In a complex society that has collapsed...the overarching structure that provides support services to the population loses capability or disappears entirely. No longer can the populace rely upon external defense and internal order, maintenance of public works, or delivery of food and material goods. Organization reduces to the lowest level that is economically sustainable, so that a variety of contending polities exist where there had been peace and unity. Remaining populations must become locally self-sufficient to a degree not seen for several generations. Groups that had formerly been economic and political partners now become strangers, even threatening competitors. The world as seen from any locality perceptively shrinks, and over the horizon lies the unknown.

Given this pattern, it is a small wonder that collapse is feared by so many people today. Even among those who decry the excesses of industrial society, the possible end of that society must surely be seen as catastrophic. Whether collapse is *universally* a catastrophe, though, is an uncertain manner.

Joseph A. Tainter, 1988
The Collapse of Complex Societies

January 8, 9:30 p.m.

Joel had mostly recovered from his over-extended stay in the snow and cold. The last physical reminder of his experience was the periodic shivering that came upon him without warning as his body continued its attempt to compensate for the dangerous temperature drop it had experienced earlier in the day. Although this recurring symptom was by now very sporadic, he kept the wool blanket wrapped tightly around himself and sipped gingerly a bit of the hot chocolate that had been brewed for him.

He savoured the taste of the chocolate. It had been some time since he'd experienced its flavour and to his surprise was really enjoying it. There hadn't been too many times of such gratuitous pleasure for far too long and he was mindful to let this particular one linger, if only for the briefest of moments. He also made note of and appreciated that the fire was providing a soothing warmth. One that his body had desperately needed.

And then, just like that, Joel's thoughts left the positive stream they had occupied for the shortest of times and returned to his current predicament. He had been lucky to get out of the cold and into a heated space when he did. He tried not to think about how he'd failed to notice the shift in weather and remove himself from the danger it posed. It had almost been a catastrophic mistake and one he should never have let happen. He knew better.

The fogginess he had experienced from the onsetting hypothermia seemed now well behind him and he was capable of coherent thought and speech once again. For the past half hour he had been engaged in an informative and, at times, emotional conversation with the group of youngsters regarding their flight from London and his from his apartment in Toronto. They shared their experiences and how they had survived the past couple of weeks without electricity

and the many conveniences industrial society had provided them with, and were just beginning to miss.

Joel stiffened and sat up rigidly when Imran outlined their conversation on the CB radio they had found in Duncan Stuart's car with an American about a possible explosion and EMP in the Washington D.C. area.

Al could sense Joel's interest in the subject from his body language and enquired immediately after Imran had shared the limited discussion they'd had with the North Carolinian whose only identification had been his CB handle: Catfish, "What the hell's an EMP anyways? It sounds oddly familiar. I just can't recall where I've heard it."

Joel took a deep breath and pulled the wool blanket around him a touch tighter, not because he was cold or shivering but because the idea of an explosion of some type near the U.S. federal capital and an EMP raised all sorts of possibilities for their predicament. And most none too pleasant. "EMP stands for electromagnetic pulse," he began.

"I received some basic background on the phenomenon when I was on the police force. It really caused me to rethink some of my assumptions about a lot of things when we were briefed on it. That was almost 25 years ago, I think. Just around the time of 911 actually. And the implications of that being the possible cause of our grid failure could be pretty significant. I really hadn't considered our power loss being the result of an EMP.

"It's been just a few years since I was exposed to the information so my recall may not be perfect, to say the least," Joel continued, becoming a bit more animated in his demeanour. "I do, however, remember some specifics given how disconcerting the material was for me at the time and the additional research I ended up doing.

"An EMP is basically a burst or pulse of energy. Electromagnetic energy, hence the term electromagnetic pulse. The burst of energy can occur in a number of different ways from a natural solar flare or lightning, to a nuclear blast or some other non-nuclear explosion. The energy can travel in three or four different ways or forms, such as via a magnetic field or electromagnetic radiation. It's the electromagnetic radiation form that travels over very long distances. The others don't tend to travel nearly as far and have a much more limited impact.

"Small EMPs can create fairly harmless interference with electronic devices, like static on a radio. Larger EMPs, though, can temporarily disrupt equipment or severely damage it. And the biggest type, like from a lightning strike, can cause structural damage because of how concentrated the energy is."

"I guess the police would be worried about the 'fallout' from a nuclear explosion," Imran suggested, smiling slightly at his own pun.

Joel smiled back with a little chuckle. “Yes, fallout from a nuclear explosion was discussed and certainly that would be a major concern from a healthcare angle. But the fear from a security or policing perspective was what would happen in the event of a large-scale EMP, nuclear or not, and the power being lost for an extended period of time. A large solar flare or high-altitude nuclear explosion could end up resulting in total chaos.

“It's been argued that either one of those could knock out electrical systems and damage or destroy equipment over hundreds or thousands of square kilometres. And once the power grid is down we face all sorts of conundrums. Especially if the power is lost for a long time,” Joel emphasised. “It's only been a couple of weeks to date for us and look at how off-kilter our lives have been already.”

“Yeah,” Imran intoned. “I really miss the Internet. And,” he added with an obviously feigned look of despair, “my online porn.”

“You’re a pig,” Hayley scolded, grabbing a nearby pillow and throwing it at him.

“Oh,” Imran responded, smirking at Hayley, “I said that out loud didn’t I? I keep forgetting to keep those politically-incorrect thoughts inside my head.” He picked up the pillow from the floor and threw it back at Haley. “I probably deserve a spanking after that obvious slip. And after the spanking?”

“The oral sex!” Al and Imran intoned together.

“Well,” Marie interjected quickly, before the conversation could drift even further into Monty Python’s absurd humour, “an EMP cannot have been what has happened here, can it? Any electronic devices we have are working fine. Radios, the car we were in, that CB radio, our flashlights. Even that guy we were chatting with from North Carolina had electronics he was using.”

“Didn't you say that the explosion was reported in the Washington, D.C. area?” Joel asked.

All of this was sounding strangely familiar to Al. The first hint had been the term EMP. It hadn't meant anything when he'd first heard it on their flight from London. Things had gone sideways big time that day and the conversation on the CB radio had left his thoughts almost immediately, especially considering what had happened to him shortly afterwards. But there was something gnawing at his memories now with the time to consider it all. He had begun searching his memory when Imran had raised it again, and then as Joel asked his question it suddenly came to him. “Jericho!” Al exclaimed.

“Jericho?” Sara asked him, wondering what he was talking about. She sat holding her sister, listening to the conversation but not really participating at all. It was all she could do to keep her mind off the tragic event of her mother’s and uncle’s murders. That nightmare had been replaying in her mind again and again, occasionally bringing tears to her eyes. She was

constantly fighting them back, more to put on a brave face for her younger sister than anything else. Sara had been paying enough attention, however, to realise that Al's outburst did not seem relevant to the conversation.

"Oh," Al laughed, "Jericho was a TV show my sister and I watched years ago. It was great. And I'm not just saying that because I had a crush on one of the actresses. Anyways, the premise was basically about survival, politics, and conspiracies after nuclear bombs were detonated in a couple dozen large American cities. As usually happens with such events it was blamed on the usual boogeymen--North Korea and Iran--but ended up being false flag attacks perpetrated by members of the U.S. Deep State who were in league with domestic terrorist groups, religious extremists, and anarchists. Their aim was to wrestle power away from the sitting government and expand the economic interests of one particular corporation.

"In fact, this corporation had actually written a report for the government outlining and warning about the very scenario that was eventually implemented, by them, rather than the geopolitical competitors targeted in the document. And, all the members of the new U.S. government that arose during the chaos, from the president to members of congress and advisors, were, not so coincidentally, former employees of this corporation."

"Deep State?" Hayley enquired.

"Yeah my sister told me a bit about the Deep State. She said it was kind of an unelected group that tends to run things in most 'democratic' countries. It's made up of members of the government bureaucracy, intelligence agencies, police, military, and big corporations--especially the largest financial and industrial businesses," Al responded. "It tends to have overarching influence on sitting politicians and do things above and beyond the elected government for its own reasons. I didn't know about it or the term when I first watched Jericho but it was definitely part of the conspiracies that were embedded in the show's storyline.

"And that had to be the first time I heard the term EMP too. I remember them having difficulty with radioactive fallout, the power grid, their electronics, resources--especially food and fuel. It was a fairly good prediction of what we're facing now, actually. They struggled to keep warm in the winter and have enough food.

"In fact, that's why they fought with a neighbouring community; to control the farmland and local salt mine. They also had ongoing disagreements over whether to take in strangers, how to distribute and share resources, and how to ensure peace and security. Travel became deadly, a bartering economy arose, mass migrations south to avoid the cold took place, and alliances between vested interests formed and broke."

"Many of the consequences you just listed were the ones the police and security forces were looking at having to prepare for," Joel stated.

"You remember all this from a show you watched as a kid?" Imran directed towards Al.

“I binge-watched it again last year on Netflix. I was avoiding writing a couple of papers,” Al responded, then added, “and I couldn't get Ashley Scott out of my head.”

“Ashley Scott, huh?” Hayley asked, giving Al a sideways glance but cuddling into him a bit closer.

“Could be a small EMP has impacted a specific local area but disrupted the entire grid,” Joel interjected. His mind was racing with this latest revelation. “You kids are probably too young to remember the 2003 blackout that hit most of northeastern North America--in fact, I'm pretty sure some or all of you weren't even born--but it turned out to be a relatively local problem that knocked out the grid for millions. It was just a few overhanging branches that contacted some wires and ended up causing a widespread power loss that lasted for a few days.”

“Really? I didn't think something so trivial could create such a huge problem,” Marie remarked.

“You'd be surprised how something supposedly insignificant can throw a monkey wrench into our technological wonders and the increasingly complex systems they are part of. There are also drawbacks to highly interconnected systems. One part can fail and the problem ends up cascading throughout the system impacting everything.”

“So, do you think we are experiencing the results of a nuclear explosion?” Marie asked. “Or maybe several like in the television show Al has described?”

“It's really impossible to say based on second- or third-hand information,” Joel began. “We have learned a lot about nuclear explosions and their after-effects, though.”

“How do we know so much? Haven't we only ever had two such bombs dropped in world history?” Hayley asked.

“True. The U.S. is the only country to have ever used them on other humans when they dropped them on the Japanese cities of Hiroshima and Nagasaki near the end of World War 2. However, there were all sorts of tests carried out with nuclear weapons in the decades after the war. France, the U.S., United Kingdom, Soviet Union, China. They all developed nuclear weapons in the decades after the Second World War and carried out all sorts of tests. At ground level, underground, and at high altitudes.

“In fact, Operation Fishbowl--I think that was the name--was a series of high altitude testing by the U.S. in the early 1960s. Starfish Prime was the first explosion and I think it was like 250 miles above the mid-Pacific and caused electrical damage almost 1000 miles away in Hawaii. That one stuck in my mind when we were reviewing the history during our briefings and I did further reading on it.

“But I tell you,” Joel continued in an increasingly serious tone, “the damage that these blasts can potentially cause are truly significant. Now, a lot depends on the altitude of the detonation since the Earth’s magnetic field varies with distance from the planet, and the given strength of the field over an area is different everywhere.

“Modern day electronics are probably also a lot more susceptible to damage since they rely much more significantly on microelectronics. Plus most of the crap manufactured today isn't as rugged as that that was damaged back in the 1960s so we really aren't completely sure how badly or how widely an explosion might impact us today. My guess is that the consequences will be a lot worse.

“The extent of damage, though, is also dependent upon the distance from the equator due to the shape of the Earth’s magnetic field and the presence of any geographical features that can interfere with the pulse, like mountains. If I recall accurately, a large weapon detonated about 300 miles over Kansas would create problems over most, if not all, of North America-”

“Kansas, that’s funny,” Al interrupted, “that's where Jericho was located...sorry, didn't mean to interrupt.”

“Quite alright,” Joel responded, continuing briskly as the memories flooded back into his mind. “The thing is, EMPs can be created by non-nuclear weapons too. Weapons that can be delivered by a cruise missile or regular bomb. The effect is not the same, however, and much more localised. In fact, both the U.S. and Soviets were developing nuclear EMP simulators in the latter part of their Cold War. It was a crazy arms race. And one that we witnessed start up again just a few years back.”