

The logo for the Lazarus Consortium, featuring the word "LAZARUS" in a stylized, blocky font with a blue-to-white gradient, followed by ".CONSORTIUM" in a smaller, white, sans-serif font. The entire logo is set against a dark blue rectangular background.

IRI-Type Hard light Apparatus

Hard-light is exactly as it sounds: Light which won't allow matter to pass through it. It is massless, can be programmed to perform a wide variety of tasks and while it has no chemical properties of its own, it can chemically bond or catalyse real matter.

While many such devices exist in laboratory conditions which are unreliable and weak at best, the IRI or Iridescence-Resonance-Inference or IRI Hard Light apparatus produced by the Lazarus Consortium is robust, reliable and efficient. The device entered prototypical testing in YE 31, was used in production and manufacture by YE 33 and in **YE 36** entered manufacture as a stand-alone device for use with other platforms and projects.

History

During the Lazarus Consortium's original establishment, an assortment of Lorath military and private sector records throughout their history entered Consortium ownership. One such highly classified record was codenamed **PROJECT EMPTYROOM**. The definition of the project was to ...

"CREATE A MASSLESS PROGRAMMABLE NON-PENETRATIVE PROJECTION WHICH CAN SUPPORT A BIO-MATTER SUBSTRATE FOR THE PRODUCTION AND MODIFICATION OF COMPLEX CELLULAR STRUCTURES AND THE SAFE ISOLATION OF PATHOGENS AND VOLATILE COMPOUNDS FROM PERSONNEL".

The end result would be so much more than this. Exactly what 'this' was, wasn't particularly interesting to the consortium – but the fact that working examples of the technology existed on a microscopic basis was. And they wanted a bigger one.

A consortium member serving under the handle **LIBRARIAN** poured through ninety years of research, cross-referencing it with everything available in possible convergent research in known space, taking nearly a full decade to come to effective conclusions.

The insurmountable problem faced in EMPTYROOM was one of inward cancellation of a property called quantum transitional state: essentially a special condition of an atom in which its natural electron frequency (the vibration of the electron shells) becomes a function of its motion constants (a function in math which normally slows things down). This transitional quantum state introduces a variety of exploitable properties to not only matter but also photons, gravity higgs-bosons and other fundamental particles and is the backbone of the entire system.

Fortunately elsewhere in entirely unrelated circles, research involved in solving this problem in an entirely unrelated application in private sector contracts on Nepleslia. This information was retrieved during **OPERATION ADPOLAR**, a domestic infiltration plan by the Nepleslian Central Intelligence

Association against the private sector nearly a hundred years prior to Lor's first meeting with Yamatai. The fruits of ADPOLAR were of a "gravity wheel"...

"CERAMIC ULTRA-LOW TEMPERATURE SUPER-CONDUCTING DISC FOR USE IN ALTERING GRAVITATIONAL CONSTANTS VIA THE EXPLOITATION OF QUANTUM TRANSITIONAL STAGE"

The work, spearheaded by Nepleslians Belmonto Pierre and physicist E. Podkletnov was to create a device which could lift and propel large objects great distances for interstellar transport and for atmospheric escape, replacing nuclear propulsion. Unfortunately the use of ceramics seriously limited the devices maximum RPM and friction meant the device was prone to overheating, though the effect was noticeable and used in stabilizing columns for many large buildings and a proposed space elevator.

Proposed Solution

The design of the device and its potential were quickly exploited: replacing the fragile ceramic wheel with a bose-einstein condensate ferro-responsive liquid wheel which was shatter-proof and frictionless and therefore cold. This theoretical device, the gravitational centrifuge was yet another decade in the making as part of [PROJECT INVERSE](#).

Operation Mule

In order to actually develop the centrifuge and move beyond the drawing-board and into functioning examples, the Consortium began OPERATION MULE.

MULE entailed the social engineering, manipulation, and money laundering to fool a number of high-level military contractors into thinking they were part of a Yamataian black-project design competition and a large number of academic circles - cooperative of otherwise through the use of coercion, threats and blackmail into developing the different components of what would become the gravitic centrifuge - all at the hand of Librarian.

These components were then assessed in Lazarus laboratories in a vast array of different conditions, optimised to create the gravitic centrifuge known today.

Unfortunately exactly how to optimise the components - in what order they should be used and at what configurations was a serious problem, requiring the use of mass simulation and massively scaled artificial intelligence: two technologies available only to the Freespace as Polysentience and Stararmy of Yamatai as PANTHEON. Librarian was out of their depth.

External assistance

Librarian made the decision to bring in an outside contractor who would be inducted into the consortium, handle [PHYSICIAN](#). Again through social engineering, Librarian convinced PHYSICIAN to take existing work applied in the sector of ST-Transfer exploitation (which was and remains illegal) and apply it to active run-times and massive parallelization: specifically on a new hardware platform codenamed

[HEINRICHITE](#), headed by consortium members WARLOCK and SYLPH, members of the RED-FACTION who later detached to become [LAGRANGE](#) who specialise in advanced psychology, information and media services – while BLUE-FACTION remained LAZARUS who primarily deal with technology.

End Product

The result was the ROM Construct and when paired with the quantum modem, the ROM-Construct Network, Lazarus Internal and Public Networks and the creation of the first LACOM facility beneath [Nyli II's oceans](#). The optimisation soon began, taking several months: splitting down two forks of interests codenamed INVERSE and INFLECTION. INVERSE would become the Gravitational Centrifuge and subsequent [C3R-Module](#) used today and INFLECTION would become the Iridescence-Resonance-Inference hard-light projector or IRI-Module

Corporate Embargo

Yamatai's awareness of what had happened would signal a direct communication from Yui Ketsuri with the Consortium, effectively banning them from Yamataian territories and labelling them a terrorist organisation for refusing to follow trade-laws. Subjectively from the consortium's perspective, Yui's true intent was to damage the consortium's image preventing further sale of goods in order to make up for what it refused disclose in order to save face. The embargo lasted nearly two years before effectively being nullified by the YSE-DION-LM/DATASS treaty.

Personal Fallout

New evidence coming to light tangentially from a case investigating [Miles Gunn](#) sparked a private investigation by [Helen Klein](#), an operator/inquisitor of the [Star-Army of Yamatai Intelligence division - SAINT](#). The investigation partially exposed Operation Mule's origins and the existence of another individual operating under the codename A3. On August 22nd, YE 36, Helen abducted [La'al "Lalah" Ioru L'manel](#), a waitress and medical student aged 28 who is believed to be associated with Librarian in some way.

La'al's whereabouts at this time are unknown and she is thought to be in SAINT custody under either observation or interrogation. What is known is that about the same time, Librarian's communications became erratic shortly before entering isolation or self-exile somewhere inside Nepleslian space and is not answering the Consortium's requests for new information for fear of exposing their identity - only maintaining very basic contact with the Physician, presumably waiting for the heat to die down.

Mechanics

The IRI projector is essentially a high-wave ultra high precision gravitational control device – but it is not controlling gravity but instead exploits the same mechanism used to control gravity: The projector itself exploits a property called a transitional quantum state which is essentially a special condition of an atom

in which its natural electron frequency (the vibration of the electron shells) becomes a function of its motion constants (a function in math which normally slows things down). This transitional quantum state introduces a variety of exploitable properties to not only matter but also photons, gravity higgs-bosons and other fundamental particles.

It relies on a property called Iridescence-Resonance Inference, which allows the device to overcome the uncertainty principle in order to effectively function.

Establishment & Rectification Optimisation

While this effect has been achieved in scientific studies available to the public, the effect is many magnitudes weaker than it needs to be to create large hard-light objects using a single robust projector. This is caused by internal-cancelling of the waves of the transitional quantum state itself: almost all impacting one another and neutralising one another. As a result, projectors have to brute-force past this inefficiency.

The Gravitic Centrifuge specifically achieves uniformity in its internal projector hardware, preventing the cancelling effect, resulting in a far more efficient projector. In addition, in order to enable multi-effector control (which essentially means many “pinpricks” in the TQS fluid system), their differing electron-resonance at any given time to be effective. It is the only device thus far able to do so. The result is a far more efficient projector.

Control Optimisation

Next, a serious problem involves actually sculpting and controlling the hard-light object. While in theory this could be done with multiple projectors, this is a losing battle, since projector-count directly affects controllability in the first place despite heightening rectification.

Optimisation found the best way to counter this effect in simulation would be by creating pin-pricks of transitional quantum state density in the fluid-system (that is, if quantum state is like a cube of liquid, the liquid is much much denser at some points than others). These individual pinpricks or “effectors” could create “root” or instruction-carrying circuitry structures inside the hard-light object, sculpting the field and sending complex messages through it to shape other parts. Unfortunately, science said the creation of these TQS-Effectors was impossible.

In theory, Heisenberg's uncertainty principle should make this impossible but by measuring key conjugate variables in the system since any observation would collapse the wave function of the electron by observer principle, meaning only speed or velocity can be known at any given time.

Instead of actually trying to know what the resonance is on an individual basis, inference works by monitoring conjugate variables, not speed OR velocity and then observing how conjugates and iridescence differ over the entire structure. In doing so, the wave-function is not collapsed from the quantum-subjective standpoint of the projector. When enough data on these two properties is available, a simple quantum computer then plots a prediction system, inferring the outcome, allowing the pinprick “hooks” of a single projector to successfully hold and manage the hard-light object without breaking it

without needing multiple devices.

Hardware

An assortment of different ways exist to create hard-light projectors but in all cases the design is a trade-off between four primary factors: 1) Programmability, mechanical response and controllability, 2) Rectification performance and projection scale, 3) electromagnetic output and 4) efficiency, size and weight.

As a direct result, projectors used for some applications are totally unsuitable in others with projectors available to the public being highly specialised, rather than generalised. Those which overstep their boundaries suffer in terms of energetic efficiency, the cost to manufacture and their mechanical fault tolerance. For this reason, it is not unusual for a device to use many projectors supporting the same object in different ways.

While at this time projectors are widely experimented with in academic settings on extremely small scales with limited results, the only effective projector at this time doing meaningful work is the Iridescence Projector privately used at this time by the Lazarus Consortium.

Mechanics

To make the best of these properties, this translates into a number of engineering differences based on some simple design rules – with the physical construction of a projector differing in a multitude of different ways to best do its job.

1. Projectors are either convex or concave, which affects their group-dynamic behavior
 1. Concave (outward) projectors excel when used in large groups for rectification. They have six effectors.
 2. Convex projectors (inward) excel at being used in small numbers. They have four effectors.
2. The layout of the surrounding electromagnetic plates affects their hardware optimisation.
 1. Box-like projectors with more hard edges excel at rectification
 2. Rounded smoother projectors with less hard-edges excel at control

Another important property are the sub-effectors: smaller arrangements of electromagnets which provide the inference effect. They often resemble compound eyes and their layout can either be uniformly distributed or in “waves” around the main effectors. They are constructed of Lazarus patented [doresu](#) and [euralis](#) quasicrystal components or substitutes.

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