/DavidDeutschOxf/status/1030356748861886464]

III. *Emergent Explanation*

From the physical (quanta, atoms, energy) to the biological (genes, cells, organisms, evolution) to the artificial (memes, creativity, culture); the world can be described in many ways, in many emergent levels. From the microscopic lens to the cosmic pan-out; Deutsch stresses that picking the right level of explanation is paramount in finding better explanations. If you attempt to describe the peacock's tail in terms of atomic composition, you will miss the better explanation of biological evolution via variation and selection pressures. If you attempt to explain why there is a London statue of Winston Churchill (an example from the book) using physical or biological evolution, you miss the better explanations from cultural evolutionary theory: ideas like leadership and war are required.

Right through the book, Deutsch places complex systems in context. Memeplexes, cultural histories and individual cognitions co-ordinate human affairs, genetics facilitates life, and theories of matter affect all things: from stars to starfish. Deutsch argues against reductionism as well as holism: views pervasive in science. Often, multiple levels of emergence must be brought into the explanation. Although the standard model in physics makes extraordinarily accurate predictions; unlike Laplace's Demon, we cannot explain all in terms of the motion of particles. Finding the scale, and the mechanics of material, is the challenge of each new problem.

Writers like Stephen Jay Gould have stressed the insignificance of humans in the evolutionary scheme. Next to the modal preponderance of bacteria, we're a minor twig in the great tree of life. In the big picture of the universe, Deutsch defies the Principle of Mediocrity script with the message that we are uniquely extraordinary – for the sake of explanation rather than arrogance. He faults JBS Haldane's well-worn quote: "The universe is not only queerer than we suppose, but queerer than we can suppose" as parochial – arguing that our senses may be limited by evolution, but there is no reason to suspect our minds to have limits on comprehension, especially when aided by the requisite technology. To Deutsch, us Earthlings are "at the top rank of significance in the greater scheme of things", the top form of emergent explanation. Humans as universal explainers *is* the best explanation in many cases, but fallible-to-a-fault Deutsch adds: "there's always room at the top".

For me, one of the book's most challenging and contestable chapters was the exploration of objective beauty. Using the famous Feynman question 'Why are flowers beautiful?', Deutsch argues that much in the same way that objective knowledge is a way for different people to communicate, beauty creates hard-to-forge signals across species. And Deutsch is of the view that we will advance art by catering to newly-found qualia and expanding Umwelts (sensory worlds).

> The fact that flowers reliably seem beautiful to humans when their designs evolved for an apparently unrelated purpose is evidence that beauty exists.

Now we come to a reason why many dismiss this author. Deutsch is a quantum physicist that favours the multiverse explanation for quantum phenomena – a chapter is devoted to why. Here I have little to add, even summarising the details accurately is beyond my scope. In an anti-Deutschian plea to consensus, I've noted that proponents of the many-worlds interpretation include respected quantum theorists like Sean Carroll, Max Tegmark, Brian Greene and Hawkins. I don't have a good grasp of the alternatives but Deutsch admits its a minority view in the field. I understand his reasoning as: this the only theory with supporting evidence that explains the observed reality. He does not rule out better explanations in the future, but he asserts the multiverse claim rather

confidently (more on this with a short Q&A with Deutsch). Basically there are gazillions of universes, not-quite-parallel, acting on each other in very minor and microscopic ways and….uh…maybe just read the chapter. Deutsch refers to the photon-split experiment to explain interference and fungibility and the presence of many-worlds *and* 'histories' of quasi-autonomous information flows *and*… read the chapter.

IV. *Problems, Evils, and Error-correction*

Karl Popper once said that all life is problem solving, Deutsch acknowledges that *problems are inevitable* – and, literally, places an image on the page of this message carved in stone. Deutsch adds a second stone-carving: *problems are soluble*. Life moves problem to problem, solutions are temporary reprieves – they're more like lesser misconceptions that will be improved upon with more problem-solving. Thus the number of explanations we will uncover are also endless. If creative solutions are limitless, the potential of life is limitless.

If you agree with Deutsch that all problems are soluble, then you might also agree that we progress with ever-better explanations. This progress is not contained to any field or faculty. Noam Chomsky has said that we expand our moral sphere as we expand our body of science. This is similar to Deutsch's message: we cannot *deduce* moral truths, or political truths, or aesthetic truths; but we can connect and uncover these objective realities with explanation. Indeed, the post-1700s West has a culture of correcting errors (and of course the plotted line is not linear). In Deutsch's mind, societal evils such as slavery, bigotry, homophobia, misogyny, tyranny, and so on, are all caused by insufficient knowledge. He calls this the principle of optimism. As we improve our explanations in psychology, biology, cosmology; a broad moral arc becomes visible: bending inexorably toward better.

In the writings of Deutsch, and Popper, error-correction is the supreme virtue. In organisms, people, science, and politics. People learn to enact new behaviours. Science discards refuted theories. Democracies replace bad leaders or policies. Sustainable complex systems adapt by error-correcting to the environment. The term 'error-correction' seems innocuous at first, but it does a lot of work in Deutsch's epistemology. It functions as one of the two most important requirements for knowledge creation (the other is creativity).

Both biological and memetic evolution optimises propagation through varied replication. These are the only two processes in the universe that create knowledge; through trial and error. Biology cares only about the ability of a gene to replicate in a given environment. Culture spreads through the spatiotemporal spreading of memes. Only one type of cultural evolution, that of the post-enlightenment West, has exhibited sustained error-correction. Deutsch lists the many forms of suffering we tend to lessen

in an error-correcting society: discrimination, bigotry, misogyny, tyranny, disease, hunger. Different cultures evolve differently: for reasons of biogeography, politics, accidents – but any grand civilisations of history at least temporarily encouraged error-correction with new knowledge creation or importation.

Last year, I wrote a too-long post in reaction to Tyler Cowen/Patrick Collison's call to have a dedicated field of progress studies. Since waffling on the issue, I've reworked to a more succinct definition of progress, based largely on Deutsch's philosophy: *Progress coincides with better explanations*. That's it. I could add something like: *and uses new knowledge to better lives* – but terms like *better* usually lead to the ought/is quagmire. I trust that it is in human nature to (mostly) use good explanations to improve lives when available. So that is my new barometer for progress, are we creating new and better explanations without regression?

V. *Bad Philosophies*

Like fish in water, explanations, and the technological fruits thereof, surround us. Yet we can be oblivious to a dirty environment. Increasingly, we are being seduced by bad ideas, and worse for Deutsch: bad philosophies. Deutsch characterises bad philosophies as the type of thinking that closes off the growth of new knowledge. Today, postmodernism is fouling the ideological waters. In this line of thought, there is no objective truth, no such thing as art, no such thing as progress: there is only interpretation ('narrative'), and power. Dogma, ignorance, tribal affiliation, self-interest, disinterest all get in the way of good explanations, and good philosophies (to name but a few knowledge-suppressing evils).

From Deutsch, I learnt a valuable lesson about the role of empiricism in science. Again Deutsch quoting Popper: all observations are theory-laden. We only *really* see what we understand, or are able to comprehend. This has roots in cognitive science, and brain prediction, but it sounds right to me. Without questioning or conjecture, the unexplained things around us are simply *there*, and we pay no special attention to them. Primitive humans looking at the night sky may have had stories about Gods and Light, but they could only see as far as the bad explanations of the day allowed. When theories improved, they may have wondered how the flames in the fire might be connected to the flashes in the sky. A reasonable question naturally arises: what still theory-less observations are we ignoring today?

Throughout this book, Deutsch addresses misconceptions in science and society. Empiricism, inductivism, deductivism, instrumentalism, positivism, holism, reductionism (as well as the easy targets of Lamarckism and Creationism) are all taken to task as mistaken philosophies of science. A formula is not an explanation. Observations do not make a theory. Science without creativity is not science. Deutsch is an unapologetic

realist, and takes the singular view that it is the bettering of explanations (of an objective reality) that drives progress.

Deutsch devotes a chapter to his own field, lamenting the theoretical physicists that fail to grapple with reality. He decries the cowardly Copenhagen interpretation in quantum mechanics as incoherent instrumentalism ("the misconception that science cannot describe reality, only 'derive' predictions from observation"). For Deutsch, this erroneous thinking is captured in the 'shut up and calculate' variant of theorising: all misconception, not linking observation, theory and reality.

In a cute or amusing (you pick) piece of imagined dialogue, Deutsch sets Socrates against Hermes (the God of Reason). They talk through the inevitability of objective truth, and dispel the notion of justified belief. In what is set up to be a knock-out punch, the concept of authority is extinguished by Hermes himself. Guesswork is the origin of all knowledge, and good explanations last because they stand on their own merits.

Critics of this book use labels like crank, scientism, arrogance, naive-techno-optimism. I think that's wrong. When you break our best science into explanations, only the constituent explanations can be criticised, that is Deutsch's whole shtick: pro-criticism. Of course, an ill-considered *belief* in science is naive without actually understanding what science is and how it works, but this is precisely what *The BoI* seeks to explain. Indeed, Deutsch also does not claim that we will figure everything out, he just says we might, and we can.

Deutsch is unashamedly pro-West. But to think Deutsch refers to a type of person rather than a way of handling ideas is folly. This is a man who thinks of people as *biological machines*. I'll acknowledge, scientism must always converge on a mono-culture society: error-corrected and efficient; but Deutsch's ample discussion of progress in aesthetics and morality leaves room for plurality. (I think many of these reasons motivated another physicist, Sean Carroll, to use the term *poetic* naturalism to describe his own outlook in *The Big Picture).*

> In reality, the difference between Sparta and Athens, or between Savonarola and Lorenzo de' Medici. had nothing to do with their genes; nor did the difference between the Easter Islanders and imperial British/ They were all people – universal explainers and constructors. But their *ideas* were different.

Deutsch pre-empts criticism of his optimism in a chapter with that title*.* Just like the world needs the tension of liberals and conservatives to set a palatable rate of progress, we probably need pessimists and optimists. I just prefer reading the latter.

VI. *A Creative I*

Deutsch likes to say the future is unknowable. (A good reminder for inductivist statisticians, asset managers and economists). His key point is that we cannot know what knowledge will be uncovered; as new knowledge is attained with creativity.

In the chapter titled *Artificial Creativity,* Deutsch tackles AI. More specifically, he claims we are not close to any *general* intelligence because we do not understand how creativity works. He adds that this explanation will also require an understanding of the universality of DNA. For now, we will continue to program marvellously specific (narrow) AI solutions like Youtube recommendations and self-driving cars. We might even fool a sleepy Turing with expanding Chinese-room-style natural language look-ups as we plug the text of the internet into GPTs. But Deutsch is adamant that, until we solve the philosophical questions around creativity, we are stuck with dumb AI.

[LINK: https://www.youtube.com/watch?v=IeY8QaMsYqY]

He adds to the discussion of the possiblity of 'superhuman' intelligence. As human brains are universal explainers, they are capable of every explanation and transformation. However, we are bound by memory, processing speed, and more pedantic things like maintenance and energy-efficiency. A superhuman AI would simply have the same universal reach as that of a human intelligence, but the issues of hardware shortcoming could be improved through architecture or additional resources. Think bigger, faster, more efficient brains.

Turning to the Big Data world, we find a new variant of the shut-up-and-calculate thinker: the data scientist. Mostly, their methods are an affront to Deutsch's philosophy. For the instrumentalists, I fetch a quote from the book: *prediction is no substitute for explanation*. These 'scientists' present ROC curves as answers, but most fail to grapple with explanations, mechanisms, and the hard-to-vary details. Machines cannot conjecture. Until we crack AGI, human creativity powers science. (Note: many statisticians are aware of this, and use tools responsibly, the problem lies with the rising number who copy-algorithm-paste-output.) Deutsch offers a simple heuristic for evaluating understanding: *If you can't code it, you don't understand it*.

VII. *Transition*

To *expla*in the presence and growth of explanatory knowledge, Deutsch outlines the evolution of matter, genes, intelligence, and finally, memes: the star of one of the final chapters: *The Evolution of Culture*. Memes are ideas (explanations, traditions, stories) – or any cultural element that can be enacted or transmitted by brains. Deutsch makes a distinction between rational memes (those that require the engagement of critical

faculties to be replicated) and anti-rational memes (those memes that rely on critical faculties to be disabled). It's perhaps a too-neat grouping (you can always fracture a meme into constituent parts) but it helps to illustrate how cultures and societies change.

> The whole of biological evolution was but a preface to the main story of evolution, the evolution of memes.

For millennia, certain memes have paralysed societies with stasis. Dogmatic ideologies enforce conformity and a status quo. These memes were effective at propagation across generations because they facilitated a subjugation to heterogeneity, winning out over other creativity-enacting memes. Memes can spread far quicker than genes. It took an age of criticism and reason – the Enlightenment – to break the dominance of anti-rational memes. After the scientific revolution, memes that encouraged human creativity began to build on each other. People questioned the Church, the King, and the ruling authorities: literacy threatened blind faith, ideas uncoupled from their sources. New art, explanations, and technology followed inevitably; improvement begat improvement in all spheres. The explosion of new memes, curated by criticism, liberated by individual creativity: was the beginning of sustained knowledge creation and curation.

I'm a fan of many ideas that Nassim Taleb has popularised, and they clash nicely with Deutsch's. (There is no mention of Taleb in the book, I bring him in for interest). Taleb's idea of LINDY (things that last, last for a reason, and will last in proportion to how long they have been around) seemingly contrasts Deutsch's claim that societies must be unfailingly dynamic to survive and thrive. Taleb espouses the Precautionary Principle, Deutsch labels this principle the epitome of pessimism. (I would like to see these two debate GMOs.) Ultimately, I think there would be a lot of agreement between Deutsch and Taleb (both are self-avowed Popperians), the difference in my view, is timescale and context. Taleb, in the months after a pandemic, feels the precautionary principle should apply to travel. Deutsch is more like *civilisation must tinker to progress with their practices and explanations in order to stave off stasis and eventual ruin*.

Practices that seem anti-rational might be perfectly rational, especially those that have evolved over many centuries. Here our explicit explanations may not have caught up to unwritten cultural knowledge. There are certain things we will continue doing until (and probably after) we can explain why we do them. For more on this notion, see Tanner Greer's *Tradition is smarter than you are*. Certainly, Deutsch is careful to advocate against "scientific planning".

Deutsch views Western society as still in an unstable transition period between static and dynamic. (A dynamic society is dominated by rational memes.) In the early 21st century there is a real concern that the spread of anti-rational memes via supercharged

information technology is causing regression. But, at the same time, we fail to notice the slow and steady spread of rational memes: science, healthcare, universal rights, etc. Similar to the charge against Pinker, Deutsch may underestimate our potential for violence, but pessimists underestimate our potential for knowledge.

When Deutsch ventures into political discussion, the result is unorthodox. Criticising the axiomatic approach and practical application of the famous Arrow's Impossibility Theorem, Deutsch channels *Enemies of the Open Society* Popper: calling the many political frameworks we devise as contemporarily arbitrary, suggesting that new options can always be invented when current governance systems stall. Predictably, he stresses that it is error-correction (removing bad leaders and policies) that is of utmost importance. If we allow our governments to rectify course, then we will hopefully tend to the free and open societies that foster rational memes, and hence, progress. Mostly his take on the social sciences is applied Deutsch epistemology: Be optimistic, embrace problems as inevitable, create new solutions creatively. What's true ain't new here but I agree that opting for institutions that create new options is preferable to those that simply weigh existing ones.

I am not convinced that Deutsch gives adequate page-space to the peculiar psychology of people, often he seems to idealise us at our rational best. WEIRD people are weird in the Joseph Henrich sense (Western, Educated, Industrial, Rich, Democratic), they are analytic and individualistic outliers – and Deutsch's protagonists. But I agree that differences in people are overwhelmingly down to differences in ideas. Western culture continues to assimilate and integrate (albeit sometimes too slowly) people of all origins. Here I watch America, the land of immigrants, collaborating in a grand project of multiculturalism – purportedly underpinned by the Western ideals of reason and science, opportunity and freedom. Perhaps the same can be said of cosmopolitan hubs worldwide. But for much of our deplorable, bigoted, backward past – this much has always been true: ideas will determine the future, not genes.

Towards the end of the book Deutsch weighs in on so-called sustainability crises. He is philosophically opposed to the Earth-as-Mother-Ship metaphor: that the Earth is a vehicle designed for our survival. He slams this view as parochial and small-minded; I'll give one cryptic line from the book to summarise his position: "There are not many fossils of old people". Knowledge transcends Earthly problems. The Earth is shaped by humans – for better or worse – until we have the Musk-esque knowledge to leave it, or perish with it. Next up in Deutsch's critical death stare: Jared Diamond's arguments in the acclaimed *Guns, Germs, and Steel*. Deutsch's take: the thesis that biogeography shaped civilisation has it backwards. While climate, geography, and physical barriers play their part; we must explain history in terms of human choices and knowledge; and pointedly for Deutsch; resource-shifting follows. For Deutsch, Diamond's argument

holds no water (there is a pun in there). Deutsch applies the same thinking to the pressing issues of the day, like climate change. If we are causing it or not, we must problem-solve; regressing to pre-industrial societies is the wrong meme. The only thing truly sustainable in Deutsch's world-view is perpetual-motion-progress.

It's a valid criticism of Deutsch that he skirts over ethical trade-offs arising in rapidly evolving societies, but to be fair, this exploration would likely have muddied his message about long-run problem-solving. We're talking escaping exploding stars with interplanetary living, qualia simulation, and cures for ageing; not trolley problems. In the final chapter, Deutsch indulges in speculation about an unknowable future. He has a better understanding of astrophysics than most, so it's good fun. To him its extrapolation from what we already know – obviously another inductivist-type misconception. But speculation is useful in that it can foster new ideas and conjecture. We invent the future, restricted by imagination alone (and those irksome laws of nature).

VIII. *Conclusion*

The books and ideas of David Deutsch have a small but dedicated following. Self-labelled 'critical rationalists' debate Popperian-cum-Deutschian ideas with relish on Twitter. Australian Youtuber Brett Hall hosts a channel devoted to reading and discussing the book: chapter by chapter. We already mentioned Pinker is a fan. Computer scientist Scott Aaronson lists the book in his top 30 best books (alongside works of Twain, Hume, and Darwin). Patrick Collison, the brilliant CEO and co-founder of Stripe, has the rather Deutschian Twitter bio: "Optimist, Fallibilist". Of the hundreds of wonderful books that Collison recommends on his personal website, *The Boi* is one of few coloured green: code for "particularly great".

Deutsch offers philosophy without sophistry. At the end of each chapter, he provides a short definition of key terms and concepts, and summarises the chapter's themes in relation to the book's central premise. His explanations are so clear it can be disconcerting, you'll skim over important bits. The writing is excellent. That he has such a masterful grasp on so many and varied scientific concepts will make you question where to question. But these are happy problems, soluble with re-reads.

How can you get your head around infinity? We move from problem to problem, misconception to lesser misconception. Start with explanations: the unit of scientific (and all forms of) progress. Maddeningly, our best explanations must be seen merely as the 'prevailing' theory. Perhaps this explains the trend towards relativism and post-modernism – truth is hard work, fallibilism is cognitively uncomfortable. Nevertheless, avoid bad philosophies. Avoid authorities. Avoid pessimism, optimism is required for objective progress. When you are shown what theories might be fundamental and which emergent explanations might be key, the work becomes easier.

If nothing else, Deutsch has captured the essence of good science and art and industry (and all creative endeavour): optimistic spirits seek objective progress by conjecturing wonderfully creative offerings that are then criticised, reasonably and coherently, in an open and free society.

Deutsch makes an utterly compelling case that an objective reality exists, breathtaking in scale, unimaginable in scope. Truth, beauty, morality: hidden possibilities beckon, to be uncovered with creativity, hopefully. Neither Deutsch nor another can be your authority, but this book can certainly be a guide. Towards the end of the book, Deutsch appends comment to a script from his favourite documentary: Jacob Bronowski's acclaimed *The Ascent of Man*. Bronowski muses about the extinction of society on Polynesia's Easter Island:

Bronowski:

> People often ask about Easter Island, How did men come here? They came here by accident: that is not in question. The question is, Why could they not get off?

…Deutsch's reply:

> Because they did not know how.