Apocalypse Got You Down? Maybe This Will Help

Cara Buckley

Searching for a cure for my climate crisis grief.

One day early this fall, 19 people gathered in a small event space in Red Hook, Brooklyn, and sat in a circle. They included an immigration lawyer, a therapist, an Extinction Rebellion protester, an artist and me. Outside, it was cloudlessly sunny and hot in a way that would have once been described as unseasonable but that nowadays is just mid-September.

We were there for a workshop called "Cultivating Active Hope: Living With Joy Amidst the Climate Crisis," a title that sounded wildly optimistic. I was there because, for the life of me, I could not understand how anyone was coping with the climate crisis.

Have you ever known someone who cited the Anthropocene in a dating profile? Who doled out carbon offset gift certificates at the holidays? Who sees new babies and immediately flashes to the approximately 15 tons of carbon emissions the average American emits per year? Who walks around shops thinking about where all the packaging ends up? You do now.

Unlike millions, I haven't been directly affected by the climate crisis — not really, not yet. But the barrage of cataclysmic planetary news, the galloping wildfires, the smack of 90-degree New York autumn days all felt so at odds with the regular tickings of human life that I often felt quite mad. I felt complicit by merely existing. After all, I belonged to the species that was taking most of the other ones down.

As much as I want to chain myself to an old-growth tree (thanks, "The Overstory"), my job at The Times precludes me from going all in as an activist. So I donate to environmental and humane causes, eat vegan, compost, take public transport, carry around bamboo utensils, post alarming articles on Facebook, buy second hand and stock up on offsets — all decisions I have the luxury to make. And yet none of it has been balm.

Asking some people around me how they were faring did not help. I heard that it was too late anyway. That I shouldn't care since I don't have kids. That the planet will, one distant day at least, be fine. One friend suggested that my climate angst was an extension of my melancholic leanings, which struck me as plausible, but not quite right. We know that the future is looking bad, that the present already is, and that inaction, especially here in America, is making it all worse. But how are we supposed to live in our hearts and souls with such an existential threat that is also, as birds and bees vanish and trees topple and die, so excruciatingly intimate?

Finally this fall, after a kayaking trip to Alaska prompted by a desire to see glaciers while they still exist — and being greeted by wildfires — I resolved to seek answers.

And what I learned, in the Red Hook workshop and in long conversations with psychologists, deep ecologists, an indigenous activist and Western Buddhists, was more or less a prescription for handling climate grief.

It looks like this: Live like the crisis is urgent. Embrace the pain, but don't stop there. Seek out a spiritual path to forge gratitude, compassion and acceptance, because operating out of denial, anger or fear only hurts us in the end.

There is dismissiveness about whether individual choices like how we consume and transport ourselves matter: Why cancel that trip to Europe if it's too late anyway and if everyone is still addicted to fossil fuels? But Lou Leonard, a founder of One Earth Sangha, a Buddhist group focused on the crisis, told me that living like climate change is real and that we can do something about it are signals to others — and can help shift cultural norms. Who would have thought Burger King would one day serve delicious plant-based meat?

"We need to break the cognitive dissonance in as many ways as we can in order to be more real with what's happening," Mr. Leonard said. Making seemingly inconvenient changes now, he said, can also prepare us for what might be to come.

Zhiwa Woodbury, an eco-psychologist, believes that we are collectively experiencing climate trauma, of which we are both perpetrators and victims — our assault on the biosphere is an assault on ourselves. Altering habits like how we eat can make people feel more empowered and less overwhelmed, he said, and can shift our relationship with the natural world. After all, the belief that natural resources exist for our heedless exploitation got us to this point in the first place (and made us none the happier). "It makes us feel good that we're doing something and it gets back to the idea of shared responsibility," Mr. Woodbury said. "The idea that individuals are powerless only exists because we've made them feel powerless."

Embracing the pain was something I struggled with more. Didn't we deserve to feel bad? Maybe. But feeling despair is itself a kind avoidance. "What despair is telling you is that you haven't processed your emotions," Mr. Woodbury said.

In the Red Hook workshop, which used the pioneering decades-old work of the environmental grief activist Joanna Macy, the facilitator, Jess Serrante, said something that hit me like a thunderclap.

"Our pain for what is happening is the other side of the coin of our love for the world," she told us. "We feel such depths of despair because we love the planet so much."

Several psychologists told me they are telling the same thing to patients who are grappling with eco-despair: Feeling depressed about the crisis is actually a sane, healthy response. Yet as a culture, we pathologize depression as a personal failing, and as individuals, we avoid it, partly, Ms. Serrante said, out of the fear that if we dive in we won't emerge. But that causes us to shut down. By jumping into the pain, it can alchemize into something bigger, Ms. Serrante told us, and reconnect us with our deepest selves.

The key is to channel it, through everyday actions or joining wider movements, and also to figure out a way to face it without being controlled by it, because operating out of fear, anger and blame burns us out. That is where the spiritual component comes in — to find a way to move to a place not of tacit acceptance, but of fierce, roaring compassion.

Mr. Woodbury and Mr. Leonard both got burned out by environmental advocacy and found emotional resilience in Buddhist practices and a more compassionate view of human nature. "There's nothing more powerful than a broken heart, as long as you have a spiritual container to hold it," Mr. Woodbury told me.

I've begun tiptoeing in that direction, trying to learn how to be spiritually nimble and to have faith in people again. Feeling connected — with others, with ourselves — is an antidote to tough feelings we try to keep at bay by distracting and numbing

ourselves. I also hold fast to something else Mr. Woodbury told me; that the crisis could force us to heal our relationship with the natural world, and there is no room for despair in that.

Still, eco-pessimism dies hard. In Red Hook, Ms. Serrante had us pair off and tell each other why we were grateful to be alive at this time. My eyebrows shot up.

"I'm grateful about being alive in this time because," I said haltingly to my partner, a man who worked in corporate disaster preparedness, "people are more aware than ever about what we have wrought? Because this is the logical conclusion to what the industrial revolution set in motion?"

"Wow," the disaster preparedness guy replied.

He told me he was grateful that he was living at a time when we could see gorgeous animals, plants and sprawling wilderness that might not be around much longer. My breath caught. I hadn't thought of that. Something shifted. I noticed the disaster preparedness guy's eyes were red and leaky, and that mine were, too.

Afterward, stepping onto the baking sidewalk, I found myself paying greedy attention to the rustling trees, the flutter of teeny birds. I felt a visceral thrum of gratitude for what still exists, for what has to be fought for, while it still can be beheld.

Introducing the Mattereum Asset Passport

James Hester

By Dr James Hester FRSA — Head of Ontology & Provenance, Mattereum

Here's an opportunity to get to grips with what the Mattereum Asset Passport is, and how it works.

Our Head of Ontology, Dr James Hester, spends quality time on WW1 battlefields in uniform, reliving the past and coming to grips with it. This is when he is not in medieval armour whacking people with great big swords. Really, he should be our Head of Ontology and Time Travel. On one of these expeditions, he recovered an artefact, and we are documenting more than a century of this item's history using the Mattereum Asset Passport.

I hope you will find that this practical example puts together the whole idea nicely. It's just the start.

After serving as Royal Armouries Curator of Collections at the Tower of London, and later completing my PhD interpreting how medieval arms and armour was used by examining traces of battle damage, I joined the team at Mattereum to put my training in understanding and documenting objects to a fascinating new purpose.

In the world of art and antiquities, curators and dealers try to compile everything that it is possible to know about an object, since doing so will not only enhance and reinforce its cultural value, but also (especially for the dealers) its monetary value. A doodle on a napkin may not seem very interesting or valuable. However, when we realise that it was drawn by Picasso in 1930 to pay his bill at a café, then suddenly an otherwise insignificant object becomes very significant indeed.

Provenance is another vital aspect of an object's overall identity which can have an enormous impact on an object's value. Tracing an object's provenance — its history of ownership ideally all the way back to its creation — begins with the present and works backwards. Understanding where an object has been is essential for a number of reasons. A pair of limited edition Air Jordans is very different from a pair of the same which Jordan

actually wore when the Bulls won the championship. For manufactured goods, it could mean the difference between a properly made product and one where corners were cut and quality standards ignored. Provenance also provides information about an object's past which could have important ramifications. If the object was stolen, created using prohibited materials, or produced in illegal or unethical conditions, unaware owners might not be able to escape trouble by simply pleading ignorance.

The same is true for any object. Lacking sufficient knowledge, a person might fail to appreciate its utility or value. But by gathering together all of the data relating to that object into one place, we can make much more informed decisions about the things we buy, sell, and use.

One particularly important questions is, of course, how to tell whether the doodle on the napkin is actually by Picasso, and not by someone trying to profit from making you believe that it is. Today, the authenticity of an object — when there is no one currently alive who bore witness to its manufacture — is determined in many sectors by experts. As consumers, we are told that the opinions of these experts can be trusted due to their reputation in the field, gained from years of experience. But even the most knowledgeable expert can make a mistake, or a charlatan may attempt to pose as an expert. And when this happens, apart from some damage to the expert's reputation, the buyer often has little to no means of seeking compensation for the error or misleading information.

The smart contracts contained in the Mattereum Asset Passport provide a solution to this asymmetric dynamic. Expert opinions regarding all aspects of an object are still sought and gathered together, but they are supported by indemnities which must be signed by anyone providing such an opinion. So by making experts put some skin in the game in the form of a sum of money which they are bound to pay out if their statement turns out to be false, we add an extra layer of protection for buyers and and extra layer of deterrence for fraud. So if an assertion made about an object is found to be untrue, the buyer is compensated: it's true, or you can sue.

So, how do we do it?

To show how all this works, let's follow an object through the process of receiving a Mattereum Asset Passport.

Our object is this seemingly insignificant piece of mangled brass. It is, in fact, a spent French rifle cartridge dating back to the early days of the First World War. As a member of a living history group which portrays the life of soldiers in the First World War, I have the honour to visit the Western Front regularly to take part in ceremonies commemorating those who took part in the conflict. On one such visit to the Somme this year for the memorial to the infamous battle which began on 1 July 1916, I discovered this cartridge in a pile of soil excavated as part of the

works being done on the site where our encampment was set up. A surprising amount of information can be extracted from this piece thanks to a combination of numerous factory marks and the context in which it was found.

It's a perfect candidate to showcase the range of information an Asset Passport can contain, and how we go about taking it through the three primary phases of an Asset Passport's lifecycle: Generation, Population, and Activation.

This particular cartridge forms part of my personal collection. As the owner, I am responsible for taking the initial steps for creating an Asset Passport. If this were a newly manufactured object, the individual or company who made it could take this step. However, since our cartridge is over a century old, it's not really a practical option in this case.

To generate a passport, I have to supply a minimum set of information about the object. If the owner knows a lot about their object, they can supply as much data as they feel comfortable providing. But since each assertion will be supported by a smart contract which hold them financially liable in the event that any information turns out to be inaccurate, owners are welcome to leave the details to later certifiers who are more specialised in a given asset type (as we'll discuss later).

The bare minimum amount of information I, as the owner, have to provide includes a general object name, measurements, proof of ownership, a general condition report, and some reference photos. In this case, since I have a bit of extra subject knowledge about these things, I'm able to add a few more bits of data that I'm comfortable standing behind. So here's a look at some of the information I'd supply to Mattereum at the start.

All of the information here is converted into XML format for ease of storage on an IPFS server (along with digital copies of the relevant physical documentation). Each point of information — we refer to them as "certifications" — is supported by contracts affirming the validity of the assertion, and committing to an indemnity for that assertion proportionate to the value of the object, the impact of the information on the object's identity, and the degree of certainty the owner is willing to claim. With this data placed on the blockchain, and the appropriate smart contracts created to support the certifications, the cartridge's Asset Passport is generated.

So now we have an Asset Passport for our cartridge, but there are still a lot of gaps in our available information on what it is and where it has been. This is where we tap into the vast stores of knowledge held by subject experts around the world to further populate the Asset Passport with data. At Mattereum, we call these experts "certifiers".

Owners can seek out certifiers to provide certifications about their objects. Alternatively, certifiers who have already established a presence in the Mattereum ecosystem can locate newly created listings for objects within their areas of specialism and provide certifications independently. To attach a certification to an object, certifiers will follow the same procedure as owners when they supplied the initial information at the generation phase (owners are, in essence, also certifiers in a manner of speaking).

Each certification is backed up by a smart contract stating the nature of the indemnity the certifier is willing to place behind their statement. Additionally, certifiers can set a fee which must be paid in order to activate a certification so that subsequent owners can enjoy the coverage offered. And, yes, current owners can set fees for their certifications as well, so that they can continue to profit from their knowledge even after the object has been sold on to several future owners.

Returning to our cartridge, I, as the owner, sought out a colleague who was a specialist in the history of the site on which it was discovered. As an added bonus, he was also present when I uncovered it, so was in a position to act as a witness to provide an additional support to my claims of lawful discovery and ownership.

So our certifier is able to add two further certifications to the cartridge's Asset Passport. First, a witness statement claiming that he saw me discover the cartridge in the way in which I had previously described (as shown below). Second, and far more interesting, he is able to tell us a lot more about where it came from, and how it got to where it was found.

As it happens, the area of the Somme where the cartridge was found (La Boisselle, on the outskirts of Albert), was only occupied by the French Army for four months before the British took over this part of the Western Front for the Allies. Furthermore, military records tell us that there were eight units of the French Army present in La Boisselle during this time. So by virtue of where our cartridge was found, we can confirm with authority that it was fired between September 1914 and January 1915 by a French soldier from one of eight units, which led it to be discarded and, over a century later, recovered by a history buff paying homage to their memory. All of this information is formatted, stored, and backed up with smart contracts using the same process described earlier.

This process repeats itself for as many certifiers as appear to attach certifications to the object. The unique identifiers created by this process to represent the sum total of all data on the object, as well as the indemnities against the statements' validity which lay out the modes of recourse should any information turn out to be false, combine to form the fully-formed Mattereum Asset Passport. In the cases where there are privacy concerns, the existence of certified data can be proved by a hash or a series of hashes placed on chain without the data itself being made public.

The full potential of the Mattereum Asset Passport becomes apparent when an object is sold or otherwise transferred to another owner.

So let's say that I decide to sell my cartridge to another collector. First off, having far more information about the object than I would have on my own, I am in a position to ask for a price much closer to its actual value. Buyers have the ability to peruse the Asset Passport to have a greater understanding of what it is they are potentially buying. Below, you can see some examples of the user interface from our cartridge's Mattereum Asset Passport. It is also possible to view the certification details of assertions made about the object.

As part of the sale, the buyer has the option, for an added premium on top of the base sale price, to activate the Asset Passport and receive the coverage offered by the numerous certifications. The buyer can choose to activate all of the certifications, or simply those which they prefer (since not all points of information will be relevant to all buyers). Certifiers are paid from the added premium whenever their certification is activated.

Once an Asset Passport is generated, the population and activation processes repeat for the duration of the object's

existence. As more information comes to light, more certifications are attached by certifiers. With each new owner, certifications are activated, meaning those owners enjoy added protection against inaccurate information about their goods, and certifiers enjoy a recurring stream of income in exchange for the knowledge which they have shared.

The true beauty of the Mattereum Asset Passport lies in its versatility. Here, we have demonstrated its capabilities using a bit of antique brass only really exciting to history nerds such as myself. But using the same procedures and the same mechanisms, it is possible to assign Asset Passports to any class of object ranging from priceless artwork, to aerospace components, to the device on which you're currently reading this.

No matter what the object is, the Mattereum Asset Passport can document it in a secure, reliable manner which ensures that vital data is preserved, that experts can derive value from their knowledge in ways not previously possible, and that consumers will have the necessary object knowledge to make the best use of the things they have.

Between the Lines of the Xinjiang Papers

James A. Millward

The Chinese Communist Party is devouring its own and cutting itself off from reality.
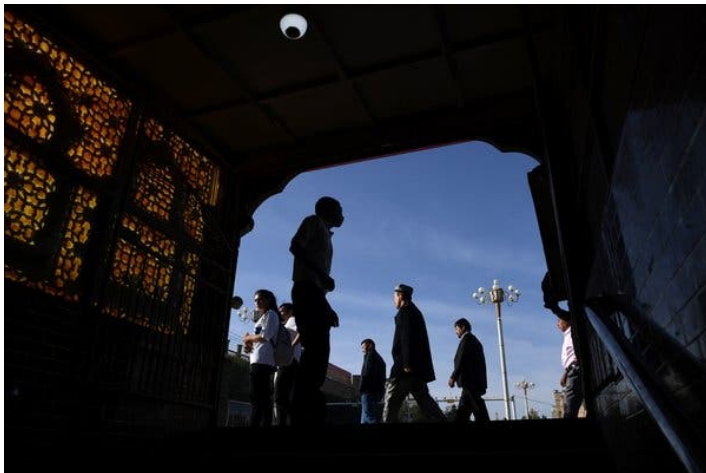
A set of Chinese Communist Party documents was leaked to The New York Times and published last weekend. They not only reveal the rationale and implementation of the Chinese Communist Party's policies in Xinjiang, a nominally autonomous region in northwestern China. They also open a window onto how China functions today, both at the top and closer to the bottom of its party-state hierarchy. And that reveals two things about the C.C.P.: its awesome power and its fundamental weakness.

From excerpts from the documents and the reporting, we learn that Xi Jinping, the party's chairman and the country's president, reacted strongly to a trio of terrorist attacks in the spring of 2014. Previously, the party's policy toward the peoples of Xinjiang — Uighurs and Kazakhs and other mostly Turkic-speaking, Muslim ethnic minorities — had largely been based on the theory that economic development and improved standards of living would defuse any dissent. This idea derives from traditional Marxist thinking: The "superstructure" of ideology, theorists argued, is determined by the economic "base" of class relations. But after the attacks of 2014, Mr. Xi jettisoned this notion, and in a series

of speeches concluded that material measures alone had proved insufficient to quell separatist sentiment in Xinjiang.

Henceforth, Mr. Xi announced, it would be necessary to transform the thinking of Xinjiang's Muslims through psychological means. This initiated what would become a campaign of mass indoctrination against what Mr. Xi and the C.C.P. called the "virus" of "religious extremism." In practice, the effort meant targeting everyday expressions of Islamic belief (owning a Quran, praying, avoiding alcohol and tobacco, fasting during Ramadan) and even secular aspects of non-Chinese culture (such as Uighur language and music). Mr. Xi also called for expanding surveillance through both high-tech systems and low-tech boots on the ground.

In the couple of years that followed the transfer of Chen Quanguo, previously the first party secretary in Tibet, to the same top position in Xinjiang in August 2016, some 350,000 people were arrested and prosecuted and more than one million Uighurs and Kazakhs were interned extralegally to undergo indoctrination. Some of the detainees were then transferred to factories associated with the camps, where they were made to work for low or, in some cases, no wages.

Some of the most fascinating revelations to emerge from the leaked documents concern the reaction of local Han officials tasked with enforcing Mr. Xi's campaign. Not surprisingly, officials who had lived and worked in Xinjiang for years hesitated when the party center, nearly 2,000 miles away in Beijing, called upon them to lock up thousands of their constituents for alleged thought crimes. For example, we learn in detail how Wang Yongzhi, the party boss of Yarkand, a county of some 800,000 people in southwestern Xinjiang, struggled with this mandate.

Mr. Wang should probably not be considered a hero. He did spend $180 million on camps and other security infrastructure in Yarkand and initially interned 20,000 people. But he ultimately released some 7,000 internees. The C.C.P., in its public denunciation of Mr. Wang, accused him of corruption. Yet according to a leaked party report and his own confession, Mr. Wang said that outsiders poorly understood local conditions. "The policies and measures taken by higher levels were at gaping odds with realities on the ground and could not be implemented in full," he wrote.

With so much of Yarkand's labor force locked up, Mr. Wang worried that its economy would decline and that he would miss his economic-growth targets, harming his chances for career advancement. Mr. Wang also seemed to suspect that prolonged mass internment would not lead Uighurs to love the C.C.P. (We know from other sources that families have been torn apart and tens of thousands of children sent to state boarding schools and orphanages.)

Mr. Wang wasn't alone in doubting. The Xinjiang papers mention that Gu Wansheng, the party secretary of neighboring Akto county, was also purged. They do not reveal if local Han-Chinese officials opposed the C.C.P.'s mass-internment policy because of pangs of conscience. But they show that officials resisted on practical grounds — and were punished for it. In fact, astoundingly, the documents mention that more than 12,000 investigations were conducted into the behavior of Xinjiang officials suspected of inadequately pursuing Beijing's mandate.

With this, the leaked papers underscore the C.C.P.'s vast power: The party can round up hundreds of thousands of people

and detain them indefinitely, while silencing other citizens and compelling obedience from officials. But they also suggest its weakness.

Not only have officials been quietly resisting policies imposed from the top — and now, too, have leaked these incriminating documents. But in sidelining and punishing such people, the C.C.P. isn't just devouring itself: It is also declaring war on expertise and depriving itself of firsthand knowledge about local conditions in Xinjiang. Once again, as during the days of Mao, the party is cutting itself off from reality and choking off the information it needs to govern.

James A. Millward, a professor of history at Georgetown University, is the author of "Eurasian Crossroads: A History of Xinjiang" and "The Silk Road: A Very Short Introduction."

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Wardley Maps with Business Model Canvas and Capital Flows

Julius Gamanyi

About Business Model Canvas, how the Income Statements corresponds to parts of it, how both correspond to and can be shown on a Wardley Map. Based on Dr. Alistair Moore's presentation.

TLDR; we talk about the business model canvas, how the Income Statements corresponds to parts of it, how both correspond to and can be shown on a Wardley Map. Based on Dr. Alistair Moore's presentation.

Lots of work goes into making model that help us understand how, and why things work.

The questions become:* What's the relation between BMC, Income Statements, and Wardley Maps* Can I move easily between them? Can I show them all using one model* Why is there a need for moving across models or having a somewhat more general ones that incorporates the others?

As for the last question, the more models we have to represent our multifaceted reality, the better; the more visual, the better. All these tools have their place and help solve a problem. At the heart of them is that they give us a language with which we can communicate with one another.

The downside is that each comes with each language that we need to learn: income statements are the financial language; Project Management has its own; Delivery has its own; and so do Contracts Management, HR, Purchasing, Design, Marketing, Security, etc

Wouldn't it be great, if there was one we could use that gives us a common language with which to communicate with all parts of an organization? We'll return to this later on.

Moving between the BMC (Business Model Canvas), Income Statements, and Wardley Maps and vice-versa was part of a talk that Dr. Alistair Moore gave at Tensor Flow London 2018 – with the slides on Slideshare. Since he's allowed me to use his images, I'll post the most striking one here in the hope that they might pique your interest enough to seriously consider going further

with Wardley Mapping.

Using the example in Simon Wardley's online book Chapter 12 would suffice. Figure 163 even has a Business Model Canvas corresponding to the business scenario. I'm reproducing it here to avoid jumps between websites.
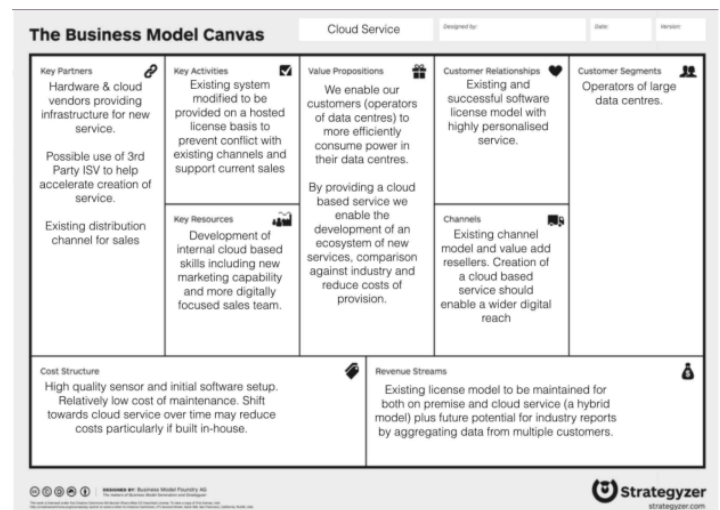

The BMC does not leave out those who feel at home reading Income Statements, such as those in 8-Q or 10-K fillings.

If we rotate the BMC anti-clockwise by 90 degrees, we can see how the "Revenue and Cost Structures" match the Income Statements from the 2019 10-K statement.

To represent the Revenue and Cost Structure on a Wardley Map, we'd need to start with Users and User Needs because this is the anchor on a Wardley Map. The User and User Need translate to, in BMC terminology, to the "Customer Segments" and the "Value Proposition." Having found that, we add an MVP or a minimum path through which Value will be delivered to the Customers.
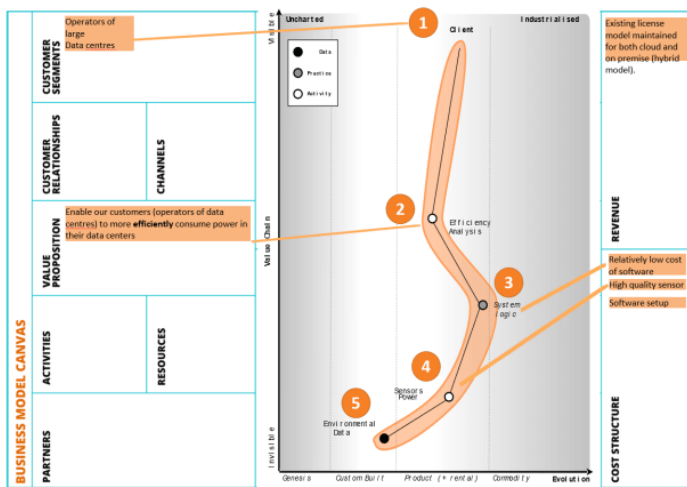
Read the map from top to bottom: I'll pull in the relevant quotes from the analysis of the scenario from Chapter 13.

1. The Client are operators of large Date Centres.

2. Their need is efficiency analysis. Because the market (according to the scenario) is reasonably-sized (about 301 Million Pounds), this component would be in the "product" phase of Evolution.

3. "… I'm aware that Phoenix has some form of system logic based upon best practice use of the sensors.

4. "I've marked on the sensor logic as a practice (i.e. it seems to be connected with how we use sensors) and

5. the environmental data as data."

Hong Kongers Break Beijing's Delusions of Victory

The authorities were so confident of elections going their way that state media filed copy in advance.

As the district council election results came in Sunday in Hong Kong, the pan-democratic camp—the loose alliance of parties in favor of universal suffrage and opposed to Beijing's policies—was ecstatic. The democrats had expected a likely victory, though nervous about possible interference and fixing—but not of quite this scale. By the end of the night, the democrats had tripled their seats, beating the pro-Beijing camp 389-61 with the highest turnout ever. Seat after seat flipped yellow, as establishment representatives fell to a wave of public anger; the more tear gas had been used by the increasingly brutal Hong Kong police, the bigger the movement toward the democrats.

In newsrooms in Beijing, however, the results began a panicked scramble to find a way to spin them in favor of the Chinese Communist Party (CCP). In stark contrast to most observers in Hong Kong, editors—and the officials behind them—appear to have sincerely believed that the establishment parties would win an overwhelming victory. Propaganda is a heady drug, and Beijing got high on its own supply.

I spoke with editors and journalists, both foreign and Chinese, at China Daily, the flagship English-language newspaper of state media; at the English-language version of the nationalist tabloid Global Times; and at the People's Daily—the CCP's official newspaper. (My sources universally asked for anonymity.) At each paper, copy was filed to editors the night before the Nov. 24 elections assuming a strong victory for the establishment. This

included predictions of increased majorities (with numbers left to be filled in as needed) for figures such as Junius Ho, whose vicious rhetoric against protesters has left him widely hated but whose comments regularly appear in the Global Times.

The misplaced confidence in Beijing's victory points to a worrying problem; at high levels within the CCP, officials believe their own propaganda about Hong Kong. That's a frightening prospect for both governance in China and for the future of the city, especially as the system struggles to come up with political excuses for a cataclysmic failure.

In many news organizations, it's standard to pre-write stories to different outcomes or at least to prepare some copy in advance. It's possible that filing these stories was simply an attempt to make life easier and that the alternative copy, anticipating a democratic victory, was simply unwritable for political reasons. (Chinese office politics are intense, and the mere writing of such copy ahead of events could be portrayed by a rival as a sign of political unreliability.)

But I spent seven years (2009-2016) working as a foreign editor for the Global Times and never saw copy filed ahead of time for similar events. Articles published in China Daily and the Global Times in the run-up to the election also seemed to anticipate an establishment victory, saying that the turnout "demonstrated the hope of Hong Kong residents that the chaos will not continue." There was little attempt to preemptively discredit the results or establish a narrative in the event of failure, and the results appear to have genuinely shocked the establishment.

It seems likely that CCP leaders actually believed the line being pushed ahead of the elections by the establishment; ordinary Hong Kongers—the "silent majority," as flailing Chief Executive Carrie Lam repeatedly called them—were fed up with protest, blamed the opposition for violence, and wanted a return to normality. Yet this was a narrative easily refuted by opinion polling, which repeatedly showed a lack of identification with the mainland, massive distrust in the police, and that the overwhelming majority of Hong Kongers, while unhappy with violence, principally blamed the government for it. The biggest question in the minds of most analysts was whether the democrats would make sufficient gains to win a majority—while the copy filed in these mainland newsrooms anticipated the establishment increasing its margin of victory.

What caused such an enormous misjudgment? The biggest single problem is this: The people in charge of manipulating Hong Kong public opinion for the CCP are also the people charged with reporting on their own success. The chief channel is the Hong Kong Liaison Office, a government organ that, officially, is in charge of pushing mainland-Hong Kong integration and that in reality acts as the coordinator for United Front policies, coordinating pro-Beijing politicians, CCP-backed newsletters, and the co-option of patronage and business networks. At the same time, it also provides intelligence to the central government.

The protests have been a massive failure for the Liaison Office. The silent majority narrative was a way of redeeming itself. It seems more than likely that material supporting it was being fed back to Beijing while any counternarrative was suppressed. A similar problem reportedly emerged with the Taiwan office several years ago.

But, of course, the CCP leadership doesn't rely on just one channel. This isn't a new problem for autocracies; from the Qing princes who told the emperor of fake successes against British forces to the Soviet underlings who reported imaginary harvests, dictatorships have a problem with data. The CCP leadership is aware of this and usually receives its information through a variety of methods, including neican ("internal reports") produced by media staff, especially at the official news agency Xinhua, for the leadership and informal channels—sometimes deliberately circumventing official sources to get at the truth.

The problem is that under the increasingly paranoid regime of Xi Jinping, even these internal reports have become much more geared toward what the leadership wants to hear. Reporting on a failed program can be painted as a sign of disloyalty. That's especially the case when it comes to any issue involving separatism—in Xinjiang in 2017, more than 12,000 party members were investigated for supposed failings in the "fight against separatism." Hong Kong is not as politically dangerous as Xinjiang, but it's still highly risky waters. Political incentives cause multiple sources to repeat the same comforting narratives to the leadership, which then becomes convinced of its credibility.

This paranoia can go to extreme lengths. In 2016, I began to notice that even positive comments from officials in the media about government programs were being reported anonymously. A journalist friend told me the reason: A positive comment about a program backed by a leader who later fell in the rolling political purges under Xi could be very dangerous. The fall of Bo Xilai, a prominent leader whom many journalists and pundits once backed, had killed many careers—and resulted in the disappearance of one of the country's most famous TV anchors.

Outside of political risks for speaking critically, there are more subtle reasons for the group think. The need for stability and national unity is so heavily propagandized in the mainland that many Chinese citizens find the idea of backing protests, especially chaotic and violent ones, almost unimaginable. Both the CCP leadership and ordinary mainlanders are also given to a crude Marxist analysis that sees material interests as dominant and finds ideological ones—especially those opposed to the CCP—hard to process. Mainlander WeChat groups in Hong Kong shared the same conviction that the establishment would triumph and have been shocked by the results.

The election has worsened a crisis of conscience in Beijing newsrooms. Several current and former reporters, although broadly sympathetic toward the government position and especially conscious of the prejudices felt by many Hong Kongers against mainlanders, spoke of feeling uncomfortable with the extremism of the coverage. Two especially singled out the repeated use of the term "traitors," and one called their own paper's coverage "toxic" and said it harmed attempts to win over the Hong Kong public.

The result may cause a change of thinking. But so far, all indicators are for a doubling down on previous convictions. State media has turned to blaming protesters and the United States for supposed electoral interference, furthering a persistent paranoia inside the CCP about foreign intelligence. Heads are likely to roll for the failure—but quite possibly the wrong ones.

Inside the Instagram AI that fills Explore with fresh, juicy content – TechCrunch

Instagram has posted an article describing the behind-the-scenes machinery that fills the Explore tab in Instagram with new, interesting stuff every time you open it. It's a bit technical, so here are…

Instagram has posted an article describing the behind-the-scenes machinery that fills the Explore tab in Instagram with new, interesting stuff every time you open it. It's a bit technical, so here are five takeaways.

Unlike the feed, which some still would prefer was simply chronological, the Explore tab needs to be algorithmically driven. But understanding what's happening on an image-based social network and recommending new content to people is a problem that's exactly as hard as you make it.

If these companies had infinite processing power and time, they'd probably come at the question of Explore a bit differently. But as it is they need to serve hundreds of millions of people on short notice and with merely enormous computing resources. I think they put this at the top of the post so people don't wonder why they're cutting corners.
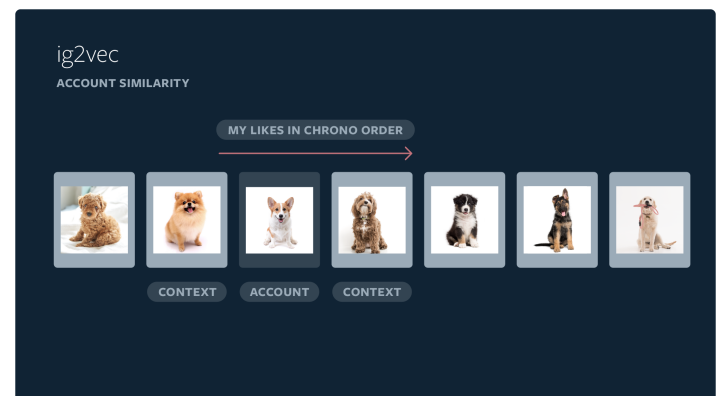
How Instagram's algorithm works

It's also easier to experiment and iterate when you can change stuff and see results quickly, they point out.

So much is posted to Instagram that it would be pretty much impossible to keep track of every photo individually, for recommendation purposes anyway. It's simpler and more efficient to track accounts, since accounts tend to have themes or topics, from a broader one like "travel" to something highly specific, like especially round seals.

While liking one post from an account doesn't necessarily mean you'll like everything else from that account, it is a good indicator that you're at least interested in the theme of that account. Even if it was this particular post of this particular cat that you wanted to heart because it reminds you of old Mittens, if you're liking pictures from an account that mostly posts cats, that's valuable information.

Notably it isn't just image features that Instagram uses to figure out what accounts are topically linked, though of course that kind of thing can be detected too. They also use your behavior.

For instance, when you like several posts in a row, they're more likely to be linked in some way even if Instagram's algorithms can't quite see it:

If an individual interacts with a sequence of accounts in the same session, it's more likely to be topically coherent compared with a random sequence of accounts from the diverse range of Instagram accounts. This helps us identify topically similar accounts.

People just tend to look into stuff that way, going from one travel-focused account to the next, or focusing on animals because they need a pick-me up. All that information gets sucked up by the algorithm and inspected for relevance. Of course deliberate actions like "see fewer posts like this" and blocking accounts has a lot of weight as well.

The process of getting from a couple billion posts to just two dozen can be pretty difficult, but you can cut the problem down to manageable size by limiting the Explore tab to accounts linked in some way to accounts the user has already liked or saved posts from. These are called "seed accounts" because everything else in the process really grows out of them.

Because of how the machine learning system represents accounts and their topics inside itself, it's super easy for it to find a couple hundred similar accounts.

Imagine if you know someone likes a particular reddish-orange marble and you need to find some more like it. If you just dip your hand into a sack of marbles you're unlikely to find one quickly. Even if you pour them out on the floor you'll still have to hunt around for a bit. But if you've already organized them by color, all you have to do is reach into the general vicinity of the marble they like and you're almost guaranteed to pick a winner.

The machine learning model does that by giving all these accounts a sort of location in a virtual space, and the closer two are in that space, the closer they are topically.
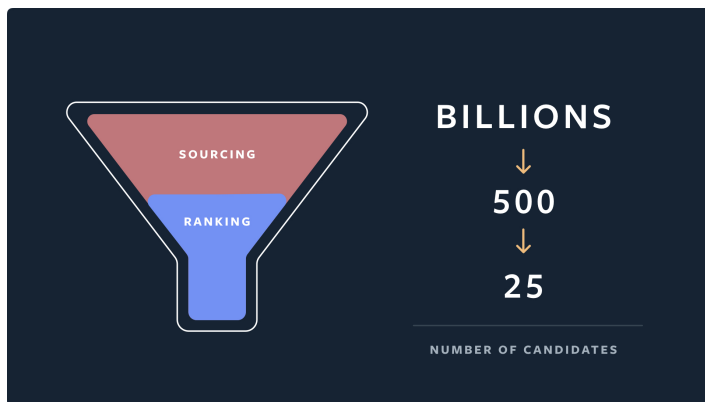
So the really hard part of paring down a set of billions to a set of hundreds is basically already accomplished by the way the accounts are classified.

From there Instagram does three passes with neural networks of increasing complexity.

First, slightly confusingly, is a simpler, combined version of the next two processes, which takes it from 500 to 150 accounts. This is a little weird, but think about it this way: This neural network has seen steps 2 and 3 happen many times and has a pretty good idea of what they do. Sort of like if you'd seen cookies get made enough times that you could guess at a recipe. You'd probably get close, but you also wouldn't want to publish it to like a hundred million people. So this step just gets the obvious stuff right.

Second is a computationally cheap neural network that uses way more signals than the simple topical similarity mentioned above. Here's where your individual likes come into play, as well as the deeper data about accounts. You like travel, sure, but in particular you like couples traveling — both things the marble-sorting algorithm above can help with. Other parameters, like a post's general popularity, or actually its being different from the other posts in the mix, figure in as well. That skims another 100

off the top, leaving 50.

Third is a computationally expensive version of the above, which does another pass on those 50 and cuts them in half, basically by looking closer and taking the time to include, perhaps, a thousand data points each rather than a hundred.

I guess that was kind of long for a "takeaway." Don't worry, the next one is quick.

"We want to make sure the content we recommend is both safe and appropriate for a global community of many ages on Explore," they write. "Using a variety of signals, we filter out content we can identify as not being eligible to be recommended."

So now you know why you don't get any of that in Explore.

Instagram now demotes vaguely 'inappropriate' content

On Occult Literature: A Diversion of Sorts
John Michael Greer

It so happens that last week's post on reading books by dead people had a curious echo. In a forum I frequent where occultism is the subject of discussion, an earnest young person put up a plaintive…

It so happens that last week's post on reading books by dead people had a curious echo. In a forum I frequent where occultism is the subject of discussion, an earnest young person put up a plaintive post, asking why so much classic occult literature is so boring to read. As usual in such forums, the discussion that followed produced more heat than light, but two things became clear in the course of the conversation. The first was that most people who get an American public school education have no idea how to read something that isn't written in a currently fashionable style of prose. The second was that most people who get an American public school education have no idea that there's any point to making the attempt.

Fairly often, mind you, occult literature is harder to understand than most other kinds of literature. What's more, this is often deliberate. The word "occult" literally means "hidden;" when an astronomer says that the planet Venus is occulted by the Moon, she means that the Moon moves between Earth and Venus and hides our closest neighbor among the planets from our view. In the Renaissance, with this in mind, the inheritors of a variety of ancient traditions of magic started using the term "occult philosophy" for their teachings; in the nineteenth century, the inheritors of the magical heritage of the Renaissance coined the term "occultism" to reflect the fact that there's a lot more to that heritage than philosophical speculations.

You may be thinking, dear reader, that these turns of phrase make it sound as though the occult is hidden because somebody or other keeps it locked away somewhere. What's more, occultists have gone out of their way to feed that notion, with stories of hidden vaults, eldritch tomes, and mystical initiations conferred in otherworldly settings. That's partly because a lot of occultists have a regrettable sense of humor, but it's also a deliberate distraction. With exceptions we'll be discussing further on, the secrets of occultism aren't secret because somebody chooses to hide them. They're secret because you can't understand them unless you've had certain experiences, and you won't get those experiences unless you put in a lot of hard work.

Of course occultism isn't the only thing of which this is true. Many years ago, for example, I took a series of university classes in botany, and those involved "keying out" plants to figure out

which species they were. It's a long and often tedious process, but you do it if you want to become a botanist, because when you've spent enough time at it, the structures and functions and family relationships of plants stop being arbitrary categories and become flowing patterns of life moving across evolutionary time—and once that happens, entire realms of botanical science open up to you that were closed before.

Unquestionably, occultism has its own equivalent of keying out plants, a set of practices that you do every day if you're serious about occultism. The details vary from one tradition to another, and often from one teacher to another, but if we're talking about old-fashioned occultism, they usually center on meditation. This is the one thing I've ever done that's more boring than keying out plants, and it's even more rewarding, and most of occult philosophy—and a great deal more—is closed to you unless you're willing to apply the seat of your pants to the seat of your chair and meditate for fifteen or twenty minutes a day.

Notably, though, botany is fortunate in that very few people tend to load wild fantasies of limitless power and equally wild terrors of limitless malevolence onto its practitioners. Occultists aren't so lucky. For a very long time now, if you teach occultism in the Western world, you get to deal with one set of people who are convinced you can teach them how to fulfill all their grubbiest dreams, and another set of people who are convinced that you're personally responsible for all the evil in the world. Just at the moment, witch burnings are out of fashion, and so the members of the second category are more a minor annoyance than anything else, but members of the first category are a constant irritation to teachers of occultism, because teaching people to fulfill their grubby dreams is not what occultism is about.

On the other hand, the difficulty here is that people who want to study occultism because they want you to show them how to fulfill their grubby dreams don't necessarily announce this up front. One of the consequences of two thousand years of Christian moral preaching is that people in the Western world have gotten very, very good at tarting up grubby desires in virtuous drag. I've long since lost track of the number of people who've approached me claiming to want to become personal students of mine and study this or that branch of occultism for the most Simon-pure of reasons, and turned out to be interested in something much less pristine.

Those of my readers who think that the grubby human desires in question have any least trace of grandeur to them are, I'm afraid, doomed to disappointment. None of the people I've just mentioned have been out to take over the world, or become insanely rich, or spend eighteen hours a day having wild orgiastic sex, or anything else particularly colorful. What they want, rather, is either what little status they can get from being a personal student of a fairly well known occult writer, or what little status they can get by having some kind of modest rank (usually, it's nothing more exotic than ordination to the priesthood) conferred on them by a fairly well known occult writer.

Is that all? Dreary as that doubtless seems, I'm sorry to say that it is. To be quite frank, I'd rather deal with a budding Lord Moldywarp, or whatever the fellow's name was, than have to face one more bland little person whose deepest, darkest, most unspeakable desires can be satisfied by swaggering it in front of fifteen or twenty online friends. Yet with embarrassing predictability, that's more often than not what shows up when

people come bustling up to me asking to study magic as a personal student. The effect is reliable enough that I've stopped accepting personal students at this point.

Certainly it's occurred to me more than once, in the silent hours of the night, that maybe the problem is me. When the student is ready, a famous Zen parable has it, the teacher appears; presumably, that also works in reverse, and when the teacher is ready, the student appears—and in that case, what am I ready for, given what generally shows up? Then I remember that I'm far from the only occult teacher who's had this problem. Aleister Crowley used to growl about the fact that requiring half an hour's honest work out of a prospective student was enough to send most of them scuttling for the exits; Dion Fortune liked to remind her students tartly that if they bothered to work at occultism the way they worked to make a living, they might actually achieve something.

Exactly such sentiments motivated Crowley, Fortune, and a great many other writers of occult literature to pursue the strategy criticized by the commenter mentioned at the beginning of this essay: they went out of their way to make their books hard to read. Then as now, most people who decide to study with an occult teacher start out by reading some of that teacher's books, and if the books make any kind of demand on the student, a significant number of the people whose sole interest in the occult consists of the desire to parade occult status symbols in front of fifteen or twenty friends will be sufficiently spooked to head for something less threatening.

There are, broadly speaking, two ways to go about making one's books difficult to read. One of them is exemplified by Manly P. Hall, one of the great American occultists of the twentieth century, the man who took H.P. Blavatsky at her word and explored the points of contact between traditional Western occultism and esoteric Buddhism. It's one thing to do this by dipping into books, as so many people have done recently. It's quite another to do as Hall did: become phenomenally learned and initiated into several of the core traditions of Western occultism, then receive formal initiation and training in Shingon Buddhism—one of the two great Japanese esoteric schools—and then fuse the lot to create a very effective system of meditation and spiritual development.

His method can be found in his books, too, but you won't find it all explained conveniently in one place. He broke up the discussion into various pieces, and squirreled some of the crucial points away in highly unlikely corners. Most of his writing was aimed at people who wouldn't make use of his inner teachings if they'd stumbled over them; he turned out reams of fodder for the mass market, essays on the esoteric significance of headaches and upset stomachs, essays on the inner meaning of Christmas, essays introducing the basic ideas of philosophy to those who'd never had to grapple with an abstract thought. An astonishingly large number of Americans in the middle decades of the twentieth century learned the basic ideas of occult philosophy from Hall's public work.

If you happen to read enough of his public work, it's hard to miss the suspicion that Hall has more to tell than he's willing to say outright. What's more, he goes out of his way to give you that suspicion—sometimes to a degree that I scratch my head, wondering why more people haven't caught on. His most famous work, the huge and lavishly illustrated tome The Secret Teachings

of All Ages, has an entire chapter in it titled "The Cryptogram as a Factor in Symbolic Philosophy," in which Hall goes on at quite some length explaining that occult books routinely have secret messages woven into them, and discussing the specific gimmicks that are used to put those secret messages into the text.

Secret messages do in fact exist in a great deal of occult writing. In point of fact, they exist in Hall's The Secret Teachings of All Ages, and any reader who applies the specific methods Hall discusses to his texts will make some interesting discoveries. (For that matter, I've inserted a secret message in this post, using one of the simplest methods Hall discusses.) No doubt there are plenty of people out there who read that bit of Hall's text, grinned, and went to work with the tools of the cryptanalyst, but the vast majority of readers of occult literature these days seem to have missed Hall's genial nods and winks entirely.

You find such nods and winks in a great deal of occult literature. When Christopher Warnock and I translated The Picatrix, the classic early medieval sorcerer's manual, I laughed aloud when I got to Book III, Chapter Four, "Why the secrets of this science may not be understood except a little at a time." It reads in full: "The ancient sages who have spoken of the occult sciences and magic in their books write them as obscurely as they could, so that no one would be able to gain any benefit from them, except by wisdom and continual study and practice in them. This chapter is placed here, as though by mistake, in order to make a modest demonstration of this."

Occultism is full of such jeux d'esprit, deadpan humor deployed in the pursuit of an immensely serious purpose. Beyond such deliberate obscurities, which are used to keep this or that teaching out of the hands of the clueless or the unserious, there's the further dimension of obscurity discussed earlier in this post: the way that certain branches of knowledge can only be understood by those willing to do the necessary work.

Unless you spend hours with a magnifying glass in your hand examining the innards of flowers so you can assign the plant they come from to its proper species, whole worlds of botany will remain permanently closed to you. Unless you spend hours with the seat of your pants on the seat of your meditation chair, considering the elaborate and deliberately puzzling imagery of the tarot, the enigmatic engravings of the alchemists, or the intricacies of the Tree of Life, whole worlds of occultism will be just as securely shut against you. No doubt some will consider that unfair, but the universe is not subject to our notions of fairness, you know.

Pondering the way that occult knowledge makes sense only to those who've done the necessary work, some of the most influential authors in nineteenth- and twentieth-century occult circles took things in a direction less playful than Hall's, and set out to create books that have the same limitation hardwired into them. Two weeks from today, we're going to start discussing one of those—Dion Fortune's elegant little classic The Cosmic Doctrine—and those of my readers who are up for the necessary work will benefit in two ways.

At the beginning of Fortune's book is a note of explanation too often neglected: "These images are not descriptive but symbolic, and are designed to train the mind, not to inform it." I'd encourage my readers to reflect on that sentence for a while. The images being referenced here are presented in verbal form in the text; each reader is encouraged to imagine them as clearly as possible, and then think about certain things in relation to them.

Such exercises are in fact basic to the kind of meditation I've discussed earlier in this essay, and at much greater length in a variety of posts and books. Its technical name is discursive meditation, because it often takes the form of an inner discourse or imaginative discussion. If you read The Cosmic Doctrine the way that Fortune asks you to read it, you're going to get a first-rate training in discursive meditation, starting with very simple images and concepts, and working from there to some extremely complex ones. The formalities of meditation—relaxing the body, using rhythmic breathing to steady the mind, and so on—are less important than the style of thought required, and that you can pick up from many sources, including a close study of The Cosmic Doctrine.

So that's one of the benefits to be gained by the work ahead. The other is in some ways subtler. It's not just books carefully designed for the purpose that train the mind instead of, or along with, informing it. All books do this. That's the deeper implication of the spooky side of silent reading I've discussed in previous posts here. Whether or not they inform the mind, they train it, for good or ill. The sort of light reading so many of us engage in for relaxation—what I've called "popcorn reading"—is comfortable precisely because it leads our minds in familiar paths; the same thing, of course, is true of books we've read many times, so that the patterns of thought they contain have long since become part of our mental furniture.

A book you haven't read before, one that has its own unique pattern of thoughts to communicate to you and isn't simply a piece of popcorn reading meant to mirror your own normal thought processes back at you, is quite another matter. There's usually a little resistance to the new thoughts, maybe a little hostility, maybe a little shudder of fear. A good novelist gets the reader past that by various enticements—an appealing character, an opening scene that catches the reader's interest, any number of narrative hooks—which is of course one of the seductive qualities of fiction, and one of the reasons why people who want to remain comfortably settled in some approved style of thinking very often disdain or dislike fiction as a whole.

The Cosmic Doctrine, though, doesn't use any of the clever narrative tricks of fiction. This isn't because Fortune didn't know them—she wrote quite a bit of fiction, some of which has become fairly well known in the occult scene, some of which remains quite obscure, and there's reason to think she wrote a great deal of pulp fiction for magazines under pseudonyms that haven't yet been traced back to her. Again, she had the same problem other occult teachers faced, then as now: the problem of filtering out potential students who weren't worth the effort of training, because they weren't willing to put out the corresponding effort to learn.

Examine the opening pages of The Cosmic Doctrine—not the introductions, but the start of the first chapter—and you can see the method Fortune used. She plunges straight into what she has to say, without apology, without transition. All of a sudden you're dealing with the concept of the Unmanifest, which she defines in highly abstract terms and only then assigns to a visual image. It's hard to escape the feeling that you've suddenly been pitchforked into unfamiliar terrain without benefit of map or compass. Nor should this feeling be ignored, because that's exactly what Fortune is trying to do here.

She did that for two reasons. The first is the one discussed earlier, the desire to chase off would-be students who aren't willing to put in the kind of mental work needed to understand what she had to say. The second is subtler. The patterns of thinking which are habitual in the modern industrial world are not useful to the aspiring occultist; a case could be made that they're not useful to anyone but the political, commercial, and ideological authorities that have put so much effort into making them mandatory.

The best way to get someone to see the world in a different way is to toss them into the deep end of the pool all at once, with only the most minimal introduction. That's what Fortune did. She wanted to communicate, to those students who were willing to make the effort, a set of mental skills that would be central to their spiritual lives thereafter; she also wanted to communicate to them certain patterns of thinking that would help them get past "the mind-forg'd manacles," as Blake put it, of the industrial world's approved modes of thought. Two weeks from today, as our monthly book club starts on the first chapter of The Cosmic Doctrine, we'll discuss both the skills and the patterns of thought, and see what can be learned from them.

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On a different subject—one that doesn't lend itself so easily to secret messages!—I'm pleased to announce that the latest issue of Into the Ruins, the premier magazine of deindustrial science fiction, has just been released. If you've followed Into the Ruins, you know already that this issue is full of vivid stories exploring the kind of future we're actually going to get, but this issue also has a livelier than usual letters to the editor column—that feature's really taking off now. If you haven't followed Into the Ruins—well, what are you waiting for? You can order copies here, and subscriptions here.

Finally, a reminder about the book club posts mentioned above may be in order. You'll need a copy of Dion Fortune's The Cosmic Doctrine in order to make any kind of sense of the posts that'll feature here on the second Wednesday of each month; the edition I'll focus on is the revised 1966 edition, which is out of print but available dirt cheap on the used book market. I'll also be referencing the 2000 edition, which went back to the unrevised text; to my mind, it's an inferior edition — the 1966 revisions were well made — but I've got both and will cite text from both.

Nine climate tipping points now 'active,' warn scientists

More than half of the climate tipping points identified a decade ago are now "active", a group of leading scientists have warned.

More than half of the climate tipping points identified a decade ago are now "active", a group of leading scientists have warned.

This threatens the loss of the Amazon rainforest and the great ice sheets of Antarctica and Greenland, which are currently undergoing measurable and unprecedented changes much earlier than expected.

This "cascade" of changes sparked by global warming could threaten the existence of human civilisations.

Evidence is mounting that these events are more likely and more interconnected than was previously thought, leading to a possible domino effect.

In an article in the journal Nature, the scientists call for urgent action to reduce greenhouse gas emissions to prevent key tipping points, warning of a worst-case scenario of a "hothouse", less habitable planet.

"A decade ago we identified a suite of potential tipping points in the Earth system, now we see evidence that over half of them have been activated," said lead author Professor Tim Lenton, director of the Global Systems Institute at the University of Exeter.

"The growing threat of rapid, irreversible changes means it is no longer responsible to wait and see. The situation is urgent and we need an emergency response."

Co-author Johan Rockström, director of the Potsdam Institute for Climate Impact Research, said: "It is not only human pressures on Earth that continue rising to unprecedented levels.

"It is also that as science advances, we must admit that we have underestimated the risks of unleashing irreversible changes, where the planet self-amplifies global warming.

"This is what we now start seeing, already at 1°C global warming.

"Scientifically, this provides strong evidence for declaring a state of planetary emergency, to unleash world action that accelerates the path towards a world that can continue evolving on a stable planet."

In the commentary, the authors propose a formal way to calculate a planetary emergency as risk multiplied by urgency.

Tipping point risks are now much higher than earlier estimates, while urgency relates to how fast it takes to act to reduce risk.

Exiting the fossil fuel economy is unlikely before 2050, but with temperature already at 1.1°C above pre-industrial temperature, it is likely Earth will cross the 1.5°C guardrail by 2040. The authors conclude this alone defines an emergency.

Nine active tipping points:

The collapse of major ice sheets on Greenland, West Antarctica

and part of East Antarctica would commit the world to around 10 metres of irreversible sea-level rise.

Reducing emissions could slow this process, allowing more time for low-lying populations to move.

The rainforests, permafrost and boreal forests are examples of biosphere tipping points that if crossed result in the release of additional greenhouse gases amplifying warming.

Despite most countries having signed the Paris Agreement, pledging to keep global warming well below 2°C, current national emissions pledges—even if they are met—would lead to 3°C of warming.

Although future tipping points and the interplay between them is difficult to predict, the scientists argue: "If damaging tipping cascades can occur and a global tipping cannot be ruled out, then this is an existential threat to civilization.

"No amount of economic cost-benefit analysis is going to help us. We need to change our approach to the climate problem."

Professor Lenton added: "We might already have crossed the threshold for a cascade of inter-related tipping points.

"However, the rate at which they progress, and therefore the risk they pose, can be reduced by cutting our emissions."

Though global temperatures have fluctuated over millions of years, the authors say humans are now "forcing the system", with atmospheric carbon dioxide concentration and global temperature increasing at rates that are an order of magnitude higher than at the end of the last ice age.

Genocide and The Thangsgiving Myth

By S. Brian Willson for Popular Resistance. As we again plan to celebrate what US "Americans" call Thanksgiving, let us pause for a moment of reflection. Let us recognize that accounts of the first…

Above: "Enlightened and Christian Warfare in the 19th Century–Massacre of Indian Women and Children in Idaho" published in "Frank Leslie's Illustrated," August 1868.

Note: We are republishing this essay by S. Brian Willson describing the true history of genocide in the United States which stands in stark contrast to the myth of Thanksgiving because of its popularity with readers and its educational value.

As we again plan to celebrate what US "Americans" call Thanksgiving, let us pause for a moment of reflection. Let us recognize that accounts of the first Thanksgiving are mythological, and that the holiday is actually a grotesque celebration of our arrogant ethnocentrism built on genocide.

Native Americans in the Caribbean greeted their 1492 European invaders with warm hospitality. They were so innocent that Genoan Cristoforo Colombo wrote in his log, They willingly traded everything they owned . . . They do not bear arms . . . They would make fine servants . . . They could easily be made Christians . . . With fifty men we could subjugate them all and make them do whatever we want. This meeting set in motion a 500+-year plunder of the Western Hemisphere, which then spread to the remainder of the globe. And it has not stopped!

Columbus feeds dogs with Native Peoples.

Historian Hans Köning concludes that what sets the West apart is its persistence, its capacity to stop at nothing. Cultural historian Lewis Mumford declared, Wherever Western man went, slavery, land robbery, lawlessness, culture-wrecking, and the outright extermination of both wild beasts and tame men went with him.

Jump 129 years to 1621, year of the supposed "first Thanksgiving." There is not much documentation of that event, apparently a three-day feast, but surviving Indians do not trust the myth. Natives were already dying like flies thanks to European-borne diseases. The Pequot tribe in today's Connecticut reportedly numbered 8,000 when the Pilgrims arrived, but disease had reduced their population to 1,500 by 1637, when the first, officially proclaimed, all-Pilgrim "Thanksgiving" took place. At that feast, the whites of New England celebrated their massacre of the Pequots in the Connecticut Valley where the Mystic River meets the sea. The Indians were in fact celebrating their annual green corn dance ceremony. But it was to be their last.


The English commander John Mason declared that the attack against the Pequot was the act of a God who "laughed his Enemies and the Enemies of his People to scorn making [the Pequot] as a fiery Oven . . . Thus did the Lord judge among the Heathen, filling [Mystic] with dead Bodies." The Narragansett and Mohegan warriors with the English were horrified by the actions and "manner of the Englishmen's fight . . . because it is too furious, and slays too many men." The Narragansett returned home and no longer participated in the war. This image is

courtesy of forquignon.com.

The rest of the white folks thought so, too. This day forth shall be a day of celebration and thanksgiving for subduing the Pequots, read Massachusetts Bay Governor John Winthrop's proclamation. The authentic proclaimed Thanksgiving Day was born. Few Pequots survived.

Most historians believe about 700 Pequots were slaughtered at Mystic. Many prisoners were executed, and surviving women and children sold into slavery in the West Indies. Pequot prisoners that escaped execution were parceled out to Indian tribes allied with the English. The Pequot were thought to have been extinguished as a people.
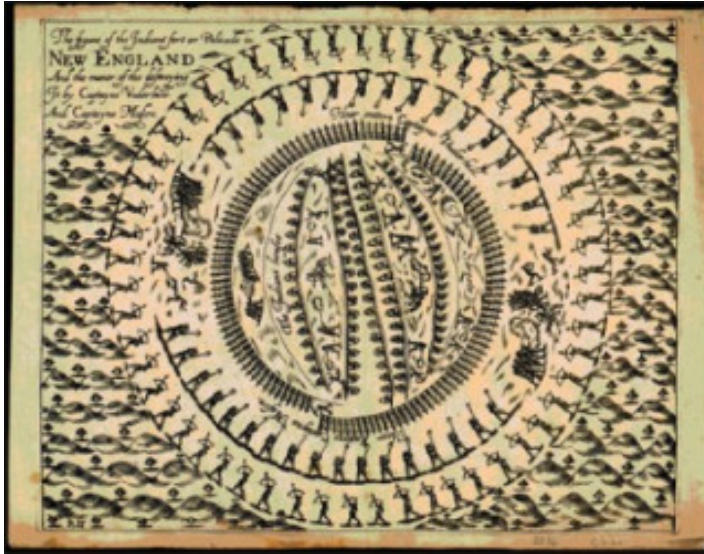
Engraving depicting the Mystic Massacre, the assault on the Pequot fort during the Pequot War. Published 1638. Source Mashantucket   nation: http://www.mashantucket.com/PequotWar.asp

But, the epitaph was premature. Enough survived such that today the Pequots own the Foxwood Casino and Hotel, in Ledyard, Connecticut, larger in size than the Pentagon, with gaming revenues in the billions.

Moving 158 years further, we discover a ruthless campaign conducted in central New York in 1779 during our "noble" Revolutionary War. The Continental Congress was furious that a majority of the Iroquois Indians (those who coined the Seventh Generation philosophy) were siding with the British against the colonialists who were rapidly settling their lands. The booming capital town of the Seneca Nation was Kanadesaga at the head of Seneca Lake in the Finger Lakes region. In the summer of 1779, the Continental Congress instructed its Army's commanding general to take care of the Indian problem. George Washington complied. He ordered General John Sullivan to lay waste . . . that the country . . . be . . . destroyed, instilling terror among the Iroquois Indians in central New York; General Sullivan affirmed that the Indians shall see that there is malice enough in our hearts to destroy everything that contributes to their support. Washington declared, Our future security will be in their inability to injure us…and in the terror with which the severity of the chastizement they receive will inspire them [Richard Drinnon, Facing West: The Metaphysics of Indian Hating & Empire Building (New York: Schocken Books, 1990), pp. 331-32].

General John Sullivan was selected by George Washington to deal with the tribes who had sided with the British during the Revolutionary War. This included; the Mohawks, Cayuga, Onondagas and Seneca tribes. It was named the Sullivan Campaign and General Sullivan took no mercy destroying at least 40 villages, including burning their crops and homes. This destruction lead to over 5,000 Iroquois displaced and many starved or froze to death during the winter months.

The culminating day of "victory" was September 7, 1779. Total destruction of Kanadesaga and the forty other Seneca towns was accomplished by 4,500 troops, nearly one-third of the entire force of the Continental Army. The only major military campaign of that year, it was one of the most vicious scorched-earth campaigns in history. All orchards and food crops were destroyed, all buildings were looted, then burned. Many of the escaping Senecas were scalped and butchered: After the battle . . . Indian warriors . . . were scalped; Lieutenant William Barton amused himself by skinning two Indians from the hips down to make two pairs of leggings, one pair for himself, the other a present for his major [Morris Bishop, "The End of the Iroquois," American Heritage, October 1969, p. 78].

Jump 162 years to 1941, when I was born in Kanadesaga, renamed Geneva by our European ancestors. As a young boy I blissfully collected hundreds of Seneca arrowheads, storing them in a special protected box in my bedroom. A chapter in my seventh grade history textbook taught that, The Iroquois were the Indian Masters of the State, but due to their destructive attacks on the frontier settlements, George Washington decided to send an army to crush the Indians . . . The Six Nations never recovered from this blow. Europeans onward and upward!

The New Republic was formed in 1789, its 1787 Constitutional Convention having been conducted in enforced secrecy, never submitted to a popular vote. The third U.S. President, Thomas Jefferson (1801-1809) described his vision of an "empire of liberty," with expanded commercial enterprises and territory. And without any Constitutional authority he quickly doubled the area of the young country by acquiring vast Louisiana from France's Napoleon for $15 million.

Twenty-one missions were built from San Diego to Sonoma on the most fertile land by slaves of the Catholic missionaries. Friars and soldiers captured Chumashes and put them on the missions. Once they were baptized, they were tied to the mission and the authority of friars who only gave them food and clothes. Many were malnourished and there were more deaths than births.

In 1807 he advocated preventive war: If the English do not give us the satisfaction we demand, we will take Canada, which wants to enter the Union; and when, together with Canada, we shall have the Floridas, we shall no longer have any difficulties with our neighbors; and it is the only way of preventing them [William Appleman Williams, The Contours of American History (Cleveland: The World Publishing Company, 1961), p. 192]. Others openly talked of expansion into Spanish America and Canada for planter and merchant prosperity in new markets, saying that the patriotic and virtuous "wise framers" of the Constitution had "too much wisdom to restrict Congress to defensive war" [Ibid., p. 194].

After moving to Humboldt County in northern California in the early 2000s, I carefully examined its history as well. The 1849 gold rush brought a large influx of white miners and settlers to California, leading to near virtual wipeout of California Indians by 1865-70. Between 1853 and 1861 there were at least fourteen wars waged against the Indians of California, with paramilitary campaigns continuing into the late 1860s. The population, once thought to have been as high as 700,000, was estimated to be 100,000 in 1849 partly due to grueling enslavement in the Catholic Missions starting in 1769. From 1849 to 1860 the population decreased by 65 percent to 35,000, due to systematic killings [Russell Thorton, American Indian Holocaust and Survival: A Population History Since 1492 (Norman: University of Oklahoma Press, 1987), p. 109]; a detailed list of atrocities committed against Indians in California, including many in what is now Humboldt County, can be found in Sherburne F. Cook's The Conflict Between the California Indian and White Civilization (Berkeley: University of California Press, 1976)].

Wiyot Indian Family

From 1857 to 1860, U.S. author/poet Bret Harte wrote for the Northern Californian and the Humboldt Times. Bret was privy to the white massacre of 188 Wiyot Indians on Indian Island in Humboldt Bay near Eureka on February 25, 1860, in which it was reported only one Wiyot child survived. Harte's story, entitled "Indiscriminate Massacre of Indians, Women and Children Butchered," included this account: "Little children and old women were mercilessly stabbed and their skulls crushed by axes. When the bodies were landed in Union [present day Arcata] a more shocking and revolting spectacle never was exhibited to the eyes of a Christian and civilized people. Old women, wrinkled and decrepit, lay weltering in blood, their brains dashed out and dabbed with long grey hair. Infants sparce a span long, with their faces cloven with hatchets and their bodies ghastly wounds. . . ." [Northern Californian, Vol. 2, Issue 9 (February 29, 1960), p. 1]. Barte fled as whites sought to lynch him.

In California as elsewhere, hordes of white frontier settlers, speculators, surveyors and other opportunists were establishing permanent settlements as they moved westward from the Atlantic Coast colonies, especially following cessation of the Seven Years War in 1763. Thousands of murders of Indigenous were proudly admitted by settlers and investors/speculators engaged in activities the equivalent of today's paramilitary death squads operating outside "official" channels, i.e., acting parallel to or outside the jurisdiction of federal troops.

As US Empire spread beyond Manifest Destiny of the continent, the US war in the Philippines was an early victim. General Jacob H. Smith's infamous order in 1901 "Kill Everyone Over Ten" was the caption in the New York Journal cartoon on May 5, 1902. The Old Glory draped an American shield on which a vulture replaced the bald eagle. The caption at the bottom proclaimed, "Criminals Because They Were Born Ten Years Before We Took the Philippines" Gen. Smith ordered "I want no prisoners. I wish you to kill and burn; the more you kill and burn, the better it will please me… The interior of Samar must be made a howling wilderness…" Estimates of deaths in this massacre range from 2,000 to 50,000.

Preventive war using terror against civilians as ordered by the government carried out by young male troops or paramilitary forces are "all-American" values. Such policies have been

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witnessed time and again in U.S. history, rationalized by our sense of being "exceptional" people. We remain in denial about our arrogant, racist and genocidal origins. More redeeming values have been exhibited, such as civil disobedience and waves of progressive political movements. But the prevailing political and economic structures remain intransigently oligarchic. In simple terms, we remain a white male supremacy society of plutocrats supported by massive numbers of obedient consumers and laborers.

By revealing our social secrets (an oligarchy committed to selfish exploitation) and realizing that those secrets have masked our social myth (a democracy committed to equal justice), we can help catalyze a revolution of consciousness. Recognizing that obedience to our system is killing us and the Planet's capacity to host us, is a grand initial step for triggering the imaginative forces necessary to enable rapid movement toward a society based on mutual aid in which sustainable communities are built and nourished at the local level.

We have yet to come to grips with the original holocaust that continues to serve as the defining and enabling experience of our "civilization." Embracing this "shadow" can ironically enable sudden and radical shifts as we are freed from expending the incredible unconscious energy needed to conceal our shame. Sharing our grief for what we have done to others, and ultimately to ourselves, will be experienced as tremendous relief.

After serving in the Vietnam War, S. Brian Willson became a radical, nonviolent peace activist and pacifist.

Thanksgiving and Genocide – Rival Nations

Thanksgiving is a time of heartwarming scenes of European pilgrims having friendly meals with the native peoples of America. Christianity had at last made it's…

Thanksgiving is a time of heartwarming scenes of European pilgrims having friendly meals with the native peoples of America. Christianity had at last made it's way to the Americas. But what would come next wouldn't be the good new of Jesus Christ and his Kingdom. Over the next 400 years, America would experience the longest and most devastating genocide the world has ever seen, all in the name of God.

The unmatched brutality to the natives by the hands of Christians, is a part of history that often goes untold and is covered up by the patriotic red, white, and blue. The extermination of Natives started with Christopher Columbus' arrival in San Salvador in 1492. Later, European Christian invaders systematically murdered additional aboriginal people, from the Canadian Arctic to South America. They used warfare, massacres, death marches, forced relocation to barren lands, destruction of their food supply, and poisoning.

Oppression continued into the 20th century, through actions by governments and religious organizations which systematically destroyed Native culture and religious heritage. One present-day byproduct of this oppression is suicide. Today, Canadian Natives have the highest suicide rate of any identifiable population group in the world. Native Americans are not far behind.

How could those who claim to worship and follow Jesus be responsible for such incredible satanic evil?

It's time for a history lesson.

Christopher Columbus has been viewed as a genuine American hero since at least 1792 when the Society of St. Tammany in New York City first held a dinner to honor the man and his deeds. Columbus Day was conceived by the Knights of Columbus, a Catholic Fraternal organization, in the 1930s because they wanted a Catholic hero. After President Franklin D. Roosevelt signed the day into law as a federal holiday in 1937, the rest has been history.

Irish and French Catholics have argued that Columbus, who "brought the Christian faith to half the world," should be named a saint. Though the move had the approval of Pope Pius IX (reign 1846–1878), Columbus was never canonized because he fathered an illegitimate child, and there was no proof he had performed a miracle.

Not until his third voyage did Columbus actually land on the American mainland. Upon seeing four rivers flowing from the landmass, he believed he had encountered the Garden of Eden. Columbus described the native people as timid, free, and generous, recording in his ship log:

They… brought us parrots and balls of cotton and spears and many other things… They willingly traded everything they owned… They were well-built, with good bodies and handsome features…. They do not bear arms, and do not know them, for I showed them a sword, they took it by the edge and cut themselves out of ignorance. They have no iron. Their spears are made of cane… They would make fine servants… With fifty men we could subjugate them all and make them do whatever we want.

Columbus would leave and return with 1,200 more soldiers at his disposal. In short order, rape and pillaging became rampant. Columbus forced the Natives to work in gold mines until exhaustion. Those who opposed were beheaded or had their ears cut off. All Natives over 14 had to meet a supply quota of gold every month. Those who did not fulfill their obligation had their hands cut off, which were tied around their necks while they bled to death—some 10,000 died handless.

In addition to putting the Natives to work as slaves in his gold mines, Columbus also sold sex slaves to his men, some as young as nine years old. Columbus and his men raided villages for sex and sport. In the year 1500, Columbus wrote: "A hundred castellanoes [gold coins] are as easily obtained for a woman as for a farm, and it is very general and there are plenty of dealers who go about looking for girls; those from nine to ten are now in demand."

A close friend of Columbus, Michele de Cuneo, was given a Native female as a gift, and wrote:

"While I was in the boat I captured a very beautiful Carib woman, whom the said Lord Admiral [Columbus] gave to me, and with whom, having taken her into my cabin, she being naked according to their custom, I conceived desire to take pleasure. I wanted to put my desire into execution but she did not want it and treated me with her finger nails in such a manner that I wished I had never begun. But seeing that (to tell you the end of it all), I took a rope and thrashed her well, for which she raised such unheard of screams that you would not have believed your ears. Finally we came to an agreement in such manner that I can tell you that she seemed to have been brought up in a school of harlots."

A Spanish missionary, Bartolome de las Casas, described eye-witness accounts of mass murder, torture and rape. Author Barry Lopez, summarizing Las Casas' report wrote:

One day, in front of Las Casas, the Spanish dismembered,

beheaded, or raped 3,000 people. He says, "Such inhumanities and barbarisms were committed in my sight, as no age can parallel…." The Spanish cut off the legs of children who ran from them. They poured people full of boiling soap. They made bets as to who, with one sweep of his sword, could cut a person in half. They loosed dogs that 'devoured an Indian like a hog, at first sight, in less than a moment.' They used nursing infants for dog food. Las Casas wrote, 'My eyes have seen these acts so foreign to human nature that now I tremble as I write.'

The Black Hills in South Dakota for hundreds of years was the sacred center of the Lakota people. The U.S. Government signed a treaty declaring they wouldn't settle on the land, and that the land belonged to the Lakota "as long as the sun shines and the grass grows". The treaty signed is called the The Fort Laramie Treaty and hasn't been overturned until this day. The promise of the treaty didn't last very long though and the land was seized after gold prospectors sparked a war with the Lakota. After a hundred years the land still officially belongs to the Lakota people, but the government drove them out a long time ago. Today the sacred Black Hills look like this:

What Columbus began, Americans would finish. Today America is often referred to as a "Christian nation" founded on "Christian values". This is a myth perpetuated in the 1960's and 70's in the Cold War era that is still strongly believed today in many white evangelical circles. But the truth couldn't be more evil. The United States of America was founded on the blood and tears of unholy genocide.

"The immediate objectives are the total destruction and devastation of their settlements and the capture of as many prisoners of every age and sex as possible. It will be essential to ruin their crops in the ground and prevent their planting more."

George Washington to General John Sullivan, May 31, 1779

In the early 18th century, the government promoted a genocide of Natives by imposing a "scalp bounty". Ward Churchill wrote: "Indeed, in many areas it [murdering Native people] became an outright business." This practice of paying a bounty for human scalps motivated the common man to hunt down other human beings for profit and continued all the way into the 19th century.

"Is one of the fairest portions of the globe to remain in a state of nature, the haunt of a few wretched savages, when it seems destined by the Creator to give support to a large population and to be the seat of civilization?"

Governor William Henry Harrison, of the Indiana Territory (1800-1812)

"You will do well to try to inoculate the Indians [with smallpox] by means of blankets, as well as to try every other method, that can serve to extirpate this execrable race."

Colonel Henry Bouquet at Fort Pitt

Aside from bioterrorism, extermination of all native peoples was urged by state officials all over the U.S. in the mid 1800's. In 1867, General William Tecumseh Sherman said, "We must act with vindictive earnestness against the Sioux [Lakotas] even to their extermination: men, women and children." The Bible was often used to support wars of extermination against local inhabitants who stood in the way of the "chosen people" possessing land (Joshua 24:13). Propaganda about savagery, lack of civilization, heathenism, vacant land, nomadic hunters without a conception of property, all were deployed to strip the Native people of their rights. Americans believed they were the new "chosen people", with a "manifest destiny" to own the continent.

From the landing of the Puritans on the North Atlantic shore, religious and political leaders inspired the English-speaking settlers with the idea that it was their mission to build the new Kingdom of God in America. They used biblical images such as "city on a hill" and phrases such as "witness into the wilderness." Belief that America was the new Israel in a promised land contributed to ideas about the manifest destiny of the United States.

Damn any man who sympathizes with Indians! … I have come to kill Indians, and believe it is right and honorable to use any means under God's heaven to kill Indians… Kill and scalp all, big and little.

Col. John Milton Chivington, U.S. Army

In 1637 the colonial leadership in Connecticut wanted to launch a war of aggression against the Pequot tribe for the sole purpose of possessing their land. When some of the colonists expressed moral qualms, the matter was referred to their chaplain, Reverend John Stone. The good reverend spent the night in prayer and in the morning, reported that God was "clearing the title" for his chosen people, the English, to possess America. The next day armed colonists attacked the Pequot settlement at Mystic and seven hundred men, women, and children were killed in the span of an hour. Captain John Mason described the slaughter in these words:

Thus was God seen crushing the enemies of his people, burning them up in the fire of his wrath and dunging the ground with their flesh. It was the Lord's doings and it was marvelous in our eyes.

When some colonists questioned the morality of the slaughter, saying, "shouldn't Christians have more mercy and compassion?" — Mason responded:

I would refer you to David's wars. Sometimes the Scripture declares that women and children must perish. We had sufficient light from the Word of God for our proceedings.

As God gave Canaan to Joshua, many argued, so God gave other lands over to white European Christians. To the thinking of many, the church was on the move to conquer the world for Christ, and all who resisted it were seen as resisting God himself and deserving death. President Lincoln would make the idolatrous claim that the United States was "the last, best hope of Earth". Christians coming to the long-inhabited land of America participated in the slaughter of millions, the sex trafficking of young girls, and brutal enslavement as a means of conquering and establishing this new land for Jesus. This was called "Manifest

Destiny". Today we can call it for what it is: unspeakable evil.

Before America was stolen and its people raped and murdered, the land was home to more than 50 million bison. The bison were a major food source for the Native peoples. By the year 1884 there were only 325 wild bison left in the United States.

The U.S. Army sanctioned and actively endorsed the wholesale slaughter of bison herds by the millions. The federal government promoted bison hunting to weaken the Native American population and even paid a bounty for each bison skull recovered. Military commanders were ordering their troops to kill bison — not for food, but to deny Native Americans their own source of food. One general believed that bison hunters "did more to defeat the Indian nations in a few years than soldiers did in 50 years".

Surviving Native Peoples were confined to "reservations", which the Nazis would eventually cite as precedent for their "camps".

Only the mass murder by the government of the USSR of about 41 million of its citizens (1917 to 1987), and by the government of China of about 35 million of its citizens (1949 to 1987) have even come close to the atrocity committed by Americans. It is estimated that over 100 million people were killed in order to steal the land.

The genocide against American Natives was the most massive, and longest lasting genocidal campaigns in human history. It started, like all genocides, with the oppressor treating the victims as sub-humans. It continued until almost all Natives were wiped of the face of the earth, along with much of their language, culture and religion.

Even in recent times, between 1944 and 1986, amid the Cold War nuclear arms race, the U.S. ravaged the Navajo Reservation lands in the Southwest and extracted 30 million tons of uranium ore (a key ingredient in nuclear reactions). What's more, the U.S. Atomic Energy Commission hired Native Americans to work the mines, yet disregarded the health risks that radioactivity exposure posed to them. For decades, data showed that mining led to severe health outcomes for Navajo workers and their families. Still, the government took no action. Hundreds of abandoned mines still pose environmental and health risks to this day.

If we look at historical reality rather than pious verbiage, it's obvious that America never really "belonged to God." When the Kingdom of God is manifested, it's obvious. It looks like Jesus. But America as a nation has clearly never looked remotely like Jesus. There was nothing distinctively Christlike about the way

America was "discovered," conquered, or governed in the early years. To the contrary, the way this nation was "discovered," conquered, and governed was a rather typical, barbaric, violent, pagan affair.

The immoral barbarism displayed in the early (and subsequent) years of this country was, sadly, pretty typical by kingdom-of-the-world standards. The fact that it was largely done under the banner of Christ doesn't make it more Christian, any more than any other bloody conquest done in Jesus' name throughout history qualifies them as Christlike.

The truth is that America was founded as a Christian nation without the crucial ingredient needed to substantiate that title: Jesus Christ. This is the problem with reading the Bible as a flat text where every passage carries the same weight of authority. In such a reading, the Bible can be used to justify every kind of violence including genocide. It's the story of America.

When a people pledge allegiance to Jesus and strive to love enemies, forgive transgressors, bless persecutors, serve sinners, accept social rejects, abolish racist walls, share resources with the poor, bear the burden of neighbors, suffer with the oppressed—then, and only then, are they a Christian nation… and that nation is called the Kingdom of God.

The Amazon Rainforest Was Profoundly Changed by Ancient Humans

Robinson Meyer

The region's ecology is a product of 8,000 years of indigenous agriculture.

The region's ecology is a product of 8,000 years of indigenous agriculture.

For more than a quarter-century, scientists and the general public have updated their view of the Americas before European contact. The plains and the Eastern forests were not a wilderness, but a patchwork of gardens, they've found. The continents were not vast uninhabited expanses but a bustling network of towns and cities. Indigenous people, we've learned, altered the ecology of the Americas as surely as the European invaders did.

Now, an expansive new study, published Thursday in Science and bearing the names of more than 40 co-authors, suggests that the human fingerprint can even be seen across one of the most biodiverse yet unexplored regions in the world, the Amazon rainforest.

For more than 8,000 years, people lived in the Amazon and farmed it to make it more productive. They favored certain trees over others, effectively creating crops that we now call the cocoa bean and the brazil nut, and they eventually domesticated them. And while many of the communities who managed these plants died in the Amerindian genocide 500 years ago, the effects of their work can still be observed in today's Amazon rainforest.

"People arrived in the Amazon at least 10,000 years ago, and they started to use the species that were there. And more than 8,000 years ago, they selected some individuals with specific phenotypes that are useful for humans," says Carolina Levis, a scholar at Wageningen University who helped lead the study. "They really cultivated and planted these species in their home gardens, in the forests they were managing," she said.

That cultivation eventually altered entire regions of the Amazon, the study argues. Levis and her colleagues found that

some of these species domesticated by indigenous people—including the brazil nut, the rubber tree, the maripa palm, and the cocoa tree—still dominate vast swaths of the forest, especially in the southwest section of the Amazon basin.

"Modern tree communities in Amazonia are structured to an important extent by a long history of plant domestication by Amazonian peoples," says the paper.

Other cultivars remain successful, but they were so thoroughly changed by agriculture that they are no longer found in the forest at large. Peach palm, Bactris gasipaes, was domesticated to have fruits as large as 200 grams. In the wild, its fruits originally had a mass of only one gram. It still appears in gardens and small farms across South and Central America today.

The ancient farmers and gardeners of the Amazon would likely have been speakers of languages from the Arawakan and Tupí families. They would probably have lived in "galactic" communities—groups of settlements separated by distance but linked by trade and communication—along the banks of the rivers that cross and irrigate the forest.

"Recent archaeological studies, especially in the last two decades, show that indigenous populations in the past were more numerous, more complex, and had a greater impact on the largest and most biodiverse tropical forest in the world," said José Iriarte, an archeologist at the University of Exeter who was not connected to the study, in an email.

"This is the largest and more comprehensive study" to reveal that influence so far, he added. "It is is very sound, since it not only includes archaeologists (which have been stressing the larger role played by humans in shaping Amazonian forests), but also botanists and soil scientists, among other 'hard scientists.'"

The paper brings together more than 80 years of research into both the ecology of the Amazon and the indigenous people who lived there. It collates data from two sources: the Amazon Tree Diversity Network, a long-running index of the animal and plant species who inhabit the rainforest; and a database of the archeological sites excavated around the Amazon.

These archeological sites include anything that suggests human influence: ceramics, earthworks, rock paintings, and mounds of dirt. It can also include anthropogenic soils, or "Amazonian dark earth," a black mixture of charcoal and organic material that resulted from ancient Amerindian slash-and-char techniques.

Because it collates two different data sources, the paper also suggests areas of future research. It finds that certain areas of the Amazon are home to the types of tree species that indicate ancient human influence, but that these places have not yet been explored

or excavated by academic researchers. "This tells archaeologists where to do new projects," says Ariarte.

The paper also leaves unexplored whether certain types of archeological evidence—mounds of earth, say, or broken ceramics—correlate with certain species of tree.

Why does this matter? Though conservationists still speak of the Amazon as a "pristine" region, Levis says that its environmental allies should talk about it differently. We can look to it, she says, as an example of how human influence can enrich the Amazon.

"Human societies increased the abundance and distribution of useful species. This can also be used to preserve the forest, I think," she told me. "We can use this as an opportunity to reduce the impacts of deforestation. Now we have huge plantations of soybeans that are destroying the Amazon—while in the forest we have lots of plants that can be used while maintaining the forest as it is."

A recent New York Times investigation found that deforestation of the Amazon is accelerating again after slowing during the mid-2000s. More than 850,000 acres of the basin are now burned and converted to farmland every year, releasing millions of tons of carbon dioxide in the process.

Some geographers, anthropologists, and indigenous people have all rejected the idea that the Americas were an untouched wilderness—"the pristine myth," as they call this tale—since the early 1990s. (Fifteen years ago, it was the topic of 1491, Charles C. Mann's article in The Atlantic, later a best-selling book.) But this paper further belies that myth in one of the most biodiverse places in the continent, suggesting that humans did not just farm in the Amazon but helped determine some of its major ecological communities.

The Science paper cautions that it's unclear whether human-cultivated biodiversity shapes the ecology throughout the Amazon Basin or just certain sections of it.

But Iriarte said that increasing evidence shows that indigenous people were gardeners and stewards of biodiversity. "Perhaps," he said, "the very biodiversity we want to preserve [in the Amazon] is not only due to thousands of years of natural evolution but also the result of the human footprint. The more we learn, the more the evidence points to the latter."

Britain's Dirty Election

Peter Geoghegan and Mary Fitzgerald

A serial liar. A campaign of online disinformation. The risk of foreign meddling. Sound familiar?

A serial liar. A campaign of online disinformation. The risk of foreign meddling. Sound familiar?

By Peter Geoghegan and Mary Fitzgerald

Mr. Geoghegan and Ms. Fitzgerald are journalists based in London.

LONDON — Pity British voters.

Not because they face a choice between two historically unpopular candidates for prime minister — Boris Johnson and Jeremy Corbyn — on Dec. 12. Nor that they are being forced to trudge to polling stations for the third general election in five years, this time in the depths of the miserable British winter.

Pity British voters because they are being subjected to a barrage of distortion, dissembling and disinformation without precedent in the country's history. Long sentimentalized as the home of "fair play," Britain is now host to the virus of lies, deception and digital skulduggery that afflicts many other countries across the world.

In this as in other respects, Prime Minister Boris Johnson — a serial liar who lost his first job as a journalist for inventing quotes — resembles President Trump. And Britain, whose election is breaking down under the pressure of manipulation, increasingly looks like the United States. Truth and falsehood have become malleable concepts. Anything goes.

Social media is the staging ground. During a recent TV debate between Mr. Johnson and Mr. Corbyn, the Conservative Party renamed its Twitter account factcheckUK, which it then used to push out partisan messages designed to look like independent verification.

When called out, the Conservatives doubled down. Foreign Secretary Dominic Raab said that voters "don't give a toss" about what happens online. His cabinet colleague Michael Gove went even further, refusing to rule out repeating the trick. (Twitter upbraided Britain's largest party for infringing its rules but stopped short of taking any action.)

This was far from an isolated incident. Barely 24 hours after the televised debate, the Conservatives launched a fake website for those looking for the opposition Labour Party's manifesto. The party paid Google to ensure that its site — which accused Labour of having "no plan for Brexit" — appeared at the top of internet search results. And in recent days, Conservative activists have bought Facebook ads impersonating the Green Party in an attempt to "split the anti-Tory vote."

Mr. Johnson and his party are not the only culprits. Pro-Labour groups that are officially separate from the campaign have spent heavily on often aggressive digital ads. Anti-Brexit tactical voting sites have been accused of misleading voters in crucial constituencies. And the Liberal Democrats — pitching themselves as the party of "Remain" — have distributed election pamphlets that look like real local newspapers.

The effect of such stunts is less to actively counter opponents'

political arguments — how many of the fabled floating voters who historically decide British elections get their views from largely anonymous websites or fake newspapers? — and more to undermine trust in politics itself.

And it seems, at least in part, to be working. As one voter said recently, she was voting for Boris Johnson precisely because he is a proven liar. It shows, she said, "he's human."

It isn't supposed to be like this. Britain has lots of regulations governing its politics, including restrictive spending limits and campaign finance transparency requirements. But these rules are designed for a predigital age.

Election candidates, for instance, are legally required to ensure that all their printed election material is clearly labeled: A leaflet pushed through a voter's door has to say who paid for it. But online political ads do not even have to carry an identifying imprint or provide more than the most cursory accounting of how money is spent.

The internet is not Britain's only conduit of disinformation. The nation's print and broadcast media have lately been prolific in amplifying messages that are at best debatable, at worst downright false.

In office, Mr. Johnson has adeptly exploited reporting conventions to spin favorable narratives. Britain's daily news agenda has often been dictated by stories briefed by an anonymous "Number 10 source." These stories — widely assumed to come from Mr. Johnson's Machiavellian senior adviser Dominic Cummings — falsely accused political opponents of dishonesty, of "foreign collusion" and of leaking top-secret government documents.

While Downing Street briefings are not permitted during the short election campaign, the Conservatives have continued to benefit from an often unquestioning press. A party release that claimed that Labour's spending plans would cost £1.2 trillion was widely reported as fact, despite the lack of any evidence. Even criticisms of such false claims serve to amplify the original message.

The government, meanwhile, has done all it can to avoid scrutiny.

Mr. Johnson took the highly unusual step of delaying the publication of a report into Russian meddling in British politics, a decision Dominic Grieve, the onetime Conservative legislator now standing as an independent who oversaw the report, called "jaw dropping." And the party's manifesto — unusually released on a Sunday to avoid, some said, the full glare of the public's attention — was so short on detail it was branded "remarkable" by the Institute for Fiscal Studies, an independent watchdog.

Making matters worse, regulators and public bodies are sitting on a number of other potentially critical inquiries into British democracy. An announcement about a possible criminal investigation into the relationship between Mr. Johnson and an American tech entrepreneur, Jennifer Arcuri, has been delayed. And three and a half years after the Brexit referendum, a police investigation into the official Leave campaign — which Mr. Johnson headed — is yet to deliver its findings.

As a result, the British electorate is dazed and weary. Arguably the most significant election in a generation — to Brexit or not to Brexit? — has been reduced to social media sound bites designed by well-paid political consultants. It doesn't matter whether the message is false; all that matters is that it is repeated often

enough.

All this deception, distortion and disinformation might well help the Conservatives, whose poll lead has barely budged despite its dubious campaign, win the general election.

But at what cost?

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