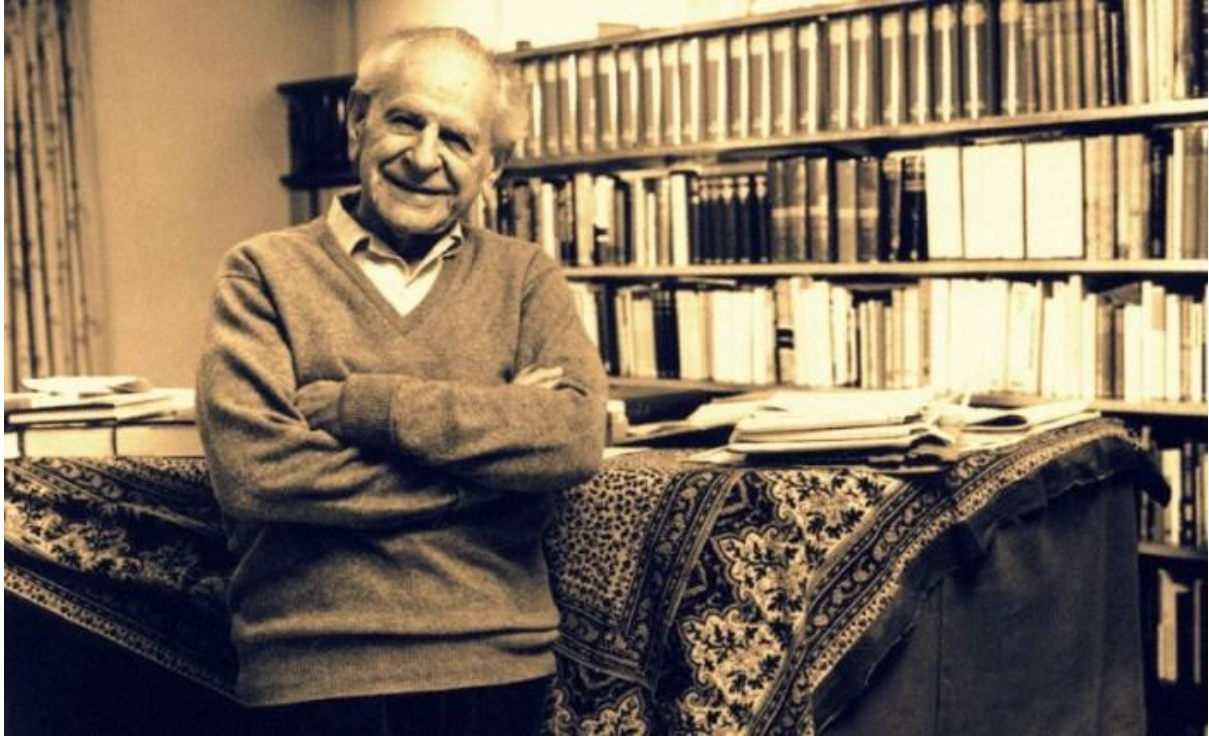


The Politics of Karl Popper



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These collected essays were designed and written separately. The intention was for them to stand alone so that someone uninitiated with the subject would be able to read any individual one in isolation, and not need to reference the others in order for it to be easily comprehensible. And so there is a slight overlap across the essays – the occasional restating of ideas, developments and principles. But any such overlap only involves that which is of central importance to the philosophy of Karl Popper.

The Politics of Karl Popper - Part 1: Asking the Wrong Question

Modern democracy remains frozen in a moment – broken from its centre out. It feels like a new problem, but it's not. It goes back to Plato and to the first questions of how societies should be ruled, to our first attempts as a species to theorize about alternative political systems and weigh the benefits of monarchy, aristocracy or a government of the people. Concerned that it would always deteriorate into a rabble – that the poorly informed masses would simply vote for other poorly informed people, or for demagogues able to manipulate them – Plato never warmed to the democratic option. And for many this still seems like the problem of our day... it's not!

From those origins the question has always been 'how do we ensure that the best people get into power?' Plato was anti-democratic but the philosophers that came after him were increasingly the opposite, all the way up to Karl Marx who believed so strongly that people should have the right to govern themselves that he tried to supplant voting altogether. They were both wrong, in exactly the same way... and in the same way as most modern proponents of democracy are wrong too. It is an understandable mistake, but not so understandable that we keep making it.

Though Plato didn't see it this way, Athens was ahead of its time. They were a direct democracy, with all important decisions of state handed back to the citizens for their vote. The term 'citizenship' was limited in such a way that it only applied to a minority of the population, but it was in principle a society where the people ruled themselves. The reason for this was fear – fear of tyranny, fear of domination, and fear of capricious governance. And so if they could ensure that they ruled themselves, then they would never have to suffer in this way. But democracies don't guarantee good policies, or even good leaders – caught in this problem, Plato tried to abolish the institution altogether.

Once he had answered the question of 'who should rule?', there was really no other option – just as there was also only one answer: *"The Best"*. The brightest, the most knowledgeable, the most courageous, the most morally upstanding, and so on. If you are going to have a government, and if someone (or a collective) needs to be in charge, then it stands to logic that they need to come from this group of people. And democracy dilutes this possibility, because voters always make mistakes, and rarely know what is in their best interest.

And yet built into this – the hope to appoint someone, or a specific party, that are The Best – is a formula for tyranny. Once in power, The Best are beyond regulation, and beyond criticism, because no one else is, by definition, qualified to hold them to account. And this is exactly what happened for most of human history. Roman military might supplied all the legitimacy that the Caesars needed. They were unquestionable, their edicts absolute, and it was only in the decline of the empire that the errors of their rule were ever called into light... too late to be fixed.

The lesson here for our forebears was understood not in terms of needing to error-correct our political institutions more quickly and more effectively, but once again in terms of needing to find a better leader; someone with more authority, more legitimacy; someone infallible. Enter monotheism and the Catholic/Christian Church. Constantine latched onto this, and so he ruled not through any demonstration of ability, strength or earthly opinion, but by the grace of God. Anyone challenging this was also challenging the faith of society as a whole, so wisely only foreign armies ever did.

The question of who should rule, now had a very neat and uncomplicated answer: God and his human representatives. Our ancestors trudged through the Middle Ages in pain and suffering, and without a doubt in their minds that society was how it should be, because those people with the

most right to rule were doing so. Of course the hiccup here was the Reformation followed by the English Revolution, where the monarchy was overthrown by people wanting self-rule... but only because they saw it as their divine right. The question of legitimacy was still echoing down from Plato.

The people's divine right to choose became the foundation for Oliver Cromwell to establish a dictatorship under different colours, and so things continued largely unchanged. The tide was shifting though, and the Glorious Revolution of 1688 became the wellspring of parliamentary democracy, the limitation of powers, and the slow end to authoritarianism. However, this change in direction occurred around the same flawed question – the debate was still around deciphering theological intentions and after which finding the right balance between the monarchy and the people. 'Who should rule' was being asked again, just in different, more appealing, ways.

The problem that kept Plato awake was being answered more-and-more definitively in just the way that he hoped it wouldn't. Plato was wrong, but so were those early movers of democracy... just as we are today. When Karl Marx entered the scene, and sought to tear the whole political and economic order down, he was still doing so with Plato's question in mind – 'how do we get the best people into power?' Targeting the capitalists and the landowners, Marx thought the workers should rule; and because these people are always in a majority, then there was also no need for elections anymore.

Millennia-upon-millennia of humanity's finest political thought, poisoned by a single bad question. All of which was cured, and should have remained so, by Karl Popper. He did so in the same way that he had previously for the problem of how knowledge accumulates – how it is that we can *know* anything at all. For too long people believed that knowledge came to them through their senses, through empiricism or induction. And this seemed to make sense – unseen explanations resembling the seen world around us. And just as the growth of our political institutions were being held back by Plato, this also held back the growth of science.

Again, the problem was buried inside of the question, and not the answer. Until Popper, people had understood the term knowledge to mean 'that which you can know for certain' or 'how it is that we can be sure about something'. It wasn't just the wrong emphasis, but it was also claiming access to something that was never available to us. The idea of proving something to be true is a mistake in itself, all we can ever do is prove something to be wrong through a process of conjecture and refutation – guesswork (ideally educated), and then the testing of those guesses through criticism. The ideas that survive this ordeal are never accepted as true, but simply not discarded as false. No truth is ever so undeniable that it cannot be questioned. And so instead of certainty, all we can ever hope for is improvement – the replacement of bad ideas, with less bad ideas, and so on.

Moments like these are not as rare as they might seem. The barrier holding back our understanding of evolutionary biology wasn't the idea of intelligent design, but rather a bad question that made it appear that intelligent design was the only answer. The question of 'why do birds have wings?' for example would never get anyone beyond the logical response, 'so that they can fly'; design is inferred at every stage in this mode of thinking. What Charles Darwin did, even though he didn't recognise it at the time, was change the question from 'why do birds have wings?' to 'what type of *process* would lead to a bird having wings?' The old explanations fell away under this new scrutiny, and Darwin had solved the problem by simply asking a different question.

What Popper exposed was more fundamental. It comes down to fallibilism, the recognition not only that we can be wrong about absolutely everything we currently hold as true, but also that the

natural state of things is error. We are wrong all the time, because no one has access to future knowledge. What seems certain today, will be laughed at as ignorant tomorrow – just as we tend to do when looking back on the values of previous generations. So any theory of political order needs to hug close to the idea that those people in government, regardless of how they came to be there, or their apparent qualifications, are going to invariably make mistakes and expose themselves as horribly flawed; as we all are.

So how do you build a political system out of this unavoidable mess? By simplifying things. Dump the abstract language of ‘reason’, ‘freedom’ and ‘rights’ – not because they aren’t desirable, but because they aren’t helpful. Words like these have simply become too malleable, too loosely understood, and too tainted to do the work that is required of them. Instead leave Plato’s flawed question behind, and the answer falls naturally into place, just as it did for Charles Darwin.

People should have the right to choose their leaders, yes! But it is not because people have a ‘right’ to choose their government, or even that this is a good mechanism to get The Best people into power, but rather by an inversion of that question. Instead of asking ‘who should rule?’, we should only be asking ‘how do we best remove bad leaders without violence?’ It is a political theory built on the understanding of how knowledge develops through constant flaws, missteps and error; and that there is no such thing as an obvious truth. Just as it is wrong to pursue certainty in knowledge, it is also wrong to pursue utopia in politics – or utopian leaders. As Popper quickly recognised, the source of all tyranny comes from the idea that the truth is manifest. What we want is error-correction!

Once here, the theory follows fairly intuitively. Any viable political system needs two simple qualities: 1. The ability to highlight errors as quickly as possible, and 2. The most efficient mechanism for removing bad leaders and changing bad policies once they have been recognised as such. More than anything, the goal here is the minimisation of harm. Democracy matters, and is a superior political system to theocracy, aristocracy, communism or anarchy (which Popper had a slight sympathy for in its attempts to escape the control of the state), only because it matches most neatly with these criteria.

Voting is an imperfect means to change imperfect politicians, but it does allow for – when done well – every member of society to voice criticisms of current leaders or specific policies, to weigh those criticisms against the publically voiced criticisms of alternatives, and then exercise the removal of bad leaders effectively and peacefully. This mess of constant criticism, change, and control by the rabble-forming masses is what Popper famously called the ‘Open Society’. A place where the emphasis should be on removing leaders, not on electing them – a place where utopia is never promised, only the opportunity for progress... and only then if we play our cards right.

Democracy as it has come to be known today, is mischaracterised and misunderstood. It is not that ‘the rule of the people’ has any intrinsic value – it is just a functional solution to a technical problem. Any government can be removed by a majority vote, and no majority consensus is ever enough to justify the rejection of future elections or the rule of law. Democracy is the best mode of government only because it is the best mode of error-correction (that we currently know of). Yet tragically, the democracies that we have today are still those designed with Plato’s question in mind, and not Popper’s. We have stumbled onto truth, and not discovered it through explanation – and so based on this old misconception, our political systems tend to be hopelessly flawed, despite being democracies.

With most people arriving at democracy from a completely different direction, Karl Popper still had all his work before him with the follow-up problem of 'how should we best structure a democracy?' ... *Continued in part 2.*

The Politics of Karl Popper - Part 2: Alternative Voting Systems

Democracy matters – we can all feel it in our bones. There is something emotionally satisfying about being able to hire and fire your government, to stand in judgement over how your society is run. And by handing this authority to the masses, it is denied to the oligarchs, the aristocrats and the dictators. Yet despite all these things having a recognisable value, even thinking in this way is a grave mistake. The problem that democracy solves has nothing to do with rights, freedoms or even ensuring that the best possible leaders get into power. In some ways these come along for the ride, but democracy has only one significant advantage worth caring about – error-correction.

Just as it goes with knowledge creation, we cannot predict the future – and so the natural state of things is error. We are all wrong, incompetent, flawed and prejudicial in ways we don't properly appreciate, all the time. This, of course, also applies to our political leaders, and to our ability to select those leaders. The hope of choosing "*The Best*" people – as Plato put it – to govern society is misplaced, as is the underlying question – also Plato's – of "*who should rule?*". Karl Popper's solution to this might have felt like an easy fix, but it was also the most important development in political philosophy that had ever occurred. He did so by embracing the fact that mistakes are everywhere, and then turning the question around, asking instead 'how do we best remove bad leaders without violence?'

From this we get democracy, but only in concept – it is the best system we have available to us for error-correcting bad leaders and bad policies. Yet this only takes us so far, in fact it leaves most of our work still ahead of us. The limitations we see in our democratic systems often come back to the fortuitous, yet tragic, fact that we historically found our way to democracy not through Popper, but through Plato – with the wrong question still in mind. Free of this, and with Popper's criterion, it is possible to tune-up and improve upon our democratic institutions – to solve problems of disproportionate political power, and achieve arithmetic fairness. The 'Open Society' is still, and always will be, within our reach; we just have a slightly different question to ask now – 'what kind of democracy is most effective at removing bad leaders and correcting bad policies?'

The dismissal of a government by regular voting, is a robust form of ensuring that leaders are always accountable, and of avoiding anti-democratic takeovers. But we never *actually* rule ourselves – on election day the keys of government are always handed over to our political leaders, after which we sit and hope that they are returned to us at the appropriate time. And when it comes to the bureaucracy – the people in charge of implementation, of minor decisions, and whose information and advice politicians rely upon – we often don't have any mechanism to change them at all (barring malpractice of some variety).

And yet when you start with Popper and not Plato, everything simplifies. We don't need to edge delicately into this imperfect space, but rather go straight for the jugular of democratic change – voting systems. The idea behind democracy that we instinctively hold, is that parliament should be a representation of the people – each individual member a mirror for their constituency; the nation in a microcosm. As closely as seats in parliament can be matched numerically to the views of the people voting, the closer a society is to the best democratic system... or so the theory goes. This is called proportional representation, and it is a terrible mistake.

Proportional representation favours parties and not people, with citizens tending to vote for what they most clearly recognise and understand – political parties – and it is those parties that select who should represent which constituencies. And what is the purpose in setting up a political party other than to further an ideology – policies may change, but their founding principles rarely do, lest they risk losing their established supporter base. This becomes a shield against error-correction and a system designed for personal advancement. The people who most adhere to the core ideology are shuffled into safe seats and conferred with significant campaign financing, while voices to the contrary (error-correction) are filtered out the other direction.

Elected representatives in this system owe their allegiances much more so to the party that supports them, than to the people who voted for them. A candidate that is elected under the banner of one political party and then later defects to a different party, or to sit as an independent, is often considered to be betraying his/her constituency – because they likely gave their votes only in consideration of the party's platform, and not with the individual candidate.

This doesn't just rob the voters of choice (the possibility of error-correction), but also robs the elected individual – and the political system as a whole – of personal responsibility between political leaders and the voting public. With this aspect built into its fabric, proportional representation tends to also cause a proliferation of political parties – and though increased choice seems to come with this, it presents a significant roadblock against the removal of bad leaders.

The more proportionate the political system, the more power that is afforded to smaller parties and independent members of parliament. In any given single electorate it is increasingly rare that one candidate will secure the votes of more than fifty percent of the population. Trying to match these numbers to elected members, a proportionate voting system tends toward ensuring that no political party holds a majority of seats in parliament. When seats in parliament successfully mirror the broader societal breakdown in this way, the means by which governments form, or fail to do so, is through coalition – and in coalition the desired fairness breaks down, from the opposite direction.

By forming government through proportional representation, the smaller coalition parties are – perhaps counterintuitively – afforded disproportionate political power. With no major party holding a majority of seats, and therefore needing the support of minor parties to form government, it means those minor parties effectively get to choose the government and to choose who becomes Prime Minister. And, of course, they are likely to make this decision in their own political interests. Rather than weighing the merits of each major party, or even leaning toward the party that has achieved the most votes, they will seek to make conditions upon their support and smuggle their own policies into power.

The fear of having unpopular political decisions legislated through the backdoor in this way, has often led to a renewed support for either of the two major parties. The thinking runs: if your political views best align with a minor party, then you should instead vote for the major party that most closely (though less perfectly) matches-up with you – anything else might risk overt minority party control, and not necessarily from the minor party that you support.

But this still doesn't protect against bad policies in the way that people hope – a greater majority for the two major parties doesn't do much to change the calculation here. If they both increase their votes equally, then they will stand as counterweights, and the role of selecting government will still be returned to the minor parties, unaffected by their diminished votes. The price of gaining power is unchanged. (The only challenge to this being that if minority party votes shrink dramatically, then maybe a major party could achieve government in their own right. This is a possibility, but a

decreasingly likely one based on the range of views and the range of parties now operating in many democracies).

This bores the inevitability of coalition government into the foundations of most modern democracies – and with it the fragility of that government, both in its formation, and also its sustainability. Worse, by producing coalition governments, proportional representation further reduces political responsibility by making decisions not only reducible to the party as a whole rather than to individual representatives, but also reducible to the collective decisions and policies of multiple parties, in arbitrary coalition.

With an understanding that no party will likely achieve a majority, voters are stuck when it comes to Popper's criterion of seeking to remove bad leaders as quickly and effectively as possible. By voting against an incumbent, you might inadvertently end up returning them to power if they cut a deal with the alternative that you voted for. Under a system like this, it becomes incredibly difficult to ever vote 'against' anyone, as opposed to 'for' a particular candidate – and so we are back with Plato, having made no progress and still trying to answer the wrong question. It becomes impossible to be decisive with one's vote, and impossible to send a decisive message of judgement upon a government or set of policies. And this is witnessed today by the attitudes of political parties that suffer electoral setbacks, who more often than not see this as a natural fluctuation, rather than a firm and conscious indictment upon their failures.

Proportional voting systems allow for very bad governments to remain in power in the face of very good oppositions, so long as they can wheel-and-deal for minority support with greater success. For many the solution to this has been preferential voting, whereby people don't just vote for a single candidate, but also select second, third and fourth choice options in the event that their first choice doesn't manage to secure over fifty percent in the original round of voting. The hope here, is that by selecting a list of candidates it becomes more likely that better leaders gain power. But of course, this is the wrong question. What we want to do is remove bad leaders, not elect good ones.

In some ways the preferential voting system does this. If the vote in any given electorate is split between various parties, and yet there is a consensus that the incumbent member is a bad leader, the divergent voting patterns might still end up removing them from power by a majority of voters placing that incumbent last on their preference list. There is scope here to remove bad leaders despite no party receiving a majority of votes.

This is something, but it is still a narrow and constrained form of error-correction. The removal of any individual, poorly performing, Member of Parliament is good, but it doesn't limit the problem of disproportionate minority party control at the level that matters. Preferential systems do open up avenues for removing bad leaders, but they don't address the issue of minority parties influencing the government through insisting on cabinet positions, the legislation of unpopular policies, and even the king-making ability to select who holds power. On the national scale, bad policies and bad governments are still increasingly immune from error-correction if they can secure third party support.

By entrenching minority rule, all such systems fall down badly. The only thing that the third largest party in any political system of this kind realistically fears is becoming the fourth largest party; not the electorate in any real sense. Minor parties need huge swings against them to ever force them out of power, and so major parties can also take more liberties with – and often outright ignore – the voters, under the knowledge that their success in achieving power hinges much more so on making deals with minor parties.

This is error-correction, but an incredibly parochial and poorly functioning variety. Government ends up being run from fringe ideas, politicians fall over themselves to please the views of minor, single electorates, and parties bargain their way into power instead of being elected. Even occasionally producing the absurd spectacle – and catastrophe for political accountability and representation – of just one individual in an entire country being able to make-and-break both governments and national policies. The hope of institutionalising error-correction, in its best form, dies here.

So what should be done – in what direction would Popper have us move? A return to something that feels a little archaic, and that appears to lack the arithmetic nuance of proportional voting systems. The two-party system is something designed to secure majority governments, and institutionalise not only accountability but also constant error-correction through criticism and comparison with an alternative government. It is a system that presents elected members with a simple proposition: perform well and in their electorates' best interests, or be removed from power. There are no backdoors, no deals to be cut and no way of ignoring the will of the voters – they either succeed or fail on their own weight, and the intended reward or punishment is always delivered unambiguously.

In a first-past-the-post, two party political system of this kind, leaders and parties will hold higher degrees of power once elected – allowing manifestos and policies to be implemented without third party hindrance or the fudging of policies. This can then be tested in public view, and a clear option can then be presented to voters as to whether to stick with the policies or accept the criticism from the second major party and vote to change government. A dialectical process of constant policy conjecture, constant unfettered application of those policies, constant criticism, constant presentation of alternatives, and then constant clear and unequivocal electoral choice.

This is still less than perfect, and there is a risk in this system that the scope of possible error-correction – possible criticisms and alternative policies – will be limited in the absence of widespread minor parties. And there is also a feeling of suppression and disenfranchisement here by denying the space for minority parties to rise and/or major parties to fall. It *can* all begin to look a touch anti-democratic. But the reach of this fear isn't quite as pernicious as it might feel – healthy debate and constant error-correction will occur inside the two major parties, and the changing of a party platform is likely to become quite drastic and radical after two or three electoral losses in a row, with the failure of each party laid bare by the fact that they are only one-of-two games in town, and this is likely to happen even in the absence of a significant or sustained defeat.

When a political system is thick with minor parties, adjustments of this kind are unlikely to ever happen, with change predominately coming about through the rise of new political parties; which even in the friendliest of conditions is not an easy thing to organise. Returning again to Popper's criterion of being able to remove bad leaders most effectively, a well-functioning democracy doesn't need a spread of voices (this will always likely occur) as much as it needs sensitivity to the wishes of the voters, policy flexibility to match that sensitivity, and the healthy development of ideas followed by the healthy criticism of those ideas.

Just as with knowledge creation, we don't – and never will – know the best possible political system; only ever approximations of it, that will then also require constant error-correction and improvement. It is a utopian fantasy to imagine that a government exists by some make-up of society that when voted for will not make mistakes, will not enforce bad policies, and who understand the future. Knowledge cannot exist in advance of problems, mistakes are the human condition, and any coalition-producing political system has the quality of making it harder to correct bad leaders and bad policies than it needs to be. All we can do is choose better-and-better political

systems judged solely by their ability *not* to elect the best leaders, but to *remove* bad leaders as easily as possible without violence.

For Karl Popper this is the Open Society, and yet once here the risk of authoritarian relapse still exists, edging ever inwards in search of space and opportunity... *Continued in part 3*

The Politics of Karl Popper - Part 3: Totalitarianism and Tiananmen

It is something so instinctively true that it barely needs repeating – democracy matters because it is about freedom, rights and empowerment. It satisfies, as much as anything, an emotional need. And yet this is completely wrong! So much so, that thinking of this kind is in fact a pathway in the opposite direction – toward domination, disenfranchisement and totalitarianism.

It is true that we should be able to elect and remove our political leaders, and yet by focussing on the hiring process we edge ourselves closer to tyranny – wilfully handing over the keys to our own society. Writing during the rise of Nazism, Karl Popper applied his “*war effort*” to understanding the psychology of totalitarianism. Where most people saw answers in biology or social conditioning, Popper instead found a technical – even mundane – sounding truth. It packaged up other such theories, simplified the whole process, and exposed the unlikely space that totalitarianism needs to survive. And having come so far, having embraced democracy so substantially today, it is a risk that we – often – no longer recognise.

The ability to elect our political leaders does nothing to ensure that those leaders won’t become tyrannical, or even that democracy will be a better functioning system than an authoritarian one. In fact it has almost become fashionable today for people to question the value of the democratic systems we live under, and to do so in comparison with the rise of seemingly cleaner, faster growing, and less problematic systems like that in China today. From all directions it feels like non-despotic, developmentally-focussed, authoritarian regimes like these are simply capable of things that democracies are not.

Sure, the trade-off is slightly unpleasant, but for many people it feels increasingly acceptable: the citizens have their voices marginalised or ignored, and in return unbelievably impressive things can be achieved. Without concern for civil liberties, crime can be addressed a lot more swiftly and comprehensively, limitations on development can be removed without fuss, and large-scale national policies can be introduced without regional pushback or legal challenges. The ability of the Chinese government to reach decisively into society, to mobilize people and resources, and to control the direction of change and progress so completely, feels not only like a good thing, but also exactly what most modern democracies are lacking.

Marred by political infighting, bogged down by the need for compromise, limited by parliamentary diversity, and constrained by the legal challenges of minor groups, democracy increasingly feels middling, messy and unproductive. So we get national, resigned-to-the-outcome mantras like ‘*it doesn’t matter who you vote for, they are all the same*’. Democracies just don’t feel designed for rapid progress, or even for passing good policies into law. And in the event that the stars do align in this regard, the next electoral cycle is always never too far away, and any good work can be undone by a new government, incentivised by the adversarial nature of our politics to roll back the changes even if they agree with the previous policies.

This stasis and inaction is most apparent when compared with Chinese style authoritarianism. Crackdowns like that in Tiananmen Square are unpleasant, and something most people would not

like to see happen in their own country. But as a price to pay for a far superior political system, and the promise of noticeable improvements in their lives, those same people often become envious. It begins to look like a compromise worth making. And this is where the discussion ends, in a simple choice between a system that makes rapid progress, and a system that respects individual rights; of which the right to vote is one.

This is a completely false understanding of the value of democracy, and with it the limitations of authoritarianism. Democracy isn't about electing the best leaders, it's about removing bad ones as quickly, effectively and bloodlessly as possible. There is a historical element in our failure to understand Karl Popper here – and our failure to understand the origins of totalitarianism. The Chinese state represents a long tradition – not limited to any country or people – as universal as anything else we have.

Our first clearly recognisable attempt at an Enlightenment – ancient Athens – was not an attempt to keep things the same, but rather to open-up old ideas, values and institutions to criticism; and so with it bring about change. Socrates paid the ultimate price for this, famously put to death for the charge of 'corrupting the youth'. Traumatized by this moment, yet also emboldened by his teacher's courage, Plato internalised a reasonably sensible lesson. He sought to avoid these types of mistakes by devising a better, perfect society, governed by perfect leaders. As Plato saw Socrates' death as a problem of who held power – in this case they weren't the right people, and so they couldn't see the mistake they were making. The idea of ruling by authority, or of deferring to traditions, wasn't wrong in itself – it was only that they had the wrong authorities and wrong traditions.

And this instinct – now replicated in places like China – is understandable. It is a product of what Popper called the "*strain of civilization*" – the deep insecurity that comes from a rejection of tribalism (belonging) and the embrace of fallibilism. The idea that all authorities, regardless of their claims to knowledge, are hopelessly flawed (just like the rest of us) and so the only reasonable thing to do is to shake-off the claims of parent-figures, and to embrace a world whose natural state is error. It's not easy. Personal responsibility and individual freedom are always inseparable from anxiety, fear and isolation. It is the shift away from the childlike impulse to find a protective and all-knowing parent. And for Popper, it is the choice between living in an 'Open Society' or a 'Closed Society'.

And for all the well-meaning intentions of Plato, he couldn't bring himself to make the adult choice. By dreaming up the perfect 'Republic', he was consciously creating a hierarchical order that could never be challenged, never be changed, and so had the same qualities of the system that he wanted to reform. Stuck on the question of "*who should rule?*", he was – without realising it – simply trying to replace one tyranny with another. And this is where the arguments in favour of modern totalitarianisms, like that in China, begin to breakdown. The person willing to abrogate their rights in exchange for increased wealth, standards of living, and global power, is still making a mistake on those very grounds.

China has a one-party political system, and for the sake of argument let us afford those people at the top of the party (those people running the country) something that no leader ever deserves – good intentions. Let's just say they aren't in it for themselves, but only for the betterment of the Chinese nation – and that they accept the responsibility to rule only because they honestly see no one else who is better qualified. They see themselves as best fitting Plato's criterion for government – they are the best people for the job. And from their position they probably feel this is true, which again runs us a little closer to the real issue here.

The protestors in Tiananmen Square thirty years ago were fighting against corruption and for democracy, yet what they were really doing was something a lot simpler – they were offering criticism. There were certain things about Chinese society – foremost their lack of a say in how they were being governed – that they disagreed with. And they chose to protest in the manner they did, only because they didn't have any other forum under which to try and correct the errors they believed they had found. However, the Chinese government saw only a break in social harmony, a risk to economic growth, and the feeling of history repeating itself and their country collapsing back into internal conflict and maybe even civil war. It's the same impulse that Plato had when he wrote that social justice *"is nothing but health, unity and stability of the collective body"*.

Individuals on the streets, blockading public areas, and disrupting everyday life, can certainly have an unpleasant feel about it. Anyone that disagrees with the purpose of their protest is also likely to resent the imposition. The decision made by the Chinese government on June 4th in Tiananmen Square was misunderstood by those on both ends of it. The values underlying it – the desire for a direct political voice vs. the desire to maintain harmony at all costs – obscured what was actually happening. It sounded again like a question of 'who should rule?', but it was a plain – even mundane – attempt to error-correct mistakes. And whether it is Plato in Athens or Deng Xiaoping in China, the rejection of avenues to error-correction has implications far beyond any individual event.

Both Plato's 'Republic' and modern day China are examples of Closed Societies – and both charge forward toward the same strange and impossible place – the idea that tomorrow's knowledge can be known today. To reject ideas as wrong – which happens every day in democracies around the world – is a completely different behaviour from that of stopping new ideas from ever bubbling-up, from ever being voiced let alone heard, and from the impact of those ideas ever being felt. The latter might feel cleaner, more efficient, and even more appropriate if the ideas in question appear ridiculous, but what is being lost is more than messiness – it is also the only means by which we can actually improve things.

Authoritarianism is a surrender of the individual – the interests of any one person in favour of the interests of the state. The sacrifice in lives and suffering under the crackdown at Tiananmen was easily justified under the shadow of China's collective strength and prosperity. This is a hallmark of all authoritarianisms – it comes in different forms, in different justifications, and with different 'higher' principles, but the individual is always expendable when compared to the state. This is not just possible to accept, but even axiomatic, once a certain conception of history becomes mainstream truth. That is, the flow of history is governed by predictable laws, that these laws are easily comprehensible, and that they point in a clear direction; an end-game. This is 'Historicism', and the mistake that Popper saw in it, that so many people seemed to have strangely missed – or naively bought into – was not just the claim that the truth is manifest, but that the future is also predictable.

Plato built his Republic on this foundation, as did almost every other political philosopher that came after him. Whether it was based on aristocratic order, divine rule, race-based nationalism, or workers seizing the means of production, all these visions involved focussing on a small set of *known* problems and then imagining that their resolution would be the last ones ever needed. There simply wouldn't be any more problems, or that any future problems would be parochial matters; tinkering on the fringes. In short, they were all utopian. Before the full horrors of Nazi Germany or the Soviet Union were widely known, Popper knew what they would be. Systems which elevate the collective above the individual, that censor criticism, that centralise control, and that impose rigid hierarchies, are systems predisposed to tyranny and horror.

Which brings us back to those moments in Tiananmen, and the apparent successes of Chinese authoritarianism. Many critics saw the crackdown as a sign of a deeper illness, something that might not kill its host right away, but that in time, inexorably, would do so. The hope they shared was that political defiance – no matter how ineffectual it might feel at the time – will slowly shift people's perceptions, further unrest will grow, and eventually it all snowballs into political overthrow.

Though coming from a different direction, there is a touch of Historicism about this type of thinking too. All questions of inevitability are fallacies. The sickness in the Chinese model has nothing to do with their ability – or lack thereof – to control future dissent, but rather the lack of error-correction that they are allowing into their political decision-making. By creating a system that supersedes the individual, China – and other authoritarianisms – are claiming an immunity to error; or that it is enough for the select few people in positions of power to error-correct each other, in house.

Popper showed that all knowledge is conjectural. It doesn't come to us through the senses, and our experiences of the world around us don't reveal true theories; instead everything is theory laden. The fact that we can ever *know* anything is only by an uncertain method of proposing theories (educated guesses), and then testing those theories against criticism – conjecture and refutation. At the point when a theory survives exposure to the best available criticism, we don't *adopt* it as true, we only don't *reject* it as false; always leaving open the possibility that future criticisms – which we can't conceive of today – might force us to abandon it altogether.

Being wrong is the natural state of things, and no truth can ever be so incontrovertible that it should be walled-off from criticism. To do so, is to claim an understanding of what is not available to anyone – the future growth of knowledge. Truth and progress only come about through the open challenge of one set of ideas by another – bad ideas are destroyed by this process, and good ones are strengthened.

Popper matched his political theory to this theory of knowledge. Instead of reaching too far, and imposing too many values that might be hard to challenge or change, democracy should be minimalist – designed to do nothing more than fix mistakes by removing bad leaders and bad policies quickly, and without violence. And constitutions – or any other means of defending the value of democracy – should simply *"make anti-democratic experiences too costly for those who try them: much more costly than a democratic compromise"*.

By silencing the protestors at Tiananmen, and anyone else that has tried to follow their example, China is closing itself off to a broader range of ideas, a broader range of criticism for existing ideas, and a broader means of error-correction. The limited range of error-correction happening inside the Chinese Communist Party today might have been sufficient to transform China into a global power, but that is only because there are greater levels of error-correction there now (though still limited) than existed under the shadow of Mao Zedong. The Great Leap Forward was a mistaken policy,,; what turned it into a human catastrophe was a fear of criticising it as a policy, and the silencing of those people who dared to do so.

The correction of mistakes is the only means of making progress that we have available to us. By limiting this into the hands of a select few people, China was also limiting its ability to respond to failures, to make changes, and to improve things. If it wasn't the Great Leap Forward, it was the Cultural Revolution, if not the Cultural Revolution then it would have been something else. China today is no longer making this same level of mistake simply because it has allowed more criticism than it did previously.

Yet by still limiting this range of criticism to those select few people in the upper hierarchy of the Communist Party, China continues to expose itself to unnecessary levels of mistakes. They are unlikely to be as obvious as the calamities of the past, but they are happening, and they will continue to do so. And this doesn't just relate to the creation of bad policies, but also a sluggishness in recognising them as bad, and then the failure to replace them with something better; again as quickly as possible. If we are being generous with the number of people in the elite circles of the Chinese Communist Party holding any real power, we might accept a figure of about a thousand – and a thousand-odd people doing error correction is just not as good as what could be nearly a billion in a Chinese democracy. A billion people looking for errors in their society, a billion people suggesting alternatives, and a billion people constantly – and loudly – judging policy outcomes.

Democracy is messy, annoying and frustrating, but only because knowledge creation is also. Anyone, or any government, claiming to be an authority, to be beyond criticism, or claiming that any given truth is self-evident (that they know it for certain) is simply making the same mistake that doomed almost every human society that has ever existed. They are always on the edge of something unpleasant, of a new Great Leap Forward, or of something much worse. Countries like China may look prosperous, successful, or even worth emulating, but they are exposed to catastrophe and limited in their ability to make progress in a way that no democracy is.

And that limitation is not just political, or technical, but moral as well... *Continued in part 4*

The Politics of Karl Popper - Part 4: Social Progress, Morality and Rugby

It is all a lot more fundamental than it sounds – it's a question of how knowledge accumulates in the world.

There is an unnecessary focus on details here, but they do need restating: Israel Folau is a hulking – and once much loved – Australian rugby player who takes his religious faith seriously. So serious in fact, that he is now willing to risk his career and reputation over the question of whether or not gay people are going to hell. He thinks they are, and that they can still be saved if only they repent and reform. Australian Rugby thinks differently, and so seemingly parochial questions of offense, freedoms, and contractual responsibilities are being arbitrated in strangely public ways.

This is only because – despite Karl Popper solving the issue a century ago – most people still don't understand how it is that we can *know* anything; how it is that knowledge develops, and with it how progress – moral or technological – is ever possible. It is not an overstatement to say that we have forgotten the most important lesson that our species could ever learn.

The details of what was said, what was breeched, who was offended, and what freedoms are protected, just don't matter when it comes to the question of what should be done about Israel Folau. The improvement in gay rights over recent decades is undoubtedly a positive, and not something that most people would want to wind back. But though the attachment to this progress is charged with heavy emotion, the only reason that it isn't reversed, is one that is cold, impersonal, and above all, explanatory.

It has always tended to lag behind technology, but moral progress is happening all around us, all the time. But that doesn't mean that the growth of moral knowledge (and knowledge in general) is linear. All theories that claim to start from a foundation are not only false, but cruel. The idea that something is known for certain, carries the imputation that questioning that certainty deserves

punishment. Because only someone who is deliberately malicious dares to criticise what they know to be true.

It is unsurprising then, that for most of human history the permanent state of things has been stagnation and suppression. Every time we discover new knowledge, the next question can always be '*why that way, and not another*'. A foundation doesn't allow this – and without questioning of this kind we cannot discover problems, let alone solve them. And so until the enlightenment and the scientific revolution, in the course of any given human life nothing ever really improved. The world you were born into was the world you died in; almost entirely unchanged.

For these people, the problem wasn't bad ideas – because bad ideas are the general state of things – but rather ideas about the world that discouraged change. New ways of organising political institutions, health care, marriage, or even new ways of understanding what constitutes a good life for example, weren't just dismissed as wrong, but silenced as heretical. The problem here is the issue of fundamentals – people believed that knowledge came from authorities, and that this knowledge was also self-evident.

With this bug in our thinking, a large chunk of philosophical thought was dedicated to questions of '*who should rule*' or '*how do we get the best people into power*'. The question itself was wrong. Instead of asking who should rule, Karl Popper turned it over and wanted instead to know '*how do we best remove bad leaders*'. What he had stumbled on was an understanding that the natural state of things is error, and that the truth is *never* obvious. So what is needed is not authorities, but constant error-correction and a tradition of criticism – a commitment to rapid change and recursive improvement.

This doesn't mean that no one can ever say that a particular moral theory is better than another, but rather that moral progress is available to us *only* because no one has a claim – as they did for most of our history – to understand the future growth of knowledge. We have come a long way, and every piece of that progress was fought tooth-and-nail by people claiming to know what was always beyond them (and always an obvious tautology): tomorrow's knowledge, today.

This also applied to the advocacy of gay rights. At every step people were saying not just that homosexuality was immoral and therefore should be illegal or limited, but also that this would remain true into the future. You only have to go back fifteen or twenty years and the consensus in every country – no matter how enlightened – was against gay marriage... at a minimum. This was – at the time – as foundational a moral principle as that of murder or theft being wrong.

It was only by embracing Karl Popper, and the acceptance that no truth is so incontrovertible that it cannot be questioned, that gay rights advocates ever got a hearing, and then slowly managed to snowball those early noises into broader acceptance, and eventually social change.

The change happened by explanation. By the open challenge of one set of ideas, by a better set of ideas. People were not shamed or coerced into changing their minds, they were convinced. This is how knowledge works: most of us have this strange impression that knowledge is literally transferable, that it can be downloaded from one person to another. This is wrong in so many ways – it can't possibly exist like this. When someone changes their mind or gains some form of new knowledge, they have in fact *given* it to themselves – acquired only, and always, through that individual's creative engagement with it.

The set of problems that got Karl Popper motivated here, was that of induction and empiricism. Essentially the claims that we comprehend the world through our senses, and that our experienced

reality resembles unexperienced true theories. Popper again turned this over – our thoughts about the world only come to us through long chains of conjecture; reality is always theory laden, and so it is always deceptive.

People listened, they thought about it, and finally they came to understand that the gay rights movement was not just championing moral change, but moral improvement. Arguments against this were less credible, were built on bad explanations, and so proved to be less convincing over time.

Popper exposed the messiness of our enterprise here. There is no hierarchy to knowledge, and what feels like truth or progress might be revealed as false, or as regression, at any moment. Any claim to the contrary is a claim to understand what is impossible – the future growth of knowledge. Considering how far we have come in recent years, or indeed how the morality of only a few hundred years ago now seems abhorrent to us, the only reasonable thing to project is that our moral standards will continue to improve. And our descendants in a hundred years will look back on us with the same – if not greater – level of disgust, and in ways that we cannot yet imagine.

This is as sure as anything that we understand in science or philosophy – prophesy is not available to us. All we can know is that moral improvements are coming our way – if we play our cards right. Just what those improvements are likely to be, we can never know until we have the explanations.

The lesson here – and particularly for people wanting to protect gay rights – cannot be clearer: it is always a mistake to try to silence opposition and criticism, no matter how upsetting those arguments may be. If we allow institutions to impose today's moral values by coercion, then we must also accept that this would have mandated that those early gay rights advocates – openly challenging accepted norms and offending the standards of their day – be silenced also. It may feel like the compassionate thing to do, but protecting feelings also means that soon enough the immoral, the barbaric, and bigoted, will also have that tool in their arsenal.

Forget gay marriage, forget legalisation of homosexuality at all for that matter. If the values of our predecessors had been immune from criticism – in the same way that certain people now want to be immune from Israel Folau's criticism – then we would still have those old values today. Women would still be second class citizens, racism would be the norm, and the thought of allowing gay men and women a voice would be a great blasphemy.

The second half of Popper's equation – after conjecture – is refutation. It is not that we adopt theories as true, but only that we don't discard them as false if they survive in the face of criticism. Without this second step, we are only ever guessing blindly at truth – rigorous testing knocks down bad ideas, leaves good ideas standing, and only then is progress possible.

So it is always a mistake to allow anyone to wall-off their truth claims. And we should not respect anyone who – once they have achieved the small piece of salutary progress that matters most to them – would then seek to shut down all criticism of that progress. Having benefited from Popper's open society, and their freedom to speak their mind without limit, they would seek to burn the bridges behind them, and again claim to be the final arbiters of truth. If silencing people by the moral standards of the day were appropriate, then we would still be living in the dark ages.

Truth has a rare property that separates it from falsehood: it is strengthened by criticism and not weakened. It doesn't need to be shielded, or protected – the more people are allowed to hammer away at it, the clearer it becomes. Israel Folau, if he could, would turn back the clock not just on gay rights but also on (in his own words) *"drunks, adulterers, liars, fornicators, thieves, atheists,"*

idolaters". We have a choice: to challenge him and let his arguments fail on their own grounds, to prove him wrong; or to simply – and dangerously – insist that he shuts up.

Israel Folau might lose his court case, and if so it will be on the principle that employers have the right to impose their moral values – or the consensus values of society – upon their employees. This is a loss for everyone involved. It means we are again in the business of outsourcing our truth claims to authorities, of empowering those people with the ability to silence dissent, and so we are also in the business of locking in the values of today against future change. Instead Karl Popper would have us meet Israel Folau's challenge head on, test his understanding of gay rights against our own, and break him down only with argument. Popper knew, as so many people seem to have now forgotten, that the source of all tyranny comes from the idea that the truth is manifest...

From here, the possibilities for what we can do, and what we can become, are literally infinite...

Continued in part 5

The Politics of Karl Popper - Part 5: David Deutsch, the Future and Infinity

The problem of how knowledge accumulates in the world – of how it is that we can *know* anything at all – is the most important lesson that our species could ever learn. The implications of this understanding reach into every field of study, into every improvement, into everything we do or could ever possibly do. And so understandably – for most of our history – it was also the philosophical problem that attracted the sharpest minds, the most intellectual energy, and which nagged most heavily upon us by our consistent failure to solve it.

And yet when Karl Popper did so, very few people paid any attention, and those who did showed a remarkable ability – despite the simplicity of his answer – to misunderstand him. Before Popper – despite the gap in our knowledge – everything felt a little more elegant, neat and high minded. It was all completely wrong, but it was also, quite consciously, a race to the top; or the bottom depending on your metaphor. People were searching for a foundation, the bedrock of who we are, and a place from where we could build ourselves up into giants. The impulse was noble, and yet entirely misguided – the only thing they were right about was the 'giant' part.

Instead of seeking to understand the foundation of knowledge, Popper showed instead that knowledge can't possibly have one. A foundation to knowledge, is a claim that something is so incontrovertible that it cannot be challenged, because the very question 'why is that the foundation and not something else?' is a state of doubt, and a foundation is, by definition, an obvious truth. And it is only once you are certain about a foundation that you can then be certain about the truths you build upon it. Something that can be questioned, is something that isn't certain.

This is a clean, neat and reductionary way of thinking about the problem of knowledge – it is also totalitarian, and doesn't take into account the place in which we actually find ourselves, and what is actually available to us. Popper solved this problem by asking a different question – the correct question – and so showed that our interactions with the world, and even ourselves, is a theory-laden process; we never perceive anything as it actually is. Our senses and instincts always lead us astray, because unseen theories about reality (knowledge) don't resemble what we see. We only come to true theories through long chains of conjecture. If knowledge came to us directly from the senses, then our theory about stars for example would still hold that they are small, cold, twinkling objects; rather than massive, hot spheres of nuclear explosions.

This difficult relationship that we have with reality, means that the natural state of things is error. We are wrong about everything, all the time. And when we do believe that something is *true*, it can never be said to be for *certain*; only that it is the best available theory that we *currently* have. Rather than a hierarchical order, where truth builds upon truth like bricks upon a steady and unchanging foundation, the process of knowledge creation is like being dropped blindfolded, in the middle of the night, into a vast and unfamiliar swamp. The mud immediately reaches your waist, and you have no idea what is the best direction to head for dry land. All you can do is take a tentative step forward in any one direction (conjecture), and once there make a judgement as to whether it feels better or worse than where you started from. If you judge it to be worse (refutation) – the water is deeper or the mud thicker – you don't necessarily move back to where you began, but perhaps in a completely different direction that you feel (again conjecture) might be better than both. And so on.

Most unsettling about this, is the realisation that when you finally, and painstakingly, crisscross your way – after countless corrections – toward a path that feels like progress, you can still never be sure that you are actually heading in the right direction. The water may be getting shallower, the ground under your feet feeling more solid, the swarms of mosquitoes less thick and less aggressive, but that steady incline you are on might just be a small sandbar in an otherwise deeper and more inhospitable part of the swamp. Your next step takes you over its edge, and now with water above your head you are swimming desperately back the way you came (again refutation).

When your solution to a problem sounds like this, is it any wonder that people instinctively turn away? But this is the same instinct that causes people to turn away from democracy in favour of authoritarianism, to prefer the status quo to social progress, and to fear technology and the future – worst of all, to not appreciate the infinite reach of human beings.

David Deutsch – an Oxford physicist and the father of quantum computation – came to Karl Popper in the tragic way that most people do – by chance and accident. It was an off-hand comment by a university professor who, despite not quite understanding Popper, was aware that Popper had solved the problem of how knowledge accumulates in the world. Immediately recognising that he was dealing with a higher level of argument than what he had encountered before, that small poke sent Deutsch off in new directions. There were no fudges, no strains of reasoning; the world Popper drew a light on was messy, but his theory was clean-edged and exact.

Everything that Deutsch would do from this moment had the unmistakable echoes of Karl Popper behind it. And though Popper embraced the mess and grind because it was true, Deutsch also saw something beyond this. There was suddenly unique reason to be optimistic, not simply because progress could be made, but that we – if we play our cards right – will be able to understand and control the universe without limit; that progress could be literally infinite.

It is a broad and expansive line that takes us back to the birth of our species in the Great Rift Valley. Evolving as we did in that eastern corner of Africa, things appeared perfect by most metrics that we use today – the skies were clear, the rivers clean, and the surrounding environment as untouched by our footprint as by that of any other animal. Of course, it was also a situation for which we were genetically well suited. And yet we never had it so bad – stalked by predators, constantly on the edge of starvation, and with no protection from extreme weather, every moment was one of suffering and fear. We know now from the fossil record – just as has been the case with all other species that have ever existed – that this same environment in which we evolved, almost killed us.

It all comes down to the limitations of genetic knowledge. Relying upon undirected mutations, the constant improvements needed to keep ahead of natural changes in the environment, are just not

something that evolution is capable of doing; at least not at the speed required. But even if it were able to do so, then those benefits would also apply to other animals (including our predators), and we would still have to suffer the same horrors and constant risk of extinction by virtue of the ensuing evolutionary arms race (micro-organisms and bacteria such as cholera bacillus evolved in this way specifically to kill human beings).

The only way that we ever managed to keep our heads above water, was with a new type of knowledge altogether – ‘explanatory knowledge’. No longer relying on the information in our genes, we could suddenly create knowledge ourselves. The process behind this remained a mystery until Karl Popper came along, but nonetheless it pulled us slightly out of the mud, and gave us the ability to dramatically change the world around us... if we chose to. The trouble was, people rarely ever did.

The immediate descendants of those people in the Great Rift Valley, despite migrating to new territory, and spreading out across the world, continued to live lives of incredible misery and desperation – the threat of death and extinction always biting at their heels. They had brains identical to our own, and so they also had the capacity to improve things exponentially. Yet – again from the archaeological and anthropological records – we know that from the standing point of any individual, nothing ever improved; the world that people were born into was also the world they died in (the artefacts – technology – we find from these periods can only be measured to an accuracy of about 10,000 years). The natural state of things was complete-and-utter stasis. This is hard to imagine based on how fast technology is improving today, and even harder to imagine when we realise that these people desired change just as much as we currently do.

Whether it was better hunting methods, better shelter, better clothing or better ways to protect themselves, our ancestors were constantly aware of how they wanted to improve their lives – they just didn’t know how to. And following this pattern, the vast majority of human history became one of unimaginable suffering, terror and extinction – right up until the Enlightenment

What changed at this moment, and what hadn’t existed until then (or at least hadn’t survived its early moments), was the establishment of what Deutsch calls a *“tradition of criticism”*. It came about largely through accident, and largely without people understanding its significance, but they had stumbled onto – in part – Karl Popper’s breakthrough long before he was born. Before this, all ‘traditions’ did just the opposite – they sought to avoid criticism, to avoid change, and to maintain stasis. The importance of this moment isn’t properly appreciated, because neither are the horrors of the static societies that came before it.

Unwilling to allow criticism, and therefore unable to make progress, we just don’t have any real record for most of these unchanging civilizations. They just didn’t survive long enough to etch themselves too deeply into history. Unable to innovate and correct errors, the first major, unexpected problem that came their way invariably wiped them out.

It was only by rejecting so-called authorities, and being free to question and criticise the world around us, that we began making rapid progress. And yet this still felt to many as cold comfort. We were improving our lives in remarkable ways, and yet for every problem we solved, new unforeseen problems were created (the industrial revolution was a solution to poverty, only for the by-product of those improved living standards – carbon – to become an existential threat of its own).

It still felt like we were only just a step or two ahead of death. That sooner-or-later we would begin to push-up against the ultimate limits of our knowledge, and so the next problem we faced could be a step too far – David Deutsch saw something different. Just as Popper had accepted the messy reality of things before him, Deutsch too started from a point of acceptance - *“we shall never reach*

anything like an unproblematic state". And so it is true that we might be doomed, but not *regardless* of what we *choose* to do. We *can* survive!

Every time we make progress we are solving problems, and every time we solve a problem, of any kind, we are creating new problems – but they are also *better* problems. The fact that problems keep arising, is never something that we will be able to fix. To be able to do so, would entail having access to future knowledge, to understand the unforeseeable. Yet despite not being able to comprehend future knowledge, we do have the capacity to deal with it – without limit. It all comes from that unique ability of ours to create explanatory knowledge, because there exists an intimate relationship between *explaining* the world and *controlling* it.

This is something that we do all the time, in what now often seems mundane ways. The world around us today, just as it was for our ancestors in the Great Rift Valley, is still a death trap. The only reason it doesn't feel as such anymore, is by virtue of the explanatory knowledge we have already created. We no longer think about the problems of staying warm in winter, ensuring a constant food supply, or of avoiding waste-borne diseases, only because we have already invented clothing, agriculture and sewerage systems. The only people that do still think about these things, are those people trying to improve them (error-correction). Without the layers of technology that we have already built around us, most of us would die almost immediately – and yet for the most part we are thriving.

The only thing that makes any environment hospitable, is what the inhabitants of it actually know. And what we know, we can control. We might still fail to solve problems in time – in which case we will go the way of all other life – but through a commitment to learn from, and correct our mistakes – to always move on and embrace better-and-better problems – we have a chance... our only chance. And there is reason to be optimistic here. It is a messy, reality-based optimism just like Popper's theory of knowledge – but also like Popper it is precise and doesn't hinge upon utopianism.

It starts by doing away with hopes of prevention or delay. Approaches like these can be useful in dealing with any individual problem, but they can never constitute a future strategy in themselves. Trying to protect against – or trying to limit once they happen – future problems that we don't yet know about, is a strategy that will quickly find its ceiling. It has the same logic of being told by a doctor that instead of treating your broken leg, he will instead show you how to avoid breaking it again in the future. For all its high-minded intent, it does nothing for your predicament right now – and in terms of existential threats, it means we only have to be wrong once for the whole project of humanity to end. To focus on problem avoidance rather than problem solving, will achieve very little of either.

Not only are these threats out there, and not only do we not know what they are, let alone how to deal with them, but there are also enemies of civilization – people who would seek to end the whole project by their own hand. Yet what all these problems have in common is their solubility, and what all these people have in common is that they are wrong. Thinking otherwise is not just to adopt the mindset of a static society, but also to adopt a mindset that – according to Deutsch – is deeply unscientific. Karl Popper has given us the tools to always stay ahead of these problems and these people, but it requires nothing less than a total commitment to achieving rapid, open-ended progress – the type of progress that static society ideology is just not capable of.

But this is not just a parochial arms race addressing cosmologically insignificant events, it is also our 'Beginning of Infinity'. Stepping firmly ahead of Popper now, Deutsch saw what for some people might sound like a truism but – yet just like with Popper before him – has been almost completely

misunderstood. That is, 'any physical transformation not explicitly forbidden by the laws of nature, is achievable given the right knowledge'. It is hard for the full gravity of that statement to set in. It means that we can reach out across the universe, manipulate planets and stars as easily as we now do TV channels, and regulate the conditions of galaxies as easily as we now regulate the temperature of bedrooms. It means that the alchemists were onto something, they only failed to create gold because they didn't have enough knowledge.

If there is a limit to what we can achieve, then that limit is also discoverable, comprehensible, and a law of nature. In the absence of such a law, everything – absolutely everything – is possible. And so we are capable of changing *everything* (the universe) at will, because there can be no such thing as a solution beyond our reach. Sure our problems often feel parochial – and they often are – but this is just because we are only at the *beginning* of David Deutsch's infinity (and always will be).

When people talk about our niche in the universe being precarious, that we are insignificant, and so we need to be cautious and humble in what we do and what we desire, they are doing the one thing that will spell the end of humanity – turning away from rapid, open-ended progress, and toward stasis and stagnation. But perhaps worse, they are wrong! As beings capable of creating new knowledge (explanatory knowledge), and therefore of affecting the universe without limit, it follows from physics that we are of the deepest cosmic significance.

It is hard to imagine a universe without limitation in this way – and so the tendency is to imagine instead that even though explanatory knowledge has this unique reach to it, and although we have the capacity to create explanatory knowledge, we are still limited by our biology. Maybe other beings will be able to control the universe in this unbounded way, maybe even better evolved versions of ourselves in millions of years' time, but not us! We are too broken, too incomplete, too much a product of our messy evolution. This misses the point of explanatory knowledge, and with it the lesson of universality.

Explanatory knowledge is a launch point, an escape valve after which there cannot be any other limitations, because with explanatory knowledge those limitations (problems) can simply be solved. And if we decide that the problem is our biological selves, then we could also simply solve this through improvements in our culture or nano-surgery in our brains. Without a foundation, our minds are completely fungible, and expandable without limit – we are entirely re-writable software. The principle of the 'Universality of Computation' means that there can be only one way of doing computation, and so the structure of our minds already contains the structure of everything. It feels god-like, but it is true, we are universal beings!

An open-ended stream of explanations is always available to us. The limitation is never resources (because all resources only become so by virtue of what people actually know) but only knowledge. It is never going to be pretty, but we *can* begin to step ourselves out of Karl Popper's swamp, and to do so at ever greater speed. Progress of this kind in any one area, is also intimately linked with knowledge and progress in other areas; if technology continues to lead the way in this regard, as it does today, then progress in politics and morality will follow closely behind. The *only* dangerous thing we can do, is to think that some solutions are beyond our reach. *"What lies ahead of us is in any case infinity. All we can choose is whether it is an infinity of ignorance or of knowledge, wrong or right, death or life."*

**** These essays are referenced to the collective works (books, articles, lectures and interviews) of Karl Popper and David Deutsch. The last, poorly attributed, quote belongs to David Deutsch; and is also the final sentence in his book 'The Beginning of Infinity'.*