

Chapter 6 Segregation of problems or homogeneity of solutions

*“I am in this earthly world; where to do harm
Is often laudable, to do good sometime
Accounted dangerous folly:”*

Our entire economic system and way of thinking is based on segregating problems. It is an approach indoctrinated from the earliest days of education and which forms the basis of the educational structures for all the industrialised democracies. The result is students leave education with a collection of qualifications governed by a pre-set curriculum and which they are ultimately measured against. So long as a student can recite the respective curriculum for each qualification and perform appropriately in exams then he or she is deemed to be worthy of success. It is an approach great for managing the education system and developing unthinking yet skilled individuals for the military industrial complex that governs us today. By contrast it is the antithesis for developing the broad and open thinking skills needed to tackle the complex multi-disciplinary problems that plague the planet. Not only is the system highly segmented and compartmentalised, but it actively resists any attempt to create broad minded and challenging thinking. For example, the standard text book for the UK A-Level maths syllabus¹ that my college uses sandwiches the chapter on the exponential function, which has such profound implications on economics and the environment, between a chapter on the sine rule and another on the equations of a circle. Though the sine rule and the equations of a circle may be interesting, they hardly have same the life changing implications of the exponential function, yet the exponential function is presented in exactly the same way as the others - just another set of abstract mathematical ideas which need to be completed to achieve exam success. Thus discussion of one of the most profound pieces of thinking any young person should be exposed to is largely censored out. Likewise the A-level economics course does not even talk about the exponential function, instead its curriculum chooses to indoctrinate students on the merits of supply and demand relationships and the anarchical ideas of different tax policies without ever reconciling the fact that the study of economics is about maintaining the impossibility of continuous exponential growth.

In contrast, I once had the pleasure to once teach a wonderful young lady from rural Zimbabwe who took great pride in describing the community that her family lived. She told how her grandmother had taught her mother about the herbs and animals in their area and how this information had been treasured and passed down through the community for generations. She explained how the older generations saw this passing of knowledge as their obligation and they took great pride in doing so. She told also how the community’s environment that had been so treasured for so many generations was now being destroyed

¹Edexcel AS and A Level Modular Mathematics Core Mathematics 2 C2
ISBN-13: 9780435519117

by the Chinese companies that were moving in under Robert Mugabe. What was inspiring was the level of knowledge and understanding she had on a wide range of critical issues exceeded by far that of many of my other students who had been indoctrinated in the segmented system of education that we subjected them to and who had lived their lives trapped within an industrial democracy. Her community had done all this without curriculum, exams and government inspectors.

While the home grown Zimbabwean education system may be out performing that of the UK on many measures, it is not an education system that would support the industrialised democratic society that we operate today which requires the majority of the population to be highly specialised and narrow minded, thus the education system must tailor its output to this end. The result is that virtually everyone ends up with a similar mindset, from journalists to politicians, and the discourse that we have on many topics becomes similarly narrow minded. So discussions on a complex issue such as climate change become limited to the narrow context of reducing greenhouse gases by developing a renewable economy or proposing that to mitigate the effects all we need do is develop flood relief programmes. Thus the complex is made to seem simple and the impossible is made to seem possible. However, it is a naturally flawed approach that leads to paralysis when dealing with complex problems where the domain of the solution reaches into many different areas and knowledge in all of these is needed to develop the framework for a viable solution. This segmented approach to learning will guarantee that the impact of events such as climate change will always overtake the actions that are proposed, as the actions are doomed to be inadequate. It is however an ideal approach to make it look like action is being taken when there is no intent to do so. It is also the approach that is being consistently taken to the three biggest crises that we face today - climate change, nuclear proliferation and financial instability, yet the solution to each one of these lies within the other. By avoiding these interconnections, politicians who falsely claim they are doing their best will always get media support because this is a simpler message for the media to communicate than the full complexity of the picture. Like many things, it becomes a self reinforcing cycle. The narrow but deep thinking needed for an industrial democracy forces a lack of consideration on inter-connectivity and so less debate happens on this. This encourages politicians to pursue their myopically failing approaches, which they can do because there is no democratic challenge. These actions which are reported myopically by the media allows the continuous segmentation of problems to continue.

For example, we thus have the extraordinary situation that no COP summit has discussed how security should be ensured in a collapsing world despite the acknowledgement that climate change will lead to political instability and statements from the UN secretary that "current proposals lack ambition." Likewise the economic summits such as Davos and G20 play lip service to climate change, with little more than platitudes being offered through ideas such as "sustainable development" and no discussion on how tax receipts can collapse due to the combined effects of climate change and peak oil. Hence, the travesty of the solution

to the banking crisis of the 2008 was to increase tax burdens and axe public spending at the same time as the poorest in society would become increasingly marginalised by climate change yet no attempt would be made to curtail excess consumption. Perhaps most disturbingly, the nuclear disarmament talks and debates on the replacement of Trident do not cover the questions raised in chapter 4. While I am yet to see any rigorous challenge to these evident conflicts of thinking in the main stream media the goals that are needed in each of these areas are clear. With climate change, we require all nations to move to a zero carbon economy, on financial development we require all nations to develop a system which equitably shares access to critical resources and on nuclear disarmament we require all nations to abandon nuclear weapons. These goals sound so idealistic that they should be dismissed. But we cannot avoid the evidence in front of us. CO2 is increasing super exponentially giving us only a tiny window of opportunity, the global financial system already came to with 24 hours of a total collapse in 2008 and is primed for a second collapse and 17,000 nuclear weapons remain in the world's arsenals, only a small fraction of which need to be fired to destroy our increasingly fragile and high risk civilisation through the secondary effects of a nuclear winter or through strikes on high impact targets such as nuclear power plants. We have no choice but to strive towards these goals irrespective of how idealistic they seem and we must achieve them; however failure to achieve any one will result in failure of the others and will doom the planet. It is the ultimate strive for a homogeneous solution which requires a mindset that is the opposite of the segmented teaching and learning ethos that our industrialised democracy has equipped us with.

If we are unprepared to break into a homogeneous solution, then we should consider the consequence of remaining with segmented thinking and determine how dim the chances of success will be. To do this we return to the prisoners dilemma of chapter 3 and calculate the probability of successfully achieving all three goals simultaneously. We have already seen how the prisoners dilemma forces two prisoners who are being held in two separate cells to act in a way that secures the worst collective outcome; with the payoff matrix that we used the result is that both end up getting eight years in jail as they decide that confessing all to their respective guards is the best way of minimising their losses irrespective of what the other does. The same pay off matrix also sees them getting only two years if they both stay silent, which is the optimum solution; as previously argued this is the unstable saddle point. This is an outcome that can happen, but it is unlikely and difficult to sustain especially if the game is to be played repeatedly. Thus if one prisoner decides to speak and the other stays silent when the game is replayed, the prisoner that suffered by staying silent will most likely decide to speak as he has suffered loss and may be in no mood or no position to suffer further loss. It results in the strategy of tic-tac; thus to win in repeated games of the prisoners dilemma you do what your opponent does. If he co-operates with you, you do the same. If he competes with you, you do the same, but you try and compete harder to make sure he is aware of the consequence of his action and if you have any doubt about the intentions of the other, you go for competition.

The prisoner dilemma assumes the rationality of the players as they both seek to minimise their losses, and for this it came to criticism from John Nash who developed it. He suggested that perhaps people are less rational than game theory supposes, and thus the unstable saddle point of mutually co-operating can be more easily achieved than the mathematics suggests. However, the fallacy behind this is that the two most rational groups of people in society are economists and psychopaths, who faced with the prisoners dilemma will almost certainly end up trapped in the unstable saddle point. The ultimate psychopaths are corporations whose needs have come to dominate industrial democracies. By their very nature corporations care only for themselves, they feel no pain and have no emotions for any one else or anything else. They lacks all the subtleties that make for normal discourse and interaction within a society, yet societies are dominated by satisfying their needs. As nations become subservient to corporations these too must also behave psychopathically, thus we see climate change and nuclear disarmament talks being played out exactly as predicted by game theory with all parties behaving rationally by collectively opting for the worst case situation of continued co-operation and resulting in the worst case outcome.

The problem for global society is that the prisoners dilemma is being played out, not with just two psychopathic players, but with multiple psychopaths. If in a hypothetical world where the climate change game is being played for the first time and all parties collectively moved towards a zero carbon economy they would achieve the unstable saddle point. But, if one player succumbs to temptation and breaks the agreement, then the tic-tac strategy comes into play making the unstable saddle point virtually impossible to maintain over repeated negotiations as the players that lose out copy the action of the one that breaks the deal and acts in rational self interest. The best measure of the difficulty of achieving this is to assume that on the first round the choices are made at random, if all players opt for the choices of a zero carbon economy demonstrating good intent and trust, then by the tic-tac strategy all subsequent rounds are played the same. The chance of the first round resulting in all nations agreeing to move to the optimum of a zero carbon economy is $1/2^k$ where k is the number of nations. Even taking a best case optimistic approach of assuming that we should only consider the interests of the G20 group of industrial nations and ignore everyone else, then the chance of getting the unstable saddle point is 9.5×10^{-7} , which is impossibly small. Adding just one extra nation into the negotiations reduces the probability of achieving the optimum outcome by half and in reality there are 196 nations on the planet, all of which are faced with the decision of either continuing to burn fossil fuel or to rely on everyone else to move simultaneously to a zero carbon economy. The chance of this happening is the unimaginably small value of 9.9×10^{-60} . For all practical purposes it is effectively zero, it is on a par with the chance of a selecting an individual atom at random from the all the atoms that make our planet. It is this probability that we are being asked to believe that is achievable.

But, the game being played on planet earth is more complicated as nations must simultaneously play games for climate change, nuclear disarmament and economic superiority at the same time and these are deeply intertwined. Nations

can only secure critical resources if they are economically competitive which requires them to ignore climate change; nations can only build nuclear weapons if they have large economies and industries to support the cost of these and in an world made unstable by climate change and resource shortages nuclear weapons continue to be regarded as the ultimate guarantee of security regardless of the illogicality of this. Thus the three games are intimately linked, yet what our segmented industrialised thinking continues to lead us towards is that the problems in these three areas can be solved simultaneously and individually. However, because of the linkages between them, then all three games must achieve the optimum but unstable saddle point at exactly the same time and remain there through repeated rounds of negotiations, so the chance of this happening in a single game is the equal to product of the probabilities of each game, which we can approximate as:

$$Probability = \frac{1}{2^k} \frac{1}{2^n} \frac{1}{2^m}$$

where k is the number of nations engaged on climate change negotiations, n is the number of nations engaged on nuclear non proliferation talks and m is the number of nations engaged in economic and resource competitions. Even taking the most optimistic scenarios of k being limited to only half the world's nations; n being limited to 10 to cover the P-5 nations, the new nuclear powers and a few prospective nuclear nations such as Saudi Arabia and only half the world's nations being involved in resource struggles so m is 98, we get the probability of achieving all three goals simultaneously of 9.9×10^{-63} . This immeasurably small value is the probability of life surviving on the planet, much less civilisation, given the current approach we are taking of tackling all critical issues on a segmented and individual basis and hoping that they are simultaneously successful. Even these bleak odds may be an overly optimistic assessment as three games that we have simplified the world's dilemma to can be broken down into various sub-games amongst which there are further subtle interactions. Thus the economic games can be considered to be an amalgam of games such as the International trade agreements, OPEC, EU and North America free trade acts amongst others all of which require competition and force blocks of nations to compete against each other. Within the security sphere as well as agreeing on nuclear talks, negotiations are also needed on conventional arms, terrorism and covert surveillance which again will interact.

In 2011, prior to the climate change talks in Qatar, I challenged John Ashton who was the UK Special Representative at these and acting on behalf of the Foreign office to push for nuclear weapons to be put on the climate change negotiating tables. He responded with the comment², *“that if he wanted to derail the talks, this would be the best way of doing so.”* He somewhat is missing the point that the existing system that he is supporting is doomed to fail.

²Emails with John Ashton, the UK's special representative on climate change
<http://www.nucli.biz/#!/emails-with-john-ashton/curc>

The above analysis is a measure of dangerous trap that we are in; a multi-party prisoners dilemma played with a multitude of perfectly rational psychopaths within the framework of a large number of interlocking games all being played at once and against a strict and non negotiable time frame. So complex is the relationship between the economy and the environment that this list of interlinking games and feedback effects is as long as anyone wants to make it. It paradoxically a function of our highly interconnected and developed global community and it is its Achilles heel. It is also a problem that our system of education and our individualistic ethos does not prepare us for.

It is difficult to know if we do not see these complexities because they are not pointed out, or because they are too difficult to communicate, or because they are too uncomfortable to acknowledge. Most likely, it is a combination of all three. But recognise these we must, because we are all trapped in this dangerous game and we all play our part. We must also relieve ourselves of the dangerously folly of thinking if we should do good then those around who are incentivised to do harm will also do good. But this is the challenge that we must rise to and failure to do so will lead to our demise.