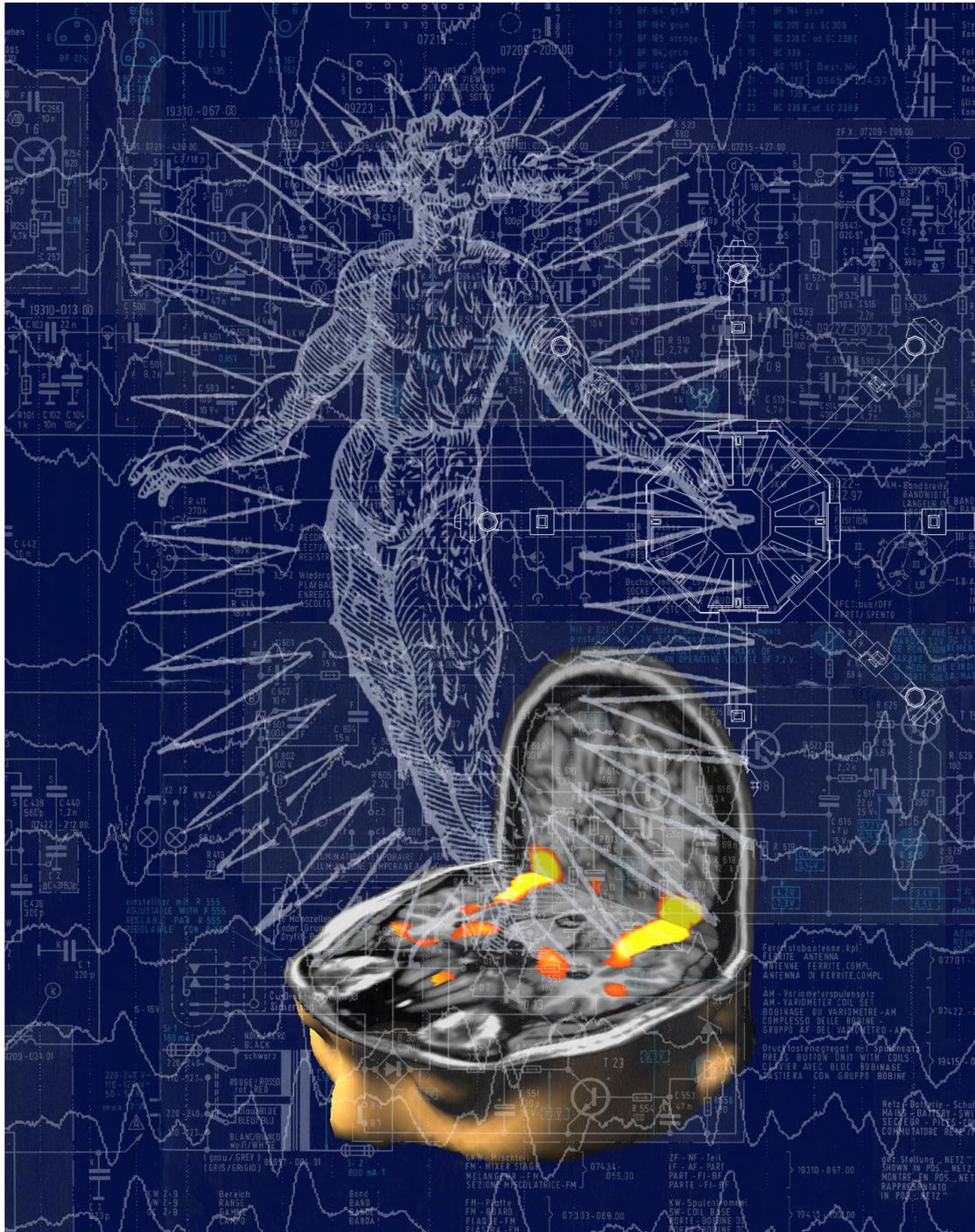


On the topology of the quantum Killing field near a Jerome drive: nonlinear interactions

A horror scenario for 2300AD/23230AD by Anders Sandberg



Synopsis

The PCs are on a starship trip from point A to point B that will take a few days. Nothing is out of the ordinary, except that the ship has been infested with an alien intelligence trying to figure it out. How to survive an encounter with something that seems to view humans as little more than toys?

This adventure aims at playing up the horror of being locked into an isolated starship, subjected to bizarre events and the growing suspicion that either the world has gone mad, one is going mad oneself or *something* is pulling the strings of everybody. And maybe reaching the destination will be the real start of the nightmare.

Inspirations

Peter Watts *Blindsight*, <http://www.rifters.com/real/Blindsight.htm>

Stanislaw Lem, *Solaris*

Event Horizon

Setup

I disliked Leroy from the start. There was something about his laddish behavior, coarse Aurore jokes and lack of perspective that rubbed me wrong. He reminded me far too much of certain people I preferred not to think of. I knew the rest of the crew and did not expect any trouble from them. One or two might be a bit wet behind their ears, but that could be fixed. The doctor was as usual quiet and withdrawn: as soon as he got onboard he retired to his cabin. I had always wondered why he had chosen a career as a ship doctor rather than a lucrative consultant job at one of the colonies – he was definitely qualified. Whenever the issue was brought up he became evasive.

“We just got SEC clearance from SS-STC, we are go.”

“Roger, opening N2 trajectory.”

“Drive online. Aligned.”

“Executing EDJ now.”

As the drive spun up and we began the trip homeward I decided I would find out their secrets. Just as a security precaution.

Having PCs with some dark secrets, mental flaws, extra agendas or other shadows is very important for building the horror. Even if the PC consciences are squeaky clean further events may make them question whether they have been repressing certain things – but things work much better if there are dark secrets that bring people into conflict. Using specially prepared PCs can also help set up an intended drama. As always, having a few likeable and/or suspicious expendable NPCs around is good.

A ship cat is essential for any space horror: “It was only the cat...”

The trip can be anywhere. Ideally the PCs should have pretty free reign on the ship, so being passengers on a large luxury liner might be less optimal than onboard a small tramp freighter. On the other hand, the luxury liner has a lot more victims. A military ship may put more restrictions on the PCs, but this is balanced by the presence of weapons, soldiers with bad experiences and the classic possibility of insanity among the officers.

If possible, play events so that at first the PCs will start thinking the mysterious events are due to human sabotage, madness or pranks. The first “evening” the crew has a ghost story contest, telling spaceman tales about haunted ships and alien demons: maybe somebody is taking their story a bit too seriously? A NPC (or a PC) always seem to be without alibi when the events occur. Someone seems to be hiding something. Why is the psych eval of Mr Hendersen blank? Is there something hidden in the cargo?

As things escalate another option should be suggested: everybody is actually going mad. Space psychosis is not unheard of, and somebody may mention those new Provolution hallucinogenic bioweapons. Or is the biosampler up to something – *where is it*, anyway? Paranoia is natural in space.

Ideally the screws should tighten slowly but surely. Gradually the “sane” possibilities vanish, tempers fray, nasty secrets or hidden insanity become revealed and all the certainties of how the world works should disappear. Maybe the whole ship actually doesn’t exist: just like in old Bouvet’s tale, it had a drive malfunction and was destroyed – the dead crew has just not noticed it yet. Or maybe the crew is actually something else, something alien, which now is remembering what it truly is.

There is a way out of the madness: careful, thorough investigation of the ship and the realization that the craziness has some limitations.

The Being

Finally it found the end: an enormous lattice of irreducible states. It found a subgraph that had a hyperbolic spectrum. Following the thin representations it touched ever more compact networks, tied to strong groups. From its nest in the subgraph it reached out and contacted the lattice. Intrigued it represented the subgraph in its own basis. It crept between the representations, feeling for irreducible handholds. It was extremely low dimensional. What was this?

The being/beings normally exist on the Planck scale as quantum gravity fields. Maybe they are the young siblings of AGRA, the normal endstate of advanced civilizations or something that evolved naturally in the early moments of the Big Bang. In any case, stutterwarp activity is visible to them and enables them to affect the macroscale universe. One (or perhaps many, it is hard to tell) has discovered and latched onto the drive of the PC ship.

The being is mainly trying to understand what it “sees”. It has little experience with the macroscale world and finds it about as baffling as a human tends to find quantum mechanics. Time flows irreversibly in one direction. Objects don’t tunnel through each other. They retain their identity over time. They seem to have observable position and velocity at the same time!

The being can act by manipulating the drive core. As long as the drive is turned on it can affect its function (what parts of the ship jump where) at high precision, but it can also draw power from it to produce gravity fields. In practice it can teleport objects around the ship or

do “telekinesis”. The drive engineer may notice an anomalous extra drain early on (blamed on some hidden extra cargo – or a stowaway?) and later discover weird spikes when various “manifestations” occur. Inspecting the drive itself reveals nothing strange.

The being “sees” the ship using the drive field (to these quantum entities seeing and interacting are actually the same thing), actually perceiving the position of every atom each jump. That does not mean it understands what it is seeing very well. At first humans and the ship cat will be indistinguishable from bulkheads and fuel in the tanks, just complex patterns of molecules. After a while the being figures out that there is something special about the carbon-water objects, especially since they seem to be moving around of their own volition in complex ways. That merits further investigation.

Learning to Crawl

Leroy was still arguing that he had not hidden the cards when there was a loud boom from the stern and the room quivered. Alerts flashed across every screen. The rumble of bulkheads sliding together silenced the quarrel. The two débutants threw themselves into some sort of crash position. Fontaine, still sitting at the bar, quickly checked his pad.

“Merde. Momentum wheel 3 is gone – the whole of section W is depressurising. And there is a leak in the lateral cistern. Quick, Michelle and Abou, suit up – I want you to check W before we turn on the backup. Leroy, take Bruce and fix that leak before we get any short-circuits. I’ll run the bridge with Catherine.” He talked fast and precisely, as if following a script.

We made our way through the bulkheads to the bridge, manually unlocking each of them after having checked for pressure. Neither of us said anything, but I knew Fontaine was thinking what I was thinking. Once is happenstance. Twice is coincidence. The third time it’s enemy action.

It all begins a few hours after leaving port. The being starts to experiment with moving things around. Some of the first tries are not very skillful and result in trouble.

Here are some possibilities:

Small objects are randomly “teleported”: A liter of noxious waste from the life support system pours over a terminal on the bridge. A pen that was on a desk is suddenly found in the stew in the pantry. A set of 39-438 bolts (used to connect external antennas to the hull) now lies neatly sorted on someone’s bunk (they are actually from a spare part container, but might force someone to do an EVA to check).

Other objects are cut using the field. A tiny cubical block of hull material is found lying around, cut out with nearly molecular precision from somewhere. A door hinge with neighbouring door and wall suddenly disappears – and then reappears, not quite fitting the hole. A navigational flywheel suddenly detonates: a part of the wheel was cut out, unbalancing it. The wheel piece appeared somewhere in the engineering spaces, doing further damage. A portacomp disappears; if found again it has been reduced to a pile of electronics, every chip cut into dustlike cubes.

A cargo container suddenly lifts off the floor, “falls” vertically and smashes into the ceiling, leaving an ugly mark. It remains there for a moment, then normal gravity (if any) reasserts itself and the container and contents fall down/bounce back. A personal belonging like a doll

or photo in someone's cabin slowly begins to slide along the floor, tracing out strange patterns. In another room a poltergeist phenomenon seems to happen: everything is thrown every which way for a few seconds.

Someone checking security cameras can find various instances of these weird events. Although not obvious, there is also some anomaly in the drive power usage every time they happen. The bigger the objects moved, the more power is used.

These experiments give the GM a good way of having crucial pieces of equipment malfunction when needed during the game – they have been affected in non-obvious ways such as having components removed, foreign objects inserted or electronics accidentally reprogrammed.

Emptier Than the Sky

"I have been trying to reach him since last shift, but he seems to have locked himself into his cabin."

"Leroy, you lazy ass, get out here!"

"OK, that does it. I'll use the override."

My grip around the mul-T tool hardened: I half expected him to jump out at us. But the door slid open with no reaction from inside.

Leroy was lying on his bunk, clothed but apparently asleep. The smell of voided bowels was the first thing that suggested something was wrong. When Bruce playfully tried to slap him awake nothing happened. He turned to me, his face pale in the dim cabin light.

"He's... dead."

The next two hours went in a blur. I helped Abou carry Leroy to the medbay. I remember helping out with the makeshift autopsy and Dr Justman's increasingly surreal investigations of the brain cavity. All the time the only thing I could think was that my prime suspect had managed to kill himself. Probably out of sheer spitefulness. I was still orbiting that black hole of a thought when finding his brain neatly placed on a folded towel in the bathroom brought me back to the absurdity of reality. The others found me sitting on the floor howling with laughter.

The being then moves on to examine the humans: when it moved things around they exhibited very unpredictable and interesting responses (the ship electronics did too, but the being isn't half as curious about it as about the bendable carbon-water bundles; however, if the pacing requires it the electronics may start exhibiting odd behaviors, including login attempts from non-existent terminals).

At first it may just try pushing someone around. It will happen when people are alone, to simplify figuring out what happens. A character will experience a sudden force slamming them into a wall or an unexpected torque making them stumble. The force can also be directed at just a part of them: a sudden pain in the stomach or arm, or an invisible force ripping out a handful of hair.

Then the being really wants to figure out how people work. It grabs an NPC and steals his brain (if there is no NPC, use the ship cat or a biosampler). This can happen at any time (such as during a sleep, a meal, game of poker or during a romantic encounter – choose the dramatically best moment). One moment the NPC is healthy, the next he slumps in apparent coma or worse. A scan in the medbay will reveal the cause: his brain has disappeared. The doctor might notice on the scan (or through an autopsy) that it is not just simply removed, it is as if someone cut it *and a part of the skull* out with molecular precision and no sign of entry – the pattern is completely impossible to achieve using any surgical instrument known to man.

Meanwhile the being now has had enough time tinkering with the stolen brain to figure out how to communicate with humans (the remnants of the brain may turn up in any location, giving another scare). It now understands that it can communicate using electric impulses similar to the ones inside the neurons and sense organs. Using ultra-precision teleportation of electrons it can induce hallucinations and thoughts. Now the real fun starts!

The Power to Cloud Men's Minds

Fontaine was quietly creeping along the hallway, eyes furtive. As I watched via the camera he seemed to search for someone. Occasionally he would mumble something. I wished I had managed to hack myself access to the microphones too, but the cameras were a good start. The others thought they had me tidily locked into my cabin, but it was the opposite: I was safe and alone, linked to the ship systems and with a cache of provisions and heavy tools. It had been my plan all along, although the brawl with Abou had been unexpected. They even claimed I started it.

Suddenly Fontaine turned. Lizard-quick as always, but trembling. There was something just outside the field of the camera. He raised his hands and began to plead. I could just make out a shadow at the edge of the screen. A quick check on my monitor showed that the others were all on the bridge (probably trying to frame me for Bruce). Now I was certain of it: there was someone standing there. Someone raising a gun. The shots rang out silently. The assailant stepped forward, picked up something from the body and turned straight at the camera. There was no mistaking: Balandraud was onboard. And he knew where I was locked in. My plan suddenly seemed a lot less smart.

At that moment someone knocked on the door. "Catherine? It's me, Fontaine."

The first one or two tries will likely produce epileptic seizures or diffuse hallucinations. These soon turn into sharper hallucinations: strange presences, objects that shouldn't be there, remote voices, acrid smells, music or fully interactive familiar people.

An early discovery is that randomly stimulating temporal lobe cortex causes memory activation. People relive past memories, either as an extremely vivid reminiscence or as a fullblown flashback. Some are familiar, others are things normally unremembered or even suppressed – traumatic memories are easy to trigger. Of course, the memories are not necessarily true. They could be mixtures of reality, confabulation and hallucination. But if you remember it, it must be your memory, right?

The next step is to start linking minds. The being by now knows how to make things one person hallucinates visible to others. The first tries may be hazy or hallucinatory things, but soon they become frighteningly vivid. The details are often wrong but the whole is plausible. While PC1 sees a charging Kafer from his tour of duty on Aurore, PC2 sees what he

recognizes as a Kafer but with many details that PC1 could, if he was told about them, point out are wrong. But neither will deny that they experience a charging Kafer – or that the pain from the wounds it is inflicting is real.

The being can induce many other bizarre mental states (see Peter Watts' *Blindsight* for some good descriptions in a sf setting, or Oliver Sacks' *The Man Who Mistook His Wife for a Hat, and Other Clinical Tales*): language problems (aphasias), inability to count (acalculia), amnesia, feelings that one's thoughts are being controlled from the outside, out of body experiences, inability to see motion despite otherwise intact vision (motion blindness), involuntary movements (dyskinesias), picking at invisible lint (carphologia), sudden mood swings, neglect of everything on one side (hemispatial neglect), sudden inability to recognize certain classes of objects or concepts (agnosia for text, tools, food, fingers, people, current impairments), delusions that some body part is actually controlled by an alien mind, delusions that a familiar person has been replaced with an impostor (Capgra's delusion) or that several people are actually the same person in disguise (Fregoli's delusion), synesthesia (seeing sounds, tasting touch etc), feelings of divine bliss (temporal lobe epilepsy) or even the delusion that one is dead or does not exist (Cotard's delusion).

Who gets what should be tuned for maximum creepiness and what the player and GM can roleplay. There is no need to throw in the entire neurology textbook to confuse and frighten the players if a bit of flashbacks can do it.

As the being continues to play with the humans things will deteriorate. The being has no obvious plan with the humans, but the human tendency to imbue meaning and agency into anything will no doubt make them start personifying the force they are struggling against and suggest various reasons it is doing what it is doing. Encourage this. The more they theorize, the more you can give "evidence" that seem to support the theories. The being does not actually understand what they are thinking but its manipulations resonate with what people are imagining since they are copied from their brains.

If the PCs are starting to think the being hides in the reactor hallucinations related to the reactor might start cropping up – strange sounds from the aft section, odd power spikes, one of the radiation suits found empty but slimy near the bridge. As they approach it the problems caused by the general manipulations seem to be some form of defense, and when they reach the reactor they will collectively hallucinate the presence of something there (possibly even an alien environment stretching out beyond the reactor section). If they expect the alien to be malign it will indeed be horrific and dangerous, if they expect it to plan to use the ship to spread its eggs to human space they will indeed see disgusting egg sacs hidden among the reactor piping. Of course, trying to kill the alien will not work as expected – there is really nothing there but a bunch of hallucinating, paranoid humans prancing around sensitive equipment with makeshift weapons...

The logical endpoint will be either when the PCs figure out what they can do against the being or when the ship arrives at the destination system. Or when they accidentally or deliberately cripple their ship.

Getting Rid of It

Michelle eagerly displayed graphs on her portacom.

"This one is drive power usage over time. See that big spike? It happened just as the container crashed through the wall. This one was when the momentum wheel blew. That one was Leroy... Right now there is a small but persistent extra usage."

"So the drive has become a ouija-board and predicts disasters. Makes sense to me."

"No, listen. The events are simultaneous, I checked the surveillance tapes. I think whatever is causing this is using the drive. There are bizarre anomalies in the warp field; the grav sensor has been recording them all the time but nobody cared to look. We must turn off the drive to stop this."

"Do that then."

"Can't. The bridge, remember?"

I nodded. We had been lucky who escaped from that peculiar hell of phosphenes and slithery-sharp things. From our hiding place we could still hear the hoarse screams from Dr Justman and Abou. How long had it been? Hours? They were still alive.

"And we cannot get to the drive after what Bruce did."

"Which leaves us with your backdoor."

"How did you know? Oh hell, you're right. You cover the rear."

We emerged from the hideout ready for anything. I had a gnawing suspicion that getting from where we were to my cabin would be harder than expected.

It should be possible to deduce that the bizarre events have something to do with the drive. Whenever the major anomalies happen, the drive uses more power. If there were a period it was turned off (e.g. when someone did an EVA to check the hull) nothing happened.

If the drive is turned off the being cannot do anything. Turning off the drive does not destroy it: it just becomes unable to perceive and affect the ship. It will resume as soon as the drive is turned on.

Permanently turning off or destroying the drive in interstellar space is suicidal, since the ship will be stuck in the middle of nowhere (even if it signalled for help the message would take months or years to arrive, and finding a ship in interstellar space is practically impossible). This might still be a preferable ending if the PCs think that they must heroically sacrifice themselves to end an alien threat.

Even if the PCs come to realise what is wrong and the solution early on they are still a few days away from their destination (or start, if they turn around). That means they may have to endure days of psychological torture anyway.

If the ship enters a system the crew can turn off the drive far away from a planet and rendezvous with a rescue ship that turns off its drive before getting close – but if the other ship drive is active or activated too close the being will just follow its “toys”.

Worse, if the being understands that the humans are trying to shut it down it can make countermoves. A simple way is to disrupt the terminal used (the keyboard suddenly breaks, the processor is teleported away), but it could just as well cut fingers trying to press a button or induce a sudden seizure. If given enough time to work out the controls it might even figure out how to control the ship on its own.

The being is extremely intelligent in some regards but inexperienced with the material world. It doesn't understand much of what is going on, including human conversations. So the PCs might make plans that exploit the being's lack of common sense: while it will defend the power supply to the drive and stop control signals that could turn it off, it might not realize that triggering the fire alarm in the engineering section or that rewiring some spare parts into a stutterwarp resonator could cause an emergency stop.

One way of handling the manipulations is of course to sedate the crew. That gives a partial protection, but unfortunately not complete. A sleeping person can be made to dream, and projecting dreams into the heads of others is possible. In fact, sedated people are completely unable to escape mental manipulations – and may wake up to find that the being has decided to do a bit of anatomical experimentation.

Endings

I don't know how much the authorities believed our story, even when Michelle gave them her files and they saw the damage. “Ongoing investigation, ma'am” they just said, “we will do a debriefing when you feel stronger.” So here I am, in a tastefully designed hospital room above Beta Canum with no access to interactive media. Maybe they suspect me for the killings. I don't really care, as long as I'm away from that ship.

But I have a nasty suspicion that whatever it was is not gone. It just lurks somewhere outside our reach. It touched us and can touch us again. Maybe I'm even carrying it with me. I'm afraid of what will happen if I travel between the stars again.

One possibility is that the being after having explored the macroscale for a while gets bored and returns to the quantum realities it normally inhabits. There will be no more visits, no explanation of what happened on the “haunted” starship. Just video recordings of an apparently deranged crew, some odd misplaced objects. Maybe it was sabotage all the time.

Another is that the being is here to stay, jumping from nearby ship to ship, growing in skill and ability to interact with humans. Maybe eventually some xenologists manage to find a way of communicating - maybe not. Of course, there is no reason to just stay in one drive: being nonlocal the being/beings can just as well be in both at the same time, infesting two ships. Or three, or a thousand...

The nightmare scenario is that it/they starts to take a liking to human minds: why try to explore macroscale reality when one can just destructively scan/take over minds and learn every nuance of reality through its natives? This might be the true reason no large space-faring civilizations have ever been discovered: they inevitably attract the attention of the beings and end up being devoured by them. Maybe their minds continue to exist as

emulations in a virtual world on the Planck scale; maybe they are just literal food for thought. In any case mankind now faces a horrific threat: powerful, apparently invulnerable creatures bent on scooping up minds from nearby planets leaving twisting bodies behind. Using any stutterwarp capable ship becomes a terrible risk if a being decides to tag along – but how else to escape or warn other planets?

It collected positive operators and applied them to the lattice. Shifting between representations it felt numerous group varieties that could be used. Spanning a subset, it reoriented itself and mapped into its eigenvalue spectrum. Now the real fun would start.