

# **The Next Chapter**

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(Shortwave broadcast only: Roll 'Simple Gifts' id)

(Annrc:) The following program is a production of the North American Service of Radio Alexandria. (Begin domestic broadcast: Roll open theme, then under for:)

Hello Team Humanity. I'm Roland B. Hunt and you're listening to The Next Chapter. (Theme up, then under for:)

The Next Chapter looks at where we seem to be headed as a species on this little blue planet, do we really want to go there, and what are our options? On today's program we'll look at the decline of democracy and the sudden rise of warlords in modern society. We'll consider the implications of a study of world food production by insurance giant Lloyd's of London. I'll have an encore interview with prominent British astrobiologist Lewis Dartnell. We'll consider five ways to overcome the defects of mass democracy. And finally I'll have an important announcement about the future of The Next Chapter broadcasts and Radio Alexandria. (Pause for stations airing 4 min. newscast.)

The Next Chapter is about ideas. It's not about any particular religion, or joining some movement or cause, or buying gold coins or land in Belize. But if you want intellectual adventure, if you like trying to answer tough questions and solve tough problems, you've come to the right place. And if you go away from this broadcast without feeling challenged or even annoyed by some of what you've heard then I have failed in my effort to rattle cages and stimulate original thinking. We live in a dangerous age but also one full of opportunity to advance humankind to our fullest potential. Let's seize that opportunity while we still can.

Before we get started though let's quickly review the ground rules we follow on the Next Chapter. First, we don't do religion on this show. I'm not a theologian and make no claims to be one. Religion is about doctrines & scriptures, about supreme beings & beliefs that cannot be challenged or even questioned. Spirituality tho is about our search for the deeper meaning of human existence. On The Next Chapter we wil from time to time talk about the spiritual dimenshun of life but we wil leave theology to others. Everyone is welcome here tho, whether u ar a fundamentalist believer, militant atheist, or anywher in between.

Second, The Next Chapter doesn't pay much attention to conspiracy theories, UFOs, Big Foot, or who killed JFK. I keep an open mind on these subjects and once in awhile I might touch on them but generally I let George Noory, Alex Jones, and others carry the black briefcase on such matters.

Third, we have nothing to sell here. No books, no MREs, no gold coins, no land in Central America. We might look at the pros and cons of owning gold, or what are the best shortwave receivers on the market, or if you're thinking of moving overseas, what are some considerations to take into account. But in the end you'll have to do your own homework and make your own decisions.

Fourth and last, The Next Chapter should not be considered for or against any government. After living and working for much of my adult life in more than a dozen poor and often war-torn nations, I've come to the conclusion that all governments, ours included, are going to do whatever it takes to keep themselves in power. That's what governments do. In the modern world there's even a term for it, COG for Continuity of Government. What we as individuals do though is up to us, not blind, impersonal historical forces...or men in black.

Unlike our ancient ancestors who lived day to day and had no way to anticipate mega-disasters, now we not only anticipate and plan for them, we humans can and have built vast underground bunkers in many countries that will allow thousands of humans to live underground for years until conditions on the surface improve. The US has them. So do the Russians and the Chinese. Switzer-land reportedly has bunkers that can shelter its entire population of eight million.

That kind of capability is a game changer but it doesn't alter the reality that our species has come up against some extremely dangerous problems for which we currently appear to have no solutions. Weapons of mass destruction, bioterrorism, and mass unemployment caused by the rise of intelligent machines are just three examples.

So if for whatever reason modern civilization does pass into history, there will be survivors. The question is, will those who come after us be able to learn from our mistakes and not repeat them?

The Next Chapter is for the elite but in this case the elite is self selecting. It's anyone who enjoys thinking deeply about serious issues. Some listeners may find some of the subjects we talk about on this broadcast disturbing but you can be sure that elites in governments and private research institutes around the world are also thinking about these issues. Our goal is to bring as many people as possible into the conversation. In a complex technological society we can't hope to meet tomorrow's challenges unless we understand them.(pause for stations carrying a newscast to rejoin.)

Today I want to look at an alarming trend in world politics and that's the disintegration of democracies and the rise of warlords. We haven't seen the use of that term much in the media but that's exactly what's happening. From Madduro and Duarte in Venezuela and the Philippines to Putin in Russia and Erdogan in Turkey, Hun Sen in Cambodia, and the new regime in Zambia, in all of these countries we've seen their presidents concentrate power in their own hands while using the police, the military, paramilitaries, and the courts to suppress dissent and muzzle the press. Occasionally we see a beneficent warlord - I'm thinking of Paul Kagame of Rwanda and Xi Jinping of China - try to use their powers to clean up corruption and improve transparency in their governments, but by and large the authoritarians are on the march across the globe.

Now it's my belief that we should not be too surprised by all of this. It's all part of the normal evolutionary process for intelligent species as we transition away from large tribes called nation-states to a new form of global governance which could turn out to be either democratic in character or totalitarian. Which way it goes will be determined by whether or not future generations can learn from our mistakes and not repeat them.

When we see high levels of corruption and wealth concentration in society after society, when the plight of not just of the poor but the middle class is ignored, sooner or later democracy is on its way out and a period of either dictatorship or anarchy is about to replace modern civilization as we have known it.

I say either dictatorship or anarchy because unlike the 1930s, we live in an age of

weapons of mass destruction. As historian Yuval Harari pointed out last week on The Next Chapter today leaders can do great harm but they cannot do great good. Or to paraphrase British prime minister Winston Churchill, never in course of human events have so few been able to do such great harm to so many.

Now I have no doubt that there are those who would challenge what I have just said, who would claim that I'm engaged in fear mongering, that the human condition is nowhere near as dire as I claim it is. To them I reply with two names, Vasili Arkipov and Stanslav Petrov. The Cuban Missile Crisis of 1962, the closest humanity has ever come to global thermonuclear war, was caused when Soviet Premier Nikita Krushchev put nuclear tipped missiles on Cuban soil only ninety miles from Florida.

When US aerial intelligence discovered the missiles President Kennedy ordered what amounted to a naval blockade of Cuba and demanded that the missiles be removed. As a high school student I remember it all as though it were yesterday but I like most Americans did not fully appreciate just how close we came to nuclear war. My older brother however was working in the Pentagon at the time and he has some pretty hair raising stories that bring home the severity of the crisis.

And even he and all the other American decision-makers, both military and civilian, had no way of knowing just how close hundreds of millions and perhaps billions of people came to death, either directly from thousands of nuclear blasts, or indirectly from starvation from the nuclear winter that would have followed.

The story that follows was completely unknown outside Russia until the breakup of the Soviet Union decades later. Vasili Arkipov was the executive officer or second in command of a Soviet nuclear submarine off the coast of Cuba during the crisis. Also off the coast were scores of American naval vessels including an aircraft carrier group. When an unidentified sub was detected so called practice depth charges were dropped by the Americans to force it to the surface so it could be identified.

The commander of the Soviet sub had been submerged for a week and therefore out of contact with Moscow. He had no way of knowing for certain whether his country and the US were at war or not but here were the Americans depth charging his ship. He decided to fire a nuclear tipped torpedo at the aircraft carrier. Had he done so the carrier and its six destroyer escorts would have all been vaporized in a fraction of a second.

To fire on the enemy using a nuclear weapon Soviet naval regulations required the consent of three people, the captain, the executive officer, and the political officer. The captain and the political officer agreed but Vasili Arkipov refused. A heated argument ensued but eventually Arkipov won the day, the Soviet sub surfaced and returned home to Russia.

None of this is fiction. It all really happened and is fully documented. Dozens of books have been written about the Cuban Missile Crisis and how skillfully President Kennedy and his team handled it. But the reality is that ultimately none of that mattered. But for Vasili Arkipov's cool headed thinking and his willingness to stand up to his commanding officer, most of us would not be here today. A single man had saved the world and it was someone way down the chain of command.

Now all of that should be scary enough but this was not the only time we came within a hairs breath of global nuclear destruction. In September of 1983 relations between America and the Soviet Union were at an all time low as President Reagan pushed for a defensive missile system that would shield the US from a Soviet attack.

Soviet decision-makers were deeply afraid of Reagan's intent so they created a new system of spy satellites that would give instant warning if American intercontinental missiles were launched toward Russia. A few weeks after the system was activated it flashed a warning that five missiles had been launched. The duty officer that day at the Soviet air defense command center outside Moscow was Lt. Col. Stanislav Petrov. The future of the world was in his hands. If he sent a message up the chain of command that American missiles were headed toward Russia the Soviet leadership would almost certainly have launched a full scale missile counter attack.

But Lt. Colonel Petrov reasoned that if the Americans were really attacking they would not send just five missiles but hundreds if not thousands. He also knew that the satellite system had just be activated and probably had some bugs in it. So he decided it was a false alarm and did not send a warning message to his superiors. Later analysis confirmed his judgment. The satellites had detected a rare cloud reflection phenomenon and interpreted it as missiles being launched.

The incidents with Arkipov and Petrov are ones we know about. There have almost certainly been others. When the survival of humanity comes down to a single man in a bunker making a correct judgment you know that sooner or later someone will make a mistake, a profound mistake from which there is no return. Never mind the threat from an artificial superintelligence, or a supervolcano, or an asteroid strike. A recent report by the Center for the Study of Existential Risk at Cambridge University put nuclear war near the top of its list of dangers to the survival of humanity. I concur with that assessment.

Nuclear war is not the only threat to our modern civilization. With seven and half billion humans on the planet today we're going to take a close look at a recent study of what would happen to the world economy in the event of a shock to the global food system. The study was carried out by Lloyds of London, probably the most famous name in insurance.

A sudden drop in food production around the world would have a major impact on all kinds of activities that Lloyds insures, meaning that it and the rest of the global insurance industry could sustain losses in the many billions of dollars. The ability of the insurance industry to pay claims promptly would have a significant impact on how quickly the world's economy recovers. However, unlike smaller events, the long term political and economic impacts of a global food system shock could last for many years. That in turn might undermine the financial health of the insurance industry and its own ability to recover quickly from such a shock.

In reading through this study I was particularly struck by the level of sophistication of the political analysis and also the deep understanding displayed by the authors of cascading interaction and domino effects. On the other hand we really shouldn't be surprised. Hundreds of billions of dollars in liability are involved. When you're talking that kind of money you can expect an outfit like Lloyd's to hire the very best analysts. Also when such large sums are at stake it's not the time for political correctness. So this study represents a lot more than just an interesting academic exercise by yet another think tank. It's a very serious effort to assess real risk in the real world.

Food System Shock presents just one scenario. There could be others. Also the authors recognize that the complexity of the effects caused by such a shock mean that a number of different outcomes are possible. What I found especially interesting is that authors chose to include certain specific geopolitical outcomes, outcomes that in some establishment circles would probably be off limits for public discussion. Some of those possible outcomes closely

mirrored my own thinking during that time period last year.

One is that Greece will eventually leave both the eurozone and the European Union and form a closer relationship with Russia. So far that hasn't happened as both the EU and Greece have in effect looked at the abyss and decided to work a deal to keep Greece in the EU. On the other hand a far larger and more influential member of the EU has voted to leave.

I'm speaking here of course about Britain. Compared to the UK Greece is small pituties. I'm sure including a Greek exit in the Lloyd's study was to underline the internal weaknesses of the European Union and what a EU breakup might lead to. So even if the specifics were a bit off the overall projection was not.

Another part of the Lloyd's scenario included the effects of instability in the Middle East. Specifically Lloyd's analysts projected that at some point the American payoffs to the corrupt generals who run Egypt will fail to prevent a takeover by the Muslim Brotherhood in collaboration with more junior levels of the Egyptian military. For the past forty years the US has been able to buy peace between Egypt and Israel through what were essentially huge bribes to Mubarak and those who have succeeded him. Once that system fails, goes the thinking, all bets are off when it comes to peace in the Middle East.

Again, the generals are still in charge in Egypt so that projection hasn't happened...yet. But growing instability in the Middle East has come from another source: Syria. Right now we have large scale military conflict taking place there with regional powers like Turkey and Iran involved as well as Russia, the US, NATO, plus other Middle East actors like Iraq and Saudi Arabia.

So the actual specifics of the Lloyd's scenario have been off but their overall assessment of international political forces has been quite accurate. The title of the study is Food System Shock: The Insurance Impacts of Acute Disruption to Global Food Supply.

Actually the scenario presented assumes much more modest cuts in the food supply than the word 'acute' implies but because of the interconnectedness of the world's food system the effects of the shortfalls are magnified in ways that might not have happened in an earlier era.

The fictional scenario covers a one year period at some point in the near future. By the end of the year global rice and wheat production have each fallen 7%, corn production has fallen by 10%, and soybeans by 11%. Yet even a shortfall of only 7% causes the world price of rice to spike 500% because the shortfall is greater in countries like India, Vietnam, Thailand and the Philippines.

All of this is triggered by what is called the strong warm phase of the El Nino Southern Oscillation in the central Pacific. Parts of the North American breadbasket suffer severe flooding while severe drought hits India and Australia. A soybean pathogen cuts production in Argentina by 15% and 5% in Brazil. Another pathogen reduces wheat production in Turkey and Ukraine by 15% and Russia by 10%. Prices for wheat, corn and soybeans quadruple compared to year 2000 levels.

The authors of the study then go on to offer several alternative responses to how these shortages might play out politically. In one alternative response food riots break out in urban areas across North Africa, the Middle East, and Latin America. Saudi Arabia cuts back its oil production to drive prices higher toward \$100/barrel. The additional revenue gained by Mid East oil producers helps them pay for food on the world market that they distribute to their local populations to prevent a repeat of the Arab Spring. However non-oil exporting countries in the Middle East and North Africa don't have the money to subsidize food locally and they see an

increase in civil unrest, terrorism, and migration into urban areas.

In another alternative response, by the end of the year Greece has left the euro. Food riots break out in Athens and soon thereafter Greece leaves the EU and begins establishing closer ties to Russia. In still another alternative response Russia continues to intervene in Ukraine and tensions with NATO escalate in other parts of Eastern Europe. The euro weakens and European stock markets fall by 10%.

The point of course is that the world food system, and with it world politics, is highly vulnerable to even modest shortages resulting from well known and understood natural causes. Remember in this food shock scenario we're not talking about food supplies being cut in half, or even by one-fourth. Recent history shows that much smaller contractions can trigger near panic reactions in world markets. Part of the reason for that is because it's impossible to be sure when a drought will end or production will return to normal. Caution becomes the order of the day.

If nations refuse to honor existing contracts and cut off exports to protect their own populations then international suppliers become vulnerable to lawsuits from food processors who in turn could be sued by wholesalers. Fleets of ships are suddenly idled because they have no cargos to transport, resulting in still more claims from what in the industry are called business interruption or BI insurance. Meanwhile civil unrest is likely to result in insurance claims from widespread property damage. Lawsuits over what is or is not covered by insurance in such scenarios could drag on for years.

According to Lloyds the purpose of the study was to educate the insurance industry on current risks caused by a highly interdependent food supply system. The goal would be to help insurers design new insurance products that take into account these risks. As for the rest of us I would expect financial analysts to urge caution when investing in the insurance industry. Each person and each situation is different but studies like the one I've just described serve to remind us that the world may be in an even more fragile state than commonly believed. We ignore that fact at our peril. If you'd like to read the full study just enter into your web search engine the words 'Lloyd's food shock study.'

The practical take away from all this is that it's one more indication of just how vulnerable the world is to a global catastrophic collapse. No doubt some would dismiss such an observation as fear mongering but keep in mind we don't sell anything on this program. We don't take any political stands. And we let others talk about religion and prophesy.

Our sole interest is in the survival of freedom, wisdom, and kindness as core human values. We don't even talk that much about democracy as the end all and be all of political organization. Part of the reason for that is that democracy can take many forms. Who is to say which form is better than another?

The founding fathers of the United States deliberately included provisions in the American constitution to slow down political decision making, to make it harder for sudden emotion to overwhelm rational deliberation. Institutions like the US senate and the electoral college were not put in place by accident. Such institutions give conservative rural populations influence far beyond their numbers compared to cities.

Today that's resulted in what many people, perhaps most, would regard as gridlock where any kind of change is next to impossible. It's a situation that clearly favors special interests who have carved out a place of political advantage and will do whatever is necessary to hang on to such privilege.

And political gridlock is not limited to America. It's common in other western style

democracies as well. Witness the current turmoil in Europe as fiscally responsible member nations seek to impose a degree of discipline on the more unruly spendthrifts among them.

For better or worse both Britain and Greece are mass democracies. Every adult can vote, regardless of whether or not they have any understanding of economics or budgets or the longterm implications of their vote. And clearly not everyone shares the vision of EU bureaucrats and European elites. Politics, both in Europe and in the US and indeed the whole world are complicated by the fact that humankind is in the midst of a revolution as great as any in our history.

In one sense humans are going the way of the horse. As intelligent machines become increasingly powerful, humans, like horses, are just not needed much anymore. Except that human civilization exists for us Homo sapiens, not silicon based robots. How we humans resolve this challenge to our existence is the overriding issue of the day. Human politicians are having a lot of trouble coming to terms with the magnitude of the problem that confronts us.

I'm convinced that humanity can have a bright future in what I call the Age of Fulfillment but to get there we'll have to put aside old and outmoded concepts like liberalism and conservatism, like socialism and capitalism. Like religious fundamentalists, political ideologues are likely to have a difficult time of it. But change does come eventually, even if painfully. And the new truth may not be nearly so painful as many traditionalists expect. For all of us, of whatever philosophical persuasion, the end goal is still the same: the uplifting and unfolding of the human spirit.

Let's take a break and when we come back I'll have an encore interview with astrobiologist Lewis Dartnell and his plan for restarting civilization if this one should pass into history. It's one of the most thought provoking and encouraging interviews I've done in The Next Chapter series and one worth hearing again. I'm Roland B. Hunt and you're listening to The Next Chapter, a production of the North American Service of Radio Alexandria. (end Promo)

### **Promo - Radio Alexandria**

Feedback is important here at Radio Alexandria so I hope you will take the time to email or write and share your ideas. Did you find yourself agreeing in part and disagreeing in part? Did we make you cheer or did you want to throw some-thing at the radio? The whole point of Radio Alexandria and The Next Chapter is to get people to thinking. Send us an email and tell us your opinions. Please be concise and to the point. We can't respond personally to every email but we with your permission we may include some of your comments and ideas in future broadcasts. You'll only be identified by first name and the name of the state, or province, or region you're writing from.

Radio Alexandria is named after the greatest library in the ancient world, one that was founded several hundred years before the common era. That center of learning was burned to the ground by religious zealots in the fifth century AD so almost all of its books were lost to posterity. Radio Alexandria's mission is to make sure that doesn't happen again. The goal is to spread ideas far and wide across the globe to the remotest village and mountain top, ideas about government, society, and the future of our species on this planet.

As a radio station we can't physically spread the great books of today but we can share the ideas contained within them. Our goal is not to tell listeners what to think but how to think, how to use logic and evidence to make rational decisions about the future drawing upon lessons learned from the past.

We live in a busy world so if you tuned in late or have to leave early you can always listen

to today's program as a podcast. Just go to radioalexandria dot net and click on programs. Transcripts of all the programs in The Next Chapter series are also available on the website. Once again the web address is radioalexandria dot net. If you have comments or questions our email address is radioshipalexandria at yahoo dot com. That's radioshipalexandria at yahoo.com.

One more reminder. Radio Alexandria is in the demonstration of concept phase right now. We're distributing our programming domestically on FM and internationally on shortwave radio while we evaluate the feasibility of buying and equipping a radio ship and deploying it to the central Pacific.

If you know something about shortwave you've probably already figured out why we would choose such a location. It has to do with the physics of shortwave broadcasting. Unlike conventional AM or FM radio, a shortwave signal can travel thousands of miles by bouncing off a layer of charged particles in the atmosphere called the ionosphere.

The signal may bounce between the earth (or sea) and the ionosphere several times before reaching an audience 5,000 or even 10,000 miles away. Sea water to a shortwave signal is like a polished glass mirror compared to a very dirty windshield. It is a thousand times more reflective than ordinary earth. If you want to put a powerful radio signal into Pacific Rim countries like China and Russia using medium sized shortwave transmitters there is no better location than the central Pacific.

The reason for putting Radio Alexandria on a ship is safety. Pacific islands may bring to mind swaying palm trees and white sandy beaches but the reality is the Pacific can be a dangerous place, what with volcanoes, typhoons earthquakes, and tsunamis. The place to ride those out is not at anchor in a harbor. A small ship like a converted trawler or lightship can put to sea on short notice and has the endurance to withstand severe punishment on the open ocean.

The programs you hear now are typical of what you will hear if we decide to go ahead with the next phase but first we need to know if there will be enough listeners to justify such a large project. If you have some ideas or suggestions for foundations or other organizations which might fund a project like Radio Alexandria please feel free to share them with us. Also we're accepting donations from listeners so if you would like to support our efforts to build a more enlightened world just go to radio alexandria dot net, click on 'programs', and then the 'donate' button.

Right now our greatest out of pocket expense is paying for airtime. If we had additional funding we could buy more airtime to beam Radio Alexandria into Europe and Russia. The longer term plan is to offer The Next Chapter not only in English but in other languages as well. The goal is not to meddle in the domestic politics of countries. They have to solve their own problems. What we at Radio Alexandria are trying to do is look at issues all modern governments are confronting and see if there might be some common solutions.

Transparency is such an issue. It's one of the best ways to combat political corruption and boost popular confidence in democratic government. There's a major anti-corruption campaign going on in China right now because the current administration understands that they're not going to be able to keep the Mandate of Heaven unless they govern responsibly.

The USA & other western democracies are also suffering from a major lack of public confidence in their political institutions. The presidential election here in the US as well as elections in Europe show deep dissatisfaction with elites & the kind of leadership they have provided in recent decades.

Humanity is entering a period of profound change, driven by technological forces we have



never before encountered as a species. Radio Alexandria's mission is to explore solutions that will benefit all in society, both individually & collectively.

In the coming months we may try some crowd funding to begin raising the money to implement these plans. In the meantime all of you as listeners can do your part by spreading the word. Tell your friends about our website, transcripts, and podcasts. Also the podcasts are available free for rebroadcast on non-commercial stations in the US. If you'd like to see The Next Chapter more widely available in your community tell your local community or public station about us.

If you see something you think your friends would find interesting, copy it off the website and share it with others. Maybe you see something you disagree with. That's fine too. Radio Alexandria is not the source of all truth. We're all about looking *for* the truth, wherever it may be and whether or not it's politically correct.

By the way free Radio Alexandria buttons are now available so if you'd like one just send us your mailing address and we'll get one off to you. You can see a sample on our website [radioalexandria dot net](http://radioalexandria.net). Just click on 'resources'. The buttons are an experiment so supplies are limited. Our email address once again is [radioshipalexandria at yahoo dot com](mailto:radioalexandria@yahoo.com).

If you find value in what we are trying to do and would like to help financially just go to [radioalexandria dot net](http://radioalexandria.net), click on programs and then the 'donate' button. If you decide to send a check please make it out to 'Radio Alexandria'. The mailing address is on the website. Any financial assistance you chose to make will be gratefully appreciated. Radio Alexandria is radio for the future. (end promo)

In 2014 a very interesting book came out entitled *The Knowledge: How to Rebuild Our World from Scratch* by British astrobiologist Lewis Dartnell. In fact I found it so interesting I added it to the Radio Alexandria list of essential books for every home library. Prof. Dartnell's day job is looking for ways to spot life on other planets. In the process he got to thinking about the future of life on our planet. When I interviewed him I wanted to know how he approached the subject.

(Dartnell interview "I was very keen... ..in their life." )

LD: I was very keen when I was researching for *The Knowledge* not to limit myself to library work, just to researching from books, and I got right back to kind of original 1700's books and the descriptions of the ways things were done with more rudimentary means. So I didn't want to have a book with such kind of book research project or by talking to people and learning from their experience. I wanted to get some direct hands on experience myself and one of the examples I spent some time at a traditional blacksmith here in England in an English village working by an open hearth, a coke fired hearth that was fired by bellows and getting blanks of metal red hot and then pounding them with hammer, transforming that metal reconfiguring and changing its shape and I made for myself with my own hands a knife. I was very smug that I could create this tool for myself from scratch. I took this knife home and I used it to cut some bread and some cheddar and I made myself a post apocalyptic grilled cheese with this knife I had made from scratch. As soon as I had finished making that I looked at my knife again and realized that it had developed a ruinous crack in the handle and I never had the nerve to use this knife again.

But I think that's kind of a nice microcosm of how society and technology adapts and improves over time because I know what I did wrong the first time and can improve it when I go back again. This is the kind of cycle of trial and error over history and that's the system you'll

need to go through to reboot civilization if you ever had to.

RH: One of the key points you make and obviously correct is that our knowledge is so specialized today that practically no one knows the complete process from beginning to end to make virtually anything. I have a bunch of medical textbooks. I was smart enough to buy a medical dictionary so I could decode some of the language but even so, the point you make is that physicians today, they're fine as long as they have all of their medicines and their technology to help them but you know even here in America we have physicians who have immigrated from overseas. For a while I was being treated by a physician from India. So he used to being able to function, some of the physicians trained in third world countries in some ways have a better feel for how to practice medicine without all the technology.

LD: Yes, I think you're right. You operate within your society acting within the capabilities of your society and so in certain parts of the world perhaps they have access to less advanced instrumentation or imaging equipment or other drugs and you're trained on how to use that particular set of resources. Clearly if civilization ever were to collapse and I hope it never does but if it were to collapse then all of those capabilities would be lost and you would have to start learning how to do things for yourself from scratch and with rudimentary means. So perhaps more a kind of battle or field medicine will become much appropriate levels when we don't have well stocked modern hospitals anymore. But a certain amount of understanding of first aid and emergency surgery may still save lives.

The conceit behind The Knowledge is that it is a single book that contains the condensed essence, the kernel of all the vital information we want to preserve. But clearly a single book can't contain all of the stuff, not genuinely, and in fact a complete library probably wouldn't contain all of the knowledge you'd actually need as well because an enormous amount of the stuff we do and have expertise in is kind of tacit knowledge. It's knowledge you know to do but you couldn't really write down a description or explanation for someone that they could refer to that written word only and have a good experience in doing this. Something like surgery is a very good example of this. With years and years of training that goes into being an accomplished surgeon you couldn't pick up just by reading a textbook and it requires being trained on the job, having someone who's already an expert in this technique teaching you how to do it themselves. There's a lot of human to human contact and training.

So I think an important realization as well is that you can try to preserve all of the knowledge and text and diagrams you want but there'll still be an enormous amount of stuff that's lost when you kind of break that chain of one person teaching another if you ever had some kind of apocalyptic event.

RH: I can think of another example of that. You and I have exchanged emails about the use of radio and using your own vacuum tubes and I sent you the link to the 17 minute video by the French ham operator who makes his own vacuum tubes in his basement, absolutely amazing, but I was reading some of the comments by people watching that video and one of them pointed out that there's no mention of how to really insure tight seal so the tube doesn't lose its vacuum. If it leaks around where the electrodes come out of the glass it's not going to work very long so there's a whole process there where you have to anneal both the metal and the glass if you're going to get a really tight seal. That's exactly the kind of knowledge you're talking about. You would have to work at it awhile and practice and you can read about it but that doesn't mean you can actually make it happen.

LD: And I think partly you followed instructions to make something and it still doesn't work

and you don't have the expertise to kind of problem solve and hack at it and try to work out what the issue is. And it's that kind of problem solving or bug hunting where a lot of this experience and expertise comes in. You might follow instructions to make a vacuum tube and it leaks but you don't know where to begin to solve that issue. Even if you work out what's gone wrong you don't know how to solve it. It's that kind of thing that might be hard if you're trying to restart everything from scratch.

RH: You're right but it occurs to me that the video tells you pretty much how to do it but having those comments about watching out and understanding the annealing process, well fine, that's something I wouldn't have thought of, but now that we know annealing is the key then you need to get the metal working textbook out and flip to annealing, and for glass also, to learn how to do that.

LD: So I guess the secret in this case would be to store and save not only that you tube video but also the list of comments after it that point out certain details and save it as a package.

RH: I feel that assuming we had seeds and the climate wasn't too bad agriculture could recover fairly quickly and we could make wagon wheels and things like that but as you move along to higher level things what are the most difficult aspects of this from your perspective?

LD: The book explains for example how to keep transport running. If all of the diesel and gasoline and degraded or run out how can you keep transport running and things like tractors to help you farm with greater efficiency or transport things around and gather your resources. I talk about the process of pyrolysis or gasification where you can turn timber, wood, and you can break it down with heat to release gasses and vapors which are combustible. So you can pull off those gases and pipe them into engine cylinders of an automobile and keep it running without any kind of fossil fuel. So you can keep mechanization going for quite a while.

RH: This would be methanol?

LD: Exactly. You run dry distillation or pyrolysis so what you're collecting is methanol, acetone and acetic acid. But actually those volatiles you want to filter out because they could condense in the engine cylinders and be very corrosive and kind of gum it up. So you filter those out and you collect things like the carbon monoxide and effusion as the wood is broken down and the gas is produced by the hot charcoals. These gases are flammable and you can use them in just the same way you would use a squirt of gasoline in the engine to run that truck.

RH: You're confirming my belief that everything in modern society is based on calculus and chemical engineering.

LD: The things we see everyday like clothes and food, and people understand that those are important things even if they don't know how to do it themselves. But there's a vast, kind of bulk of the iceberg that remains invisible that we never see in everyday life and are oblivious to it. This is the mechanism behind the scenes to do things for us, to apply force and transform things and the chemistry that goes into creating these vital substances to be used in everyday life that we don't really think about. It's this stuff that's just as important as agriculture for providing for society or the products of civilization you most often see, are the artwork or the great monuments or the statues and stuff. But if you can't deal with things like effective agriculture or dealing with your own waste and sewage or create substances that that civilization requires to run then it doesn't matter how many monuments you can build because you would end up collapsing. It's this kind of invisible stuff that the book talks about that people would never have appreciated were important in the first place.

RH: I'm thinking about cleanliness and the germ theory which now we know so even if we don't

build elaborate facilities for water purification at least we know we have to put the outhouse away from the water supply and maybe in the 14th century we weren't so well aware of that. LD: Or even as late as the 1800s when there was the 'big stink' striking London. So the capital city of the most powerful empire in the world, and even then people were throwing their excrement into the River Thames and then twenty yards down the river someone was using a bucket and drawing water and drinking it. There were these horrific outbreaks of cholera and other water borne diseases in London and all the other populous areas of the world. With retrospect we now understand germ theory, we understand why people get sick with transmissible diseases and pass them on to each other. With the simplest application of knowledge (this could be avoided). I explain in the book how to make a rudimentary microscope so you can prove to yourself that these germs exist, and therefore why you should take steps to prevent water borne or transmissible diseases. But that realization only came (?) in our history. One of the main themes I play with in the book is how could you accelerate recovery and kind of leapfrog over centuries of our own development with the correct application and kind of providing hints. Clearly providing something like germ theory and hygiene and sanitation is right up at the top of the list there.

RH: Would like to expand a little on that theme?

LD: So the themes in the book are how can you accelerate the reboot of civilization as much as possible, and clearly with hindsight we know that certain pieces of knowledge can be very useful. So I describe in the book the printing press which allows you to replicate human thought and kind of democratize knowledge. It no longer requires teams of scribes to copy documents with handwriting. You can use machinery to replicate those kinds of writing for you. And radio also, as we've already discussed, is a wonderful technology for communicating over vast distances across the globe and then that itself has electricity as a prerequisite discovery. So I explain in the book how you could reinvent electricity and apply that to the technology of radio communications. Other things seem more simple because they are so commonplace today and we take them for granted. These are things like hygiene and sanitation and why you have to break that disease cycle. And how to make something like soap to break those disease cycles. Something like soap has a ludicrously simple recipe that you can provide to someone in the pages of a single book and make a vast difference in their life. (end of interview)

British astrobologist and UK Space Agency fellow Lewis Dartnell, author of the book *The Knowledge: How to Rebuild Our World from Scratch*.

Let's take a break and when we come back I'll offer some ideas on how we could improve democratic government and reduce the chances that dictators will arise to subvert the democratic process. I'm Roland B. Hunt and you're listening to The Next Chapter, a production of the North American Service of Radio Alexandria.

### **PSA: Shopping for a good shortwave radio**

Many of you are listening to this program as a shortwave broadcast but others are listening to it as a podcast. If you're an internet listener I'd like to encourage you to invest in a portable shortwave receiver. Someday the worldwide web may not be available. Besides there are quite a few shortwave stations broadcasting to North America, many of them with programs you're not likely to hear on the domestic media.

There are a number of good AM-FM-shortwave sets on the market now, many with advanced circuitry only the military would have had just a few years ago. If you've listened much on the shortwave bands you know that it's not like tuning in a standard AM or FM station.

Reception conditions can vary greatly even over the span of a few hours or days. That's why advanced features like PLL, digital tuning, and double conversion are important. They help bring in weak signals and filter out stronger stations on adjacent channels.

As you read customer reviews on the web and are trying to decide between models, be sure to select a radio that is highly rated for sensitivity to weak signals. When it comes to shortwave listening that's probably the single most important criterion. If you want to listen to ham radio operators you'll need to spend a little more and get a receiver with SSB or single sideband capability. That's a special type of voice transmission pioneered by the hams and now also widely used by military organizations. Without an SSB switch on the radio, the conversations and reports of hundreds of thousands of ham operators around the world will be totally unintelligible.

Someday shortwave radio could be your only source of uncensored news and information. If a state of national emergency is ever declared, all domestic broadcast stations will be under the control of the national government. If you want to hear anything other than the official version of what's going on you'll have to listen to shortwave radio and if you're serious about it you'll want to hear what ham radio operators around the world are reporting. Shortwave radio, in the past, in the present, and in the future, your window on the world. [end psa]

On today's broadcast we've considered the implications for our continued survival arising from the fact that a single person can trigger a global nuclear war capable of killing billions of humans from its direct and indirect effects. We've looked closely at a study by the insurance giant Lloyd's of London that indicates that even a relatively modest decline in world food output could have serious consequences for world political stability. And we've listened to prominent British astrobiologist Lewis Dartnell describe how we could go about reconstructing modern civilization if that should ever be necessary.

Humankind faces many challenges, challenges compounded by divisions in religion, ideology, and national and cultural identity. If we are to meet those challenges, we've got to focus on the values that unite rather than divide us. And we have to consider new forms of government that will insure our safety without destroying freedom.

In thinking about those new forms I'm going to suggest five rules of governance that apply universally to all intelligent biological species at our stage of evolution. The first rule is that elites always rule. The only other alternative is anarchy. The important question to ask is which elites and in whose interest do they govern?

Hunt's second rule of governance states that money is power. It always has been and it always will be. A corollary is that concentrations of wealth mean concentrations of power, concentrations that can be dangerous to survival of a free society.

Hunt's third rule is that there are no free markets except on the blackboards of college economics courses. In the real world all markets are distorted by politics. Those with money have power and they use that power to see to it that the rules favor themselves. It's always been that way since the beginning of civilization and it will always be that way.

Hunt's fourth law of governance states that all political systems transfer wealth over time. They either make the rich richer and the poor poorer or vice versa but transfers of wealth will naturally occur unless specific measures are taken to prevent them.

And finally Hunt's fifth law states that if you want to have a democracy you must have a literate population and a middle class. Without a middle class the political system will degenerate into feudalism.

The mass democracy that we have seen in the last couple of centuries since the French Revolution is inherently unstable. Many scholars have written about this problem and its causes. For a future civilization, which I am sure will eventually possess all the weapons of mass destruction we have today, we as a species have to dispense with rule by the whim of the uninformed masses and replace it with what I will call 'responsible democracy'.

To that end I want to suggest five changes that will address this problem of instability while maintaining the power of humans to control their affairs, which after all is what democracy is all about. Today these changes will be considered very controversial. In the next civilization cycle, I predict they will become standard practice.

The first change in the way that democratic forms of government are implemented is that all solitary leaders, as in kings and presidents, must be replaced by collective leadership, that is, by a popularly elected parliament with competing parties led by a cabinet whose powers are clearly defined in a written constitution with a bill of rights.

The presidential form of government grew out of a need in the 18th century to transition from hereditary rulers like kings and emperors to leaders who are popularly elected. Today we have example after example of presidents who become dictators and tyrants. A parliamentary system led by a cabinet does not guarantee that a dictator might not arise but it minimizes the chances. Even Prime Minister Churchill during World War II ruled as head of a coalition of parties and not as a supreme leader unfettered by restraints.

The second change in how future democracies must function is that there must be a Government Integrity Branch independent of the parliament and the cabinet with the power to reach into every government department, the military, the courts and the intelligence agencies to root out corruption and insure that constitutional standards are maintained. Violations will be referred to an independent judiciary for adjudication.

The third change in democratic theory that I propose would require that those who run for public office must demonstrate competence over a period of years at lower levels of government before they can qualify to run for positions with greater responsibility. This eliminates the danger of the 'man on the white horse' who suddenly appears to appeal to the popular sentiment of the moment. Such a selection system does risk the creation of a 'political class' but at least the competence of leaders must have been demonstrated before they can advance to higher office.

The fourth change in democratic theory would require that citizens be able to demonstrate increasingly sophisticated knowledge of the issues if they wish to vote in elections for progressively higher offices. So most anyone who meets age and citizenship requirements will be able to vote for the country board of supervisors but not for state senators, or governors, or federal offices. Unlike the discriminatory practices sometimes found in earlier voter qualification systems, Electors - we'll use that term instead of voters - will have to pass fair and objective written tests to demonstrate that competence. These will likely be multiple choice type exams which are not subjective in any way and thereby eliminate any chance of discrimination against racial or ethnic groups.

The fifth change I propose to move from mass democracy to responsible democracy is perhaps the most controversial. Democracy cannot survive when there are extremes of wealth. That means we can still have some well to do individuals in society but it rules out a class of super wealthy individuals. So for example I can imagine a wealth ratio of 20 to one or 30 to one but not 300 to one, as it is today. Even if the wealthy get the tax code written to favor themselves all income above a certain level returns to the treasury.

All of this has absolutely nothing to do with envy and everything to do with the maintenance of a healthy democracy. Talent and ability are encouraged but just as there are some limits to free speech such as the prohibition to inciting violence or lying for personal gain, there have to be some restraints on private wealth.

These are some ideas put forth to encourage popular discussion and debate about our future. As for adopting any of them during this current civilization cycle don't hold your breath. Entrenched interests would never allow it. But then a brutally honest appraisal of our current civilization would strongly suggest that it will not last much longer. As to how many of us will survive and in what condition no one can know. But as the Chinese proverb says, "In crisis there is opportunity."

And now I want to announce to you that next week will be last radio broadcast of The Next Chapter. We've been on shortwave radio for almost four years but all good things must come to an end. The Radio Alexandria website will remain and it will no doubt be updated from time to time but financial considerations dictate an end to distribution by shortwave. To those of you who contributed to our efforts over the years I extend my deepest thanks for your support. Rest assured that our values and goals will not change. Radio Alexandria will always be committed to freedom, wisdom, and kindness.

If we can spread the idea everywhere, to the remotest village and most isolated hamlet, that we are members of one intelligent species among many in the universe, working toward a common goal of greater enlightenment, then no matter what catastrophe might befall us in the coming years, those who survive will share a common vision of humankind, a shared ideal of who we are and where we want to go in this adventure we call life. (deadroll closing theme, then up slowly for...)

This is our planet and we are its stewards. Everyone has a part to play in the drama that is human existence. And that's what Radio Alexandria is all about. You our listeners are the wild cards. History could someday turn on your knowledge and insight. Until next time think deeply and act wisely. The future is in our hands, Team Humanity. Let us embrace it! (music up full until end)

Annecr: You've been listening to The Next Chapter with your host Roland B. Hunt. A transcript of this broadcast is available at our website 'radioalexandria dot net. Tune in again next week for another edition of The Next Chapter, coming to you from Radio Alexandria.

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Definitions of commonly used terms on The Next Chapter:

The Hunt Paradox (sometimes referred to as the Strangelove Paradox) states that the more advanced an intelligent species becomes the more likely it is to destroy itself.

The Hunt Paradigm states that there are quite a few carbon based intelligent species in the universe. After reaching a certain level in their evolution they all go through a similar process of development until the point they encounter the Hunt Paradox. Some find a solution to the paradox and advance to a still higher level. Others do not and destroy themselves.

Note: It is not necessary that the conjecture be true. It is merely a useful mental construct for integrating ideas about evolution with ideas about the rise and fall of civilizations.