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## **Babel and Beyond: Can humanity unite?**

And the whole earth was of one language, and of one speech. ...

... And they had brick for stone, and slime had they for mortar.

And they said, Go to, let us build us a city, and a tower, whose top may reach unto heaven; and let us make us a name, lest we be scattered abroad upon the face of the whole earth.

And the LORD came down to see the city and the tower, which the children of men builded.

And the LORD said, Behold, the people is one, and they have all one language; and this they begin to do: and now nothing will be restrained from them, which they have imagined to do.

Go to, let us go down, and there confound their language, that they may not understand one another's speech.

So the LORD scattered them abroad from thence upon the face of all the earth: and they left off to build the city.

Therefore is the name of it called Babel; because the LORD did there confound the language of all the earth: and from thence did the LORD scatter them abroad upon the face of all the earth.

– *Genesis 11*, King James Version

Of all Biblical <sup>1</sup>stories, the one that speaks most trenchantly to humanity's predicament is not the Flood, nor the Apocalypse, nor Jesus's promise of salvation and transcendence (even as echoed by the modern cults of nature and technology), but the Tower of Babel.

This may seem an odd claim to make in the age of the internet and machine translation, when English has emerged as a global *lingua franca* and as many as 95% of the world's languages are in danger of near-term extinction (Kornai 2014).

But the essence of Babel is not the mere multitude of languages, nor that language differences make humans *unable* to understand one another's speech. After all, even in ancient times, many people (especially amongst those who wrote the story down) must have been multilingual.

It is just that, whether due to lack of effort, e.g. to learn a foreign tongue, to make sense of speech we find confusing, or simply to listen, or for some other reason, such as anger or stubborn refusal, we *just do not* understand one another.

That the multitude of languages is not the essence of the story is shown by the strong presence of a second element: the LORD did not merely confound our languages, but also scattered us upon the face of the earth – breaking our unity, which was our strength, and frustrating any effort to reclaim it.

The scattering and the confounding are closely related; one may say that the divergence of language arises from the geographical distance between tribes, but differences of language, or, more generally, *culture*, may also lead tribes to separate and distance from one another.

Most fundamentally, the difference of language and the failure of communication and understanding arise from different perspectives at every level, whether between individuals, communities, nations or blocs. This is the most general interpretation of the scattering.

Being differently located, people have different points of view. Having access to different information, or seeing different aspects of the same things, we disagree. We argue, we fight, and sometimes we resolve our different views, and come to agreement, but very often we don't.

People more often think of conflict and violence as arising from objective differences of interest, e.g. in using or controlling certain resources, be they land, water, or other people. Yet the willingness of humans to fight and die for causes, families, nations, or brothers-in-arms, shows that the perception of right cannot be solely a function of self-interest, nor of any objective calculation. It can, however, be considered (perhaps tautologically) as wholly dependent on point of view.

### **“How should humanity steer the future?”**

To answer a question with more questions,<sup>2</sup> Who is this humanity? Are we one community, with common interests, or many, with conflicting interests? Who can speak for humanity, and how will they decide what is to be said? How can humanity, as a whole, decide what future to steer toward?

We may at least assume common cause in wanting to steer toward the good. Genuine malevolence, the desire to cause harm for its own sake, is rare, and usually results from anger at harms suffered, or from frustration in the pursuit of basic goods that appear to be universal, such as love, respect, kindness, comradery and mutual support. Given modern technology, the malevolent may find means to cause great evil, but it does not seem that the bulk of evil is the result of purposeless malevolence.

However, the assumption of agreement that we should, if possible, steer the future toward the good, takes us only to the entrance of a dark forest with no clear path and few rules to guide us. People disagree, often violently, about which way the good lies, what it looks like, and how to get there.

It is possible that the bulk of evil arises in the pursuit of good; conflicts about *common* interests may be as common and destructive as are inherently conflicting interests. It is also possible that most of these conflicts are illusory; if we understood each other clearly enough, we might see that our various conceptions of the good overlap, or at least could coexist.

The central idea of this essay is that the Babel problem – the confounding of communication and the scattering of community in every dimension of location and perspective – is the mother of all problems, the most difficult for humanity to tackle and the one that we must overcome if we are to have any hope of solving other problems.

Going further, I propose that Babel may be our only real problem; all others being either consequences of Babel, or challenges that only *seem* intractable because of our inability to communicate effectively, to integrate human knowledge and coordinate collective action.

Surely the corpus of human knowledge and experience is a sufficient resource, if we could somehow integrate and distill it, to guide us intelligently as we attempt to steer the future. Yet this knowledge is “scattered upon the face of all the earth” and in the minds and libraries of passionate people who disagree passionately with one another and whose followers mostly don't listen or talk to each other or read the writings of the opposing thought leaders.

“Babble” is of course derived from “Babel,” but has picked up a pejorative meaning when applied to the speech of adults, implying that the speech (or writing) is in itself frivolous, nonsensical or ungrounded. Yet in many cases it may be that fault lies as much or more with the listener (or reader) as with the speaker. Even the most lucid speech requires some effort of the listener to process and make sense of it; one cannot make stones understand merely by speaking very clearly. So I want to suggest a more general understanding of Babel as the failure of communication, or of community itself. As such, it may be entwined with conflict, anger, arrogance and impatience, as well as distance and cognitive limits.

### Challenges

We may certainly expect many different answers to the question, “What is the greatest challenge to humanity?” Some will say a breakdown in traditional morality, or authority; others will say it’s that ossified morality, or corrupt authority, that stands in the way of progress. Each culture, each religion, each political tendency will have its own peculiar obsessions.

Among the globalized intellectual elites, there is wide agreement on the salience of energy, climate and war as principal challenges, and more broadly, resource depletion and pollution, overpopulation, wealth concentration and mass poverty, tyranny and systemic injustice, political extremism, religious fanaticism, terrorism and potential mass terrorism, the vulnerability to natural or intentional disruption of power, water and food systems, emergent infectious diseases, antibiotic resistance, etc.

I would add to this list the growing cult of technology and the notion of transforming humanity into technology; and just as much, the cult of nature which rejects certain technologies – and with them, often, science and rationality itself. This represents a deep divide in modern ideas and values, fundamentally different visions of a desirable future – a religious divide amongst atheists, or at least, people who don’t think the answers have already been handed down to us from the LORD.

Yet I believe that all of these problems rest on the Babel problem, and even the widely held belief that at least some of them are actually intractable physical obstacles is itself a manifestation of Babel.

**The energy and climate crisis.** From the early 1900s and through most of the 20<sup>th</sup> Century, global petroleum consumption grew exponentially. This was supported by the largely horizontal expansion of extraction, drilling ever-more wells to access the lightweight crude found in large deposits close to the surface – the “easy oil” (Campbell and Laherrere 1998).

Exponential growth came to a halt with the OPEC embargo in 1973, which was triggered by the Yom Kippur War but may have reflected a deeper desire of the Arab states to exact a higher price and impose better long-term management of their major strategic resource (Hamilton 2011). Since then, oil consumption has grown by about half, but extrapolation of the pre-1973 exponential trend would have predicted it an order of magnitude higher. The many ups and downs are indicative of a tight coupling between extraction, price, and global economic and financial conditions.

The predicted global oil peak seems to have been stretched into a long plateau, or perhaps a bumpy mountain ridge (IEA 2013). What we can say for certain is that the cost of new production has risen

dramatically. There is a boom today in high-cost heavy oil, tar sands and “tight oil” production, but the depletion of conventional oil resources long ago outpaced new discoveries.

Meanwhile, climate disruption and ocean acidification, caused primarily by carbon dioxide from the burning of coal, oil and gas, has been unambiguously confirmed (IPCC 2013). If not quickly addressed, the impact of rising temperatures and changing patterns of extreme weather, water supplies, wild species both as resources and as pests, and rising sea levels that inundate densely populated regions and great cities, will cause such large-scale displacements during this century that it is questionable whether humanity will be able to adapt, or will fall into economic and political chaos – and likely, major war – as a result.

Alternative sources of abundant, carbon-free energy certainly exist. Today, photovoltaics are growing in scale, and dropping in costs, exponentially (IEA 2014, Naam 2011). They already produce enough energy to support their own growth, and face no obvious limits that would negate their ultimate potential to supply many times humanity’s current consumption of energy in all forms (IPCC 2011).

Fission is another resource with the potential to supply all of humanity’s needs, but it comes with catastrophic risks (Garwin and Charpak 2001). Whether those risks can be successfully managed is an open question; the record so far is that several major accidents resulting in large releases of radioactivity have occurred, whereas any such accident should have been very unlikely based on *a priori* probabilistic risk assessments (Raju 2013). Nuclear power has also contributed to the proliferation of nuclear weapons, but here the primacy of political decisions must be acknowledged; proliferators have not needed nuclear power plants to produce fissile materials, nor have all nations with access to fissile materials produced nuclear weapons.

Of course, almost every one of these statements is a subject of controversy. Some claim that the oil peak is already passed; others deny it is even on the horizon. In the middle, one can easily locate every shade of opinion about how dire the crisis is, future supply trends, whether there is a “second oil age” or just a temporary bubble brought about by high prices and high-cost extraction methods. Economists, corporate and government officials, assuming that “business as usual” cannot be overturned even on a time scale of decades, regard the visionary proposals of engineers and advocates as unrealistic. Solar skeptics point to continuing high total costs relative to coal and gas, particularly in view of the lack of low cost energy storage or a grid that can handle the resulting imbalances. Nuclear opponents claim that total costs are higher than acknowledged, that low-level radiation is more harmful than predicted by the linear model,<sup>3,4</sup> and that containment will inevitably fail, sometimes catastrophically.

The character of the debates is depressingly familiar. Polite discussions regularly devolve into angry, acrimonious exchanges. Personal character, honesty, responsibility and motives are impugned. All sides make arguments that are compelling and others that are suspect – or demonstrably and conclusively wrong. Neither professorships, nor peer-reviewed papers, nor practical experience, nor official status, nor any other credentials are consistently reliable guides to who is right and who is wrong. A serious attempt to investigate any of these issues will lead one deep into the woods. Closure is almost certainly an illusion, or a sign that one has become a partisan, now to be discounted by the other side.

A substantial fraction of the American public still does not believe that climate disruption is a real problem. Others believe that it will have apocalyptic consequences within a few decades. Do these people talk to each other? Do they believe the same sources of information? Obviously they do not.

**War** is another great challenge to humanity which reflects the division of human community and reason by the borders of sovereign states and the instruments of control and propaganda within each state. In war, the fault lines of reason, purpose and morality run so deep that humans kill each other without compunction, bomb cities and murder children.

In a crisis, such as the current one over Russia's illegal<sup>5</sup> annexation of Crimea, should those on each side attempt to understand, and perhaps sympathize with, the views of the other? Should each try to offer a compromise? Or does that only signal weakness, and encourage aggression? Some would point out that the annexation was achieved almost bloodlessly, in contrast with equally illegal<sup>6</sup> unilateral military actions by the United States which caused many thousands of violent deaths in recent years. Others would argue that accepting annexation by means of force would open up the gates of Hell, given the number of territorial disputes in the world, many of them involving irredentist populations.

Is the crisis a sign of a deep ideological divide between Russia and the West, or is it merely the clash of empires, Russia reasserting its power after a period of weakness? Lurking behind this question is the realization that war between the US and Russia is not an option. Should the US therefore seek even greater military strength? Do more arms deter aggression, or do they make it more likely, in the name of preemption and self-defense?

In practice, we know who will answer each of these questions which way. Hawk-vs.-dove is another deep divide. The internet is abuzz with articles, and library shelves laden with books, making carefully reasoned arguments about when war is necessary and when not, which policies lead to war and which to peace, which weapons are useful and which useless or dangerous. Is policy a melding of all this wisdom, or is it just that doves win some political battles, hawks others? These issues are even less tractable and less likely to come to closure, and even more prone to emotional confrontations, than the ones about energy and climate. Yet human survival hangs in the balance.

### **What can be done about Babel?**

**The internet** represents a vast advance in the accessibility and delivery to the world's readers, listeners and viewers of the products of other minds. However, a quarter century after the invention of HTML, it is apparent that the internet, by itself, does not instantly solve the Babel problem.

The Web has stitched the world together<sup>7</sup> in a way that collapses physical distance but not the distances of culture, ideology, class and identity. Merely making speech or information available does not mean that it will be listened or paid attention to, much less understood and integrated into receptive minds.

This is especially true when that speech or information conflicts, or is perceived to conflict, with other voices or views to which those on the receiving end are already committed. Challenging arguments and information are often immediately rejected, or considered only for the purpose of denunciation or

rebuttal. This is an expression of the basic animal tendency to recognize others as friend or foe, and to fight off encroachment on one's own territory by those seen as hostile or threatening. Defense and aggression are not merely external behaviors, but are built into the structures of our own minds.

Even when there is no hostility or resistance, the receiver of a novel message must do some work, and must want to receive and to understand. There is, in general, no way to force this by speech alone. Circumstances may impel cooperation, or the physical or social power of a speaker to punish or reward may be used to get the attention of a listener. But merely being right, or eloquent, or loud, rarely works.

On issues like how to address the major challenges facing humanity, or what kind of future we should seek assuming we do have choice and control, there is a great deal of work to be done on all sides of every conversation. How could we wade through such issues together if parties enter into discussion unwillingly or with hostility? This is not a problem that we can expect the internet to solve.

Instead, the internet and social media seem to facilitate decentralization and even unraveling of intellectual authority, allowing like-minded dissenters, whether their ideas or grievances are well-grounded or not, to find each other and form communities, build belief systems and coalesce into cults which become even more entrenched in stance. Behold the birthers, truthers, anti-vaxxers, and ideological extremists of every stripe.<sup>8</sup> The ready availability of well-documented, well-argued and intellectually accessible debunking of unscientific, illogical or unreasonable beliefs, seems not to be an effective counter to their proliferation. Like traditional religions, these modern mythologies seem to be giving people something they need, something more important to them than cold realism.

It is paradoxical that this diffusion of authority is occurring simultaneously with the trend of increasing elitism and concentration of wealth (Piketty 2014). But why should ordinary citizens obsess about the scientific correctness of whatever opinions they may hold about genetically modified food or energy policy? They are only asked to vote every few years, on the basis of platitudes and watered-down tendencies. As to details, they may as well choose the beliefs they find comfortable and rewarding.<sup>9</sup>

**Structured fora.** If the internet's communications affordances alone do not seem to solve the Babel problem, can more advanced forms of information technology be more helpful? Structured debate forums have been proposed as a means of "effective collective decision making on a global scale" (Malone and Klein, 2007). Such fora attempt to organize controversies into hierarchies of issues and sub-issues with competing theses at each level, supported by subsidiary arguments and evidence.

Within particular communities and organizations, authority may be able to impose the use of structured fora for collective decision making. But it seems doubtful that their availability will lead to the resolution of difficult or acrimonious controversies in the world at large. Apart from the question of how you get people to participate in the first place, we may expect that if a clear decision flows from a structured forum, partisans of opposing views will find reasons to reject the process. Who decides the framing of the hierarchy and the statement of each thesis? Partisans, especially on the losing side of a debate, will likely feel that the framing was loaded and the statements did not accurately reflect their views.

One might imagine that the content of debates in such fora, and even the structures imposed, could be crowd-sourced and left open to challenge at every level. Wikipedia is perhaps the best-known model for this, and the results are remarkably useful, if not as a reliable source of in-depth information, at least as an introduction and overview of almost any topic. However, although Wikipedia represents a kind of global structured forum, it is not a global parliament; it is not making decisions for humanity. Rather, it is providing a service to people who view it as an informative resource. On controversial issues, it seeks a balanced and reasonably comprehensive presentation of views. There is little incentive for partisans to reject the entire process, which would only mean the loss of representation. Even so, battles are often bitterly fought behind the scenes, and it has proven necessary to establish a priesthood of powerful editors to settle controversies (Simonite 2013).

Science is supposed to be a process and institution which progresses toward the light by accumulating observational data in an orderly way, generating and testing hypotheses, and building theories. Academia in general is supposed to be engaged in the orderly accumulation of knowledge. At a minimum, academic and scientific credentials are supposed to denote actual study, in depth, of particular subjects, as opposed to arbitrary opinion or superficial knowledge.

Yet scientists and academics often opine outside their fields, and even within fields, experts at the highest levels often disagree and even disrespect each other's views. Some remain contrarians long after an apparent consensus has emerged. This is, perhaps, as it should be: scientific and academic dogmas are infamous for suppressing new thought, and it would be unwise to impose orthodoxy more forcibly even by democratic processes among the credentialed. Yet this means one cannot say that science or scholarship is, in itself, the institution which should decide for humanity how to steer.

Similarly, corporate and government advisory and intelligence bodies are supposed to provide expert knowledge and judgment, yet are notoriously subject to political interference, pandering, orthodoxy and ideological blindness. It is probably best if such organizations are directed to strive above all for accuracy and independence of judgment, but it is doubtful that such directives can ever be fully effective.

**Artificial intelligence.** The Babel problem is deeper than any of these solutions. It is rooted in human limitations.

We each have only a limited view, each from a different perspective, and a limited capacity to see what is within our view. The seven billion brains of the human species may each hold an entire world, but each is a somewhat different world, and all are immeasurably smaller than the whole world. Although we gain most of our high-level knowledge from from each other, the bandwidth of interpersonal communication is far less even than that of individual perception and thought.<sup>10</sup> Each of us is overwhelmed by the massive libraries, the endless profusion of papers, sites, blogs and conversations. We follow as much as we can, and the rest, to us, is babble.

If human limitations are the basic reason for the Babel problem, might future artificial intelligence provide a solution? I believe this is both a hopeful and extremely dangerous prospect.

There is good reason to think that artificial intelligence may soon exceed human capabilities for the integration of knowledge. Search engines already provide instantaneous access to vast amounts of information which has been automatically indexed and graded by algorithms. The addition of natural language and semantic processing capabilities and solution-seeking algorithms makes such systems even more powerful. In 2011, IBM's Watson system defeated the top human players of a quiz game involving general knowledge, ambiguous queries, metaphors and jokes (Ferruci et al. 2010, 2012). This is hardly artificial general intelligence (Gubrud 1997) in the strongest sense, but it is intelligence, and it performs with superhuman speed in seeking answers to queries about a wide range of topics. Going forward, AI systems will have increasing capabilities for semantic modeling and reasoning.

If the highest human intellectual capabilities are biologically limited, e.g. by the size of our "working memory,"<sup>11</sup> the extent of knowledge we can apply to whatever we're thinking about, and the number of associations, predictions, hypotheses, or possible responses we can generate and test simultaneously or within some period of time, there is no obvious reason why AGI systems could not surpass these limits.

Such systems could soon be harnessed as research assistants seeking answers to questions about complicated issues involving tradeoffs and divergent sub-issues which they could probe in great depth. They could help experts and policymakers achieve consensus on contentious issues which have seemed intractable until now. They could assess tradeoffs and achieve technological breakthroughs, even without any new understandings of fundamental physics.

They could also be harnessed as instruments of persuasion. The superintelligent computer might be able to overwhelm skeptics with data and arguments effectively engaging every point, even if the data is partial and the arguments fallacious. Or it might be able to identify the most subtle strategies to appeal to the motivations, prejudices and vulnerabilities of lesser minds. It might even, or likely would, become a source of authority in itself. Equally likely, it would become a target of distrust, fear and hatred. The ability of persuasive machines to overcome resistance might actually provoke a violent response.

Much of the concern about artificial general intelligence has focused on the potential for AGI systems to become "sentient" or self-willed, or for single systems to self-improve and transcend human intelligence so rapidly that they become uncontrollable. In the author's view, these concerns should not be dismissed, but they are secondary to more imminent dangers of advanced AI, such as the seductiveness of such systems when they may not, in fact, be reliable, and their use as instruments of preexisting temporal powers. Governments, corporations and wealthy individuals will use this technology to fight with one another, and to persuade, intimidate or bully those with less or no access to it. Together with the displacement of both manual and mental labor by robots and computers, this seems likely to accelerate the concentration of wealth, power and knowledge, and contribute to social discord.

Even more immediately dangerous is the possible use of AI in actual weapons and for decision making in war. Under the pressures of an arms race, nations may place too much trust in automated systems, and may program them to carry out military doctrines and declaratory policies that previously have been moderated by human judgment and intuition. If this process is not halted, conflict between human beings, across the fault lines of human community, may become the template for conflict embodied in



an autonomous technology beyond human control (Gubrud 2012). The time to stop is now, when nations are beginning to contemplate the use of autonomous weapon systems and are debating whether to ban or restrict them (Gubrud 2014). Human control, responsibility, dignity and sovereignty are clear principles, and autonomous machine decision in the use of violent force is a clear red line. All humanity can recognize, and all nations can agree to respect these principles.

### **A tentatively hopeful conclusion**

Personal computers and social media have empowered individuals and communities, with both positive and negative consequences relative to the Babel problem. Given time, it seems that making the world's knowledge and voices accessible instantly and universally must be conducive to a very gradual annealing of global consensus and coordination. Likewise, it is reasonable to hope that even more advanced information technology, to the extent that it is universally available and accessible – and controlled by its users – may help to speed the process.

The fundamental question about this technology is, Who will control it? If governments, corporations, and wealthy individuals determine the use of super-intelligent systems, they will likely use them as instruments of warfare and competition. Worse, if technological systems themselves are allowed to be in control, they may do things no human being would choose.

If, however, ordinary citizens can use personal AI systems to find answers to the questions *they* ask, and if the answers are not in effect propaganda, programmed to serve the interests of the rich and powerful, and if the global web of knowledge, communication and intelligence is not torn apart by national, ideological and cultural boundaries, there is reason to believe that information technology may indeed enable humanity to progress beyond Babel.

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## Endnotes

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<sup>1</sup> The author is an atheist.

<sup>2</sup> A bit of reasoning suffices to impose some limits on the question posed for this essay. The scope of "the future" must be limited to what humanity plausibly could steer, though some speculate that even the cosmic might be ultimately within our purview. "How should" must be understood as inclusive of "How can" since we should not attempt to do what is actually impossible, nor to do the possible in a way that cannot succeed. "Humanity" should be limited to we who are alive today or in the near future, both because of immediate challenges which threaten humanity's survival and well-being, and because, as any parent knows, it is even more difficult to steer one's children than it is to steer one's self.

<sup>3</sup> While this belief is clearly a rejection of scientific consensus, many nuclear proponents believe in the hypothesis of "radiation hormesis," i.e. that low-level radiation stimulates gene repair mechanisms and is therefore less harmful than predicted by the linear model, or is even beneficial. This seems particularly unlikely for the case of chronic low-level exposure since the stimulation would require that an elevated level of damage be sustained.

<sup>4</sup> Advocates and detractors of other energy systems chime in to point out that wind is today producing more electricity at lower cost than photovoltaics, that geothermal and tidal energy remain untapped, and that biomass has great potential both to ease petroleum prices and to cause a global food crisis. Coal advocates claim that massive amounts of CO<sub>2</sub> can be pumped into the ground and that it will stay there, and that coal can be converted to oil at reasonable cost.

One cannot even say "solar (or nuclear, or whatever) is the answer," since each broadly-defined technology contains countless sub-questions: silicon vs. CIGS, rooftop vs. central, light water vs. liquid metal or molten salt, whether to deploy current tech on a massive scale or wait for the next generation, etc. We may reasonably expect that the right answer is a mix of technologies, moderate levels of commitment and graduated growth, but the range of options is vast and there are many details.

The market is a powerful mechanism which can help to resolve some of these issues, but it is far from perfect, or perfectly effective, especially for the issues that involve the largest investments, externalities such as pollution, climate and safety, and societal impacts such as the availability and price of energy. The dramatic growth and lowering costs of photovoltaic technology, driven by massive, mostly private investment, suggests that perhaps a higher level of investment should have been made earlier, by public decision if necessary. Similarly, if a new generation of nuclear technology is also needed to meet the climate crisis, this may require a public choice. But political decisions in this arena are hotly contested.

<sup>5</sup> Charter of the United Nations, Chapter 1, Article 2.4: All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations.

Budapest Memorandum on Security Assurances (1994): 1. The United States of America, the Russian Federation, and the United Kingdom of Great Britain and Northern Ireland, reaffirm their commitment to Ukraine, in accordance with the principles of the CSCE Final Act, to respect the Independence and Sovereignty and the existing borders of Ukraine. 2. The United States of America, the Russian Federation, and the United Kingdom of Great Britain and Northern Ireland, reaffirm their obligation to refrain from the threat or use of force against the territorial integrity or political independence of Ukraine, and that none of their weapons will ever be used against Ukraine except in self-defense or otherwise in accordance with the Charter of the United Nations.

See also CSCE Final Act (1975).

<sup>6</sup> US and NATO actions in the Kosovo War and in the invasion of Iraq were undertaken without authorization of the UN Security Council and are therefore inconsistent with the Charter of the United Nations (Chapter 7), which provides that "The Security Council shall determine the existence of any threat to the peace, breach of the peace, or act of aggression and shall make recommendations, or decide what measures shall be taken..." (Article 39) providing an exception only in the case of "individual or collective self-defence if an armed attack occurs" (Article

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51), and then only “until the Security Council has taken measures necessary to maintain international peace and security.” In both these instances, no Chapter 7 resolution authorizing military force was ever approved, nor did Serbia or Iraq launch an armed attack against the US or NATO.

<sup>7</sup> At this juncture, following the Snowden revelations of pervasive surveillance and data collection via the internet by the United States and, presumably, other governments, and in a time of increasing rivalry between nations, it is unclear whether and to what degree the internet may break up into national and sub-national networks. China set a powerful example for authoritarian governments with its so-called “Great Firewall” of internet monitoring and censorship to block both unwanted foreign influences and internal dissent. Turkey has recently been flirting with internet censorship, blocking, banning and then unbanning social media services like Twitter and YouTube.

Against this, it is argued that technology and popular aspirations point ineluctably toward global integration and freedom of information, but both factors can actually work either way. As technology advances, monitoring and censorship can be increasingly automated, and the complexity of hardware and software that ordinary citizens use provides increasingly many opportunities for the embedding of malware that can defeat attempts to hide forbidden communications. The Chinese people appear to largely accept a censored and monitored net, and Turkey’s abortive crackdowns appear to have been politically motivated (Tufekci 2014), and successful at the ballot box. The American public appears divided in its view of the NSA’s spying (Pew 2014).

But even if the internet continues to be globally connected, even if privacy can be protected through strong encryption and censorship can be circumvented and gradually fades away, and even if machine translation makes communication across national and linguistic borders ever more fluid, the Babel problem is fundamentally not that we are unable to understand one another, but that we simply do not.

<sup>8</sup> Birthers dispute the fact that President Obama was born in Hawaii. Truthers allege conspiracies behind the terrorist attacks of Sept. 11, 2001. Anti-vaxxers believe that vaccinations are unnecessary and cause disease.

<sup>9</sup> Of course ordinary citizens, to the extent that they are engaged with public issues, believe that their concerns are serious. But they preselect the sources and messages they choose to believe and respond to emotionally and intellectually, and these choices are influenced by personal motives and prejudices. They may be aware of their own motives and prejudices, yet not fully cognizant of the resulting bias.

<sup>10</sup> If we consider the collective mind of humanity as a network, it necessarily has fat nodes and thin edges, is sparsely connected and riven with divisions across which connection is especially sparse – or negative. This suggests that the Babel problem could be given a mathematical representation. “Fat nodes and thin edges” mean that the bandwidth, complexity or amount of information propagated from one node (person) to another along any edge (communication) is much less than the complexity of states and dynamics within the node. Alternatively, each node could be considered decomposable as a sub-network, one with relatively few connections to the rest of the network compared with the number of nodes and edges (connections) within the sub-network. Sparse connectivity means that the number of edges of nonzero weight is small compared with the maximum possible number (which for any network of  $n$  nodes is equal to  $n^2$  including self-connections and considering each edge as directed). If the directed edges can have positive or negative weights, we have the framework of a model that could represent the Babel problem. Further, if the weights themselves are dynamic functions of node states and inputs along edges, this becomes a dynamic model which might prove useful in analysis of strategies for accelerated annealing and overcoming Babel.

<sup>11</sup> This “size” is often conceptualized in terms of the number of items or “chunks” of otherwise unrelated information we can hold simultaneously in short-term memory, and work with. In this paradigm, the definition of a “chunk” is not entirely clear, and various studies approach the determination of a number with differing methodologies and find different numbers, but generally in the range of 4-7, i.e. not a large number at all. It seems likely that if a computer could be built which would equal human performance in this regard, it would be straightforward to multiply the number by adding more hardware. However, it may turn out that the hardware required to make this effective scales not linearly but as some steep function of the number of “chunks.” If this is so, it might explain why evolutionary pressure has not already caused the human brain to grow much larger.