Map: scenarios of a global double catastrophe

Combination of two technologies resulting in global catastrophe

	Nano	Cogno	Nuclear	Geo	AI	Asteroids	System crisis
Bio	**Biotech is used to create potentially dangerous nanotech** 1. Living cells will create the **building blocks** for nanorobots (by synthesizing them in a special ribosomes). 2. "**Animats**" will be developed - Artificial life with both biological and non-biological elements. (DNA origami) 3. Only nanorobots will give definitive **protection** against biological weapon. 4. **Augmented E. coli** engineered to become remote controlled robots **Nanotech used to create genetically modified living beings**	**Bio used to make drugs** • Manufacture of dangerous drug becomes as **simple** as growing a tea mushroom. • GMO bacteria produce **recreational drugs.** • The demand for recreational drugs will result in blossoming of the **black market** of biotechnologies which will make it possible to manufacture bioweapons of mass destruction in the basement. • To prevent addiction to a superdrug, the special **brain changing bioweapon** will be deployed, but goes awry. **Bio affects cognition** • An artificial illness could be created which has among its symptoms **euphoria** and increased sociability which functions to spread it. • **Zombie-bioweapon** will be created for fun (zombie-meme materialized) • Infection could make people stupid and **less risk-averse** in subtle way (toxoplasma) • GMO neurons used to connect brain to the internet, **human brains dissolve** into neuronet • Widespread brain enhancement drug results in premature aging or longterm damage, global intelligence decline and societal collapse (like alcohol, MJ, but also nootropic at first). • Gene therapy for depression results in biological "wire heading". • Brain enhancement results in the creation of immoral supergenius, who will be more able and willing to develop dangerous bioweapons (augmented angry biohackers). • Drugs and genes will be used to memetic indoctrination and creation of slaves and zombies. • Brain implants will make brains vulnerable to computer and memetic viruses	**Nukes against bio** Sterilization failure: One may try to apply nuclear weapon to destruction of dangerous laboratories and sterilization of the infected areas, but result in wider bio-dissemination or nuclear war. **Bio helps nukes** Modified bacteria can be applied to extraction of uranium from sea water and for its enrichment, and also for extraction of plutonium from spent fuel. **Bio and nukes used together** • Nuclear war occurs in world strongly infected with biological agents. War make impossible adequate rate of manufacture of vaccines, and simultaneously leads to intensive migration of people. Resources which could be used to protect against microbes are used to protect against radiation instead. Many people are weakened and are susceptible to diseases. • A country which is losing nuclear war releases hundreds of different pathogens and starting multipandemic. • High radioactivity after nuclear war results in higher mutation levels and growth of dangerous pathogens and creatures. • After a pandemic, many nuclear sites will be unattended and will melt down, resulting in severe radiological contamination. • Quarantine measure will be mistakenly implemented by nuclear weapons (if a city is infected with dangerous virus, some may try to stop its spread by nuking the city). • Bio and nuclear contamination of crops will result in famine or illness. • Nuclear winter results in crop failure, and remaining food is contaminated or affected by artificial pests.	**Bio affects climate** • Methane producing bacteria accelerate global warming. • Carbon capture bacteria extract all carbon which results in global cooling and plan die-off. • Plant killing bacteria result in large carbon release and albedo change. • Airborne microorganisms dim sun light. It is unlikely, unless they are specially designed to do it or they should be nanobots. • Pandemic results in failure of geoingeneering system which result in quick global warming (Seth Baum "Double catastrophe: Intermittent stratospheric geoengineering induced by societal collapse")	**Bio helps AI** • Genetically modified superhumans will possess superintelligence which will allow them to create real computer AI. • People will die out from a virus, and will be replaced by robots in their working places **AI uses bio** AI will create a super-virus as a weapon. **Parallel convergence: appearance of new products on the basis of both technologies** • Biological assemblage of superdense chips will sharply accelerate AI growth. • Special viruses will upload programs created by AI into human brains. • AI will be created directly from biomaterials – neurons, DNA.	**Meteor causes bio** • A comet could bring extraterrestrial life to Earth (very unlikely). • A meteor could break sealed facilities with bioweapons (Chelyabinsk meteor would have been able to do it if it struck another city, Kirov).	**Collapse results in bio** Economy collapse leads to global terrorist war, where small organizations start to produce bioweapons to fight each other. Many pathogens are released simultaneously. **Bio starts collapse** Pandemic starts economic devastation and total collapse, resulting in vicious cycle
Nano	**Nanobots based brain implants** • Strong drug-like effect could be achieved by direct stimulation of specific areas of the brain by microrobots. • Nanorobots will permit systems that deliver information directly to the brain, creating powerful forms of entertainment and VR. • Nanobots will be used to upgrade human brains, gradually replacing neurons. • Computer virus could attack such nanobots. • People could become p-zombies as a result of nanoupgrade		**Nano makes nukes** • Nanotechnology will allow cheap separation of isotopes and the design of much simpler nuclear weapons. • Nanotech may be used to create large scale structures like giant gigaton class bombs. • Nanotech may be used to create simpler fusion bombs which use laser ignition. **Nukes against nano** • Attempts to struggle with swarms of nanorobots by means of nuclear attacks will lead to additional destruction and global contamination. • Large scale nuclear war against Grey Goo. Nuclear strike against Grey Goo sites only help to disseminate it around the world. **Nano against nukes** • Nanobots used to infiltrate a nuclear weapons control system and cause premature detonations or launch a missile. • Nanotech weapons will be used preventually to disarm nuclear power with unintended consequences.	**Nano affects climate** • Nanobots harvest all carbon, and dim sun light, resulting in global cooling	**Nano creates AI** • Nanotech used to quick scan and reverse engineer human brain leading to quick creation of unfriendly AI. • Nanotech used to create large supercomputers which results in quicker creation of AI. • Nanorobots will also provide high resolution brain scanning that accelerates AI development. • Progress in nanotechnology will support Moore's and enable supercomputers that vastly outperform the computational power of the human brain. • Nanorobots also will be real carriers of AI – something will turn out an average between intelligent ocean in the spirit of Lem's *Solaris* and the scenario of Grey Goo. **AI creates nano** • UFAI creates nanotech weapons to kill or enslave humans Hostile AI uses nanorobots as a weapon for establishing its power on the Earth. • AI will help to develop and release super-efficient nanorobots.	**Nano conquers space** • Nanoreplicators could thrive in space and quickly create enormous structures there. • They could be used to create large nuclear weapons in space or kinetic weapons aimed at Earth. • Hypothetically, they could be used to create a large enough detonation device which will be able to start chain fusion reaction in the depths of giant a gas planet (using deuterium enriched layers there).	**Nano kills states** • Nanotech and 3D printing result in cheap building of weapons by small groups, which results in large scale terrorism, sectarian violence and demise of national states.
Cogno			**Cogno helps nukes** • Augmented humans become cleverer and find ways to make cheap nukes **Nukes kill cogno** • Nuclear war destroys science and education and stops tech progress	**Drugs kill climate control** • Semi-wireheaded humans will lose interest in long term planning and will not invest in long term projects like global warming prevention	**Cogno helps to create AI** • Human brains merge together via neuronet and form new hive-mind AI, and human individualities are lost inside it. • Communication of AI and the human brain through brain-computer interface will essentially strengthen possibilities of both. AI will get access to human intuition, and humans – to unlimited memory and speed of thought of AI. • Brain's raw power is used to achieve "psychogenic singularity": AI runs on brain wetware. • Brain uploading could be the best way to AI. But resulting AI could be hostile anyway. **AI wireheads humans** • AI-based games result in effective wireheading (virtual reality, the Internet, lucid dreams enhancement, fembots, designer nootropic drugs). • AI decided to wirehead humans as it could think that it is what humans really want. • The superdrug will be the weapon of hostile AI against people. • Unemployed (because of robots) humans will be more and more addicted to superdrugs		**Drugs helps terrorists** • Terrorists are using stimulants to get more energy and less fear and are willing and able to create large apocalyptic acts of destruction (already happens in Syria with drug "kapogen").
Nuclear				**Nukes start natural disaster** • Nukes may be used to provoke explosion of a supervolcano. • Nukes may be used to destabilize methane hydrates on the arctic ocean floor. • Nukes may cause large fires in taiga and s nuclear winter.	**AI uses nukes** • AI will make nukes easier, faster and cheaper. • AI uses nukes to get rid of humans. **Nukes against AI** • Humans could use nukes to try to stop AI.	**Nukes affect asteroids** • By means of nuclear weapons it is possible to deflect an asteroid from the Earth, or to direct it to the Earth. **Asteroid affects nukes** • Asteroid impact can be apprehended as a nuclear attack and lead to the accidental beginning of nuclear war. • An asteroid may destroy many nuclear power stations and cause large scale contamination.	**Nukes start system crisis** • Any explosion of a nuclear bomb in a city can bring down the world financial markets. **System crisis starts nuclear wars** • The collapse of the markets and financial crisis can lead to a fragmentation of the world and all against all fight for power with use of nuclear weapons **Cheap nukes results in terrorist war** • Cheap nukes become widespread, and low level nuclear war becomes constant
Geo							**Volcanic winter raises chaos** • Volcanic winter results in global chaos, pandemics and wars for food, as well as evil creativity (e.g. "Year without summer" and Frankenstain novel) • Chaos rises risks and lowers control in all domains, as well as rising hate against all social groups.
AI							**Unpredictable consequences of complexity** • Usage of supercomputers will create a certain new type of instability: fast and not clear (in military sphere, in economy, in the field of futurology). **Unstable arms race results in unsafe AI** • War or war threat will result in arms race in which the most destructive and dangerous AI will be created. **Complex infrastructure failure** • All world infrastructure is controlled by global computer system (power, planes, robots). Hackers attack it and cause it to behave in most dangerous way: planes crashes in nuclear power stations, home robots attack humans etc.

Complex	**Triple scenarios** AI-nano-bio Nukes-bio-climate AI-cogno-nano	**Chain scenarios** Sliding to deeper and deeper levels of degradation Possible structure: Starting catastrophe - main killer - the one that kills last human (nuke-bio-climate) **Circular scenario** Regress of civilization happens many times because of catastrophes. It may go for millions of years until Earth exists. Anyway it will result in extinction.	**All-cause scenarios** **Peak everything** Peak oil, coal, all resources, Malthusian catastrophe **NBIC-convergention** **Oscillations near singularity** As tech progress hyperbolically improves, enormous amount of events could happen before the Singularity and prevent us to reach it. **Total war** Using AI, nano, bio, nukes **Complexity crisis**	**Structure of a global catastrophe** Complex relation between different events and causes as it always happens in the real world catastrophes. See my map "Casual structure of a global catastrophe" (but it is for one cause scenario).	
Integration ways	Two technologies are integrated to create potentially dangerous mechanism or implementation	Two catastrophes: one starts the second	Two catastrophes: the first makes humanity vulnerable to the second	Two catastrophes happen simultaneously	Two catastrophes: one tech is used to stop risks from the second, but result in double catastrophe

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