

Transportation Dreams and Imaginary Journey – on Technology, Automation and the World

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Abstract

The paper discusses the historical transportation development project in France called Aramis, and parallel to it an artwork dealing with a self-driving vehicle and audio, titled the R-Bus. The Aramis project revealed the socio-political and technical challenges of integrating innovative systems into society, while the R-Bus offered a glimpse into a future where hybrid ecologies redefine the boundaries of reality and narrative. In the heart of the article are questions about emerging technological systems and their impact to our lives.

Keywords

Art, AI, Transportation, Algorithms, Aramis, R-Bus, self-driving vehicles, ecosystems

Introduction

When a human plays the piano, our admiration lies in their skill and personal interpretation. In contrast, when an automated system performs music, such as a self-playing piano, our fascination shifts to the "magic" behind the technology that brings the music to life. This magic is emphasized by the sight of keys moving as if guided by an invisible hand, devoid of a physical presence. Typically, while watching automated mechanics in action, we instinctively compare the precision and technical correctness of the automated performance to the nuanced interpretation of a human pianist. At the core of this comparison is the notion that the human performer serves as the counter measure against which the automation is evaluated.

We are living in a world with increasing amounts of automation, artificial intelligence and data-based infrastructures. The paper discusses a public artwork that offers a concrete experience and brings out view of the world that is structured with algorithms and data. The artwork, the R-Bus (2023), consisted of a self-driving robotic bus driving in an urban area and an audioscape inside it [1]. The artwork was created as a journey in a world that hosts artificial organisms imagined to be living in a green environment in-between urban construction. In the work, audience could hear sounds of imaginary species developed by machine learning. The base for the generative sounds are based on an existing bioacoustic hypothesis and the actual environment in the area where the robotic bus was driving. The robotic bus had a mind of its own, it independently decided which route it took and where it would leave the passengers.

As another example, the paper shortly introduces the historical transport development in France. The Aramis transportation system was a futuristic concept that was being developed from 1970 until the plans were abandoned in 1987. The description of the Aramis-project is based on a book by Bruno Latour Aramis, or the Love of Technology, which traces the process of the personal rapid transit (PRT) development in Paris. [2].

1. Technology

The dream of creating intelligent systems with technology has a well-documented history. One notable milestone occurred in 1956 when Allen Newell and Herbert Simon worked to create a computer capable of proving mathematical theorems. Similarly, since the 1950s, Artificial Intelligence (AI) researchers have been striving to develop a computer skilled at chess. This longstanding ambition reached a groundbreaking moment in 1997 when IBM's Deep Blue astonished the world by defeating the world chess champion Garry Kasparov [3].

During the same time Bruno Latour published a book titled *Aramis or the love of technology* [2]. The book examines the relationships between humans, technology, and society through the lens of the ambitious Aramis project for an urban transportation system. It traces the rise and fall of the automated transportation system intended for Paris. The Aramis project was planned and developed for twenty-four years, from the 1970 until 1987. In the mid-1980's the political interest in its development faded away and at the end, its components were considered too complex and expensive, and the project was abandoned. However, the dream about a better and intelligent public transport system didn't disappear. Today, a comparable technology-fused dream is found in the development of self-driving vehicles that are operated with AI systems.

1.1 Aramis

The Aramis project was conceived in the 1970s as a revolutionary public transit system that would combine the efficiency of mass transit with the flexibility of private vehicles. The system was envisioned to consist of small, automated pods that could be individually programmed to transport passengers directly to their destinations without the need for stops or transfers. It promised to alleviate urban congestion, reduce pollution, and provide a personalized yet communal mode of transportation.

At its core, Aramis represented the dreams of modernity and technological progress. It was seen as a way to transform city living in Paris [2]. The project embodied a vision of a harmonious relationship between humans and machines, blending cutting-edge technology with public utility.

From its inception in 1970 to its ultimate abandonment in 1987, the Aramis project underwent numerous phases of planning, prototyping, and re-evaluation. Over the years, it encountered a range of technical, political, and economic challenges. While engineers made significant progress in developing the components of the system, the project struggled to transition from theory to practical implementation. By the mid-1980s, the political interest that had sustained the project for years had diminished. The lack of a clear and unified vision among stakeholders compounded the issues, and disagreements about funding and priorities became overwhelming. Ultimately, the system's components were deemed too expensive and overly complicated to justify further investment. In 1987, after twenty-four years of development, the project was formally abandoned [2].

The story of Aramis's failure became a point of reflection for example for academics and policymakers about technologies that fail to achieve their potential. Bruno Latour's book *Aramis or the love of technology* clarifies that the development and deployment of technology are inextricably linked to the social, political, and cultural contexts within which they exist. [2] It is clear that large technological initiatives aimed at societal transformation require more than just technical proficiency; they demand the complex relationships and interaction among diverse social actors—politicians, engineers, innovators, investors, and the public, all playing critical roles in the success or failure of these projects.

1.2 Artists' role

Even if there has been a clear absence of artists involvement in the official transportation dreams and developments, there are contemporary artists who have worked on the topic and developed alternative visions concerning transportation in diverse environments. A good example is the work *Metronome* by artist group HeHe (Helen Evans and Heiko Hansen) from 2012. The *Metronome* is a prototype and a result of artistic research that explored autonomous and temporary vehicles running on abandoned railway tracks of Petit Ceinture in Paris. In a way it is an antithesis of the railway industry as a light, temporary and slow vehicle. *Métronome* offered a journey alone or with a couple along the old tracks of the Petit Ceinture. The constructed vehicle was electric with solar panels [4]. Another example from the arts is Rob La Frenais, an independent curator, artist and writer, who has had a project that investigated the Future of Transportation within the arts with a focus on slow travel [5].



Figure 1. *Metronome* 2012 by HeHe. ©HeHe

Artists' presence in the technological conversation is often underestimated. While artists may not have been a part of the central technological endeavors in history, their insights and methodologies can present valuable perspectives that would enrich the discourse around technology. Experimental artists explore speculative scenarios and alternative futures and construct visions of what could be rather than what is. They run test scenarios, exploring the potential dystopias and utopias inherent in emerging technologies. Also, artists, unlike other stakeholders, are rarely driven by profit, political agendas, or engineering challenges. Their function is to explore the emotional and symbolic dimensions of technology, often preceding and exceeding the purely rational analyses of policymakers and engineers. Today, one can state that their exclusion from the conversation around technology is a missed opportunity.

2. Premises of the R-Bus

The creation of the R-Bus as an artistic endeavor stemmed from a fundamentally different set of premises and motivations compared to the development of Aramis's large-scale transportation system. Yet, both projects share an intriguing initial spark: the exploration of issues surrounding intelligence, transportation, and automation within human-engineered infrastructures. While Aramis was envisioned as a personal rapid transit solution aimed at revolutionizing public transport, the R-Bus emerged as an AI-driven artwork that delved into profound questions about intelligence, control, and automation, especially in relation to the natural green environment and the more-than-human world.

At the core of the R-Bus project lies questions about who holds the decision-making power in shaping our world. As an artwork, the R-Bus serves as a platform for investigating the dynamics of technological control. It juxtaposes the realms of AI and automation with the relationships found within ecological systems. By exploring these aspects, the R-Bus becomes a catalyst for dialogue about how societies navigate the intersection of innovation and ecology. It asks us what kind of ecologies we have in the future and how can we take into account the ethical concerns of our environment within technological progress.

Thus, while Aramis and the R-Bus originated from different spheres—one as a public transit vision, the other as an immersive artistic experience—they both grapple with the essential question of how intelligence and automation will influence the trajectory of our world. The R-Bus, in particular, underlines the necessity of re-evaluating who has the authority and responsibility to guide technological development in a way that honors all life forms sharing our planet.



Figure 2. The R-Bus project's bus stop 2023. © Beloff

2.1. Description of the R-Bus

The artwork, the R-Bus, offers a glimpse of our plausible future - not only with transport and urban mobility, but also the way we design our world and what types of organisms we allow as a part of the ecology we live in. The R-Bus investigates the convergence of natural and human-constructed technological entities and asks crucial questions about human-designed 'nature' and the environment [1].

The R-Bus artwork transports audiences on an immersive journey. At its core, the R-Bus consists of a self-driving robotic bus navigating through an urban area on its self-selected routes, accompanied by a dynamic soundscape that is generated by machine-learning algorithms. The sound-scape can adapt and evolve in response to the surrounding green environment. The bus, the environment, and the soundscape create an experience that engages the audience on multiple levels. With the physical mobility of the bus, the artwork transports viewers through the urban landscape, while the constantly evolving soundscape invites them to contemplate the

intricate relationships between biological organisms, technology, and our collective future.

The soundscape featured in the R-Bus work draws inspiration from the acoustic niche hypothesis, a concept developed by environmentalist Bernie Krause during the 1980s and 90s. [6,7] Active in the realm of bioacoustics since the 1960s, Krause has been active in the field of bioacoustics by recording and archiving of natural soundscapes since the 1960's. His theory on acoustic niche hypothesis posits that in a well-established ecosystem, different species mitigate acoustic competition by communicating at distinct frequencies. [6] Essentially, this means that each species occupies a specific frequency range, allowing them to identify and connect with their own kind while coexisting with others in the environment.

The acoustic niche hypothesis also provides us a lens for examining species diversity within an ecosystem by analyzing the variety of sounds and frequencies present. In an era where suitable habitats for flora and fauna are increasingly scarce due to human intervention, we are witnessing a decline in biodiversity. This loss not only results in fewer species but also leaves certain frequencies in the acoustic landscape unoccupied. The underlying premise is that unused frequencies can serve as potential habitats for digitally generated audio-based organisms.

Utilizing machine learning, the R-Bus soundscape first identifies these unoccupied frequencies and then generates sounds that resonate within them. These newly created sounds symbolize imagined (digital and fictional) species that may thrive within this ecosystem, alongside various organisms, agencies, and interactions. Although these entities are conceptualized through sound, they stem from a technology-driven framework grounded in data collected from the surrounding natural environment.

To capture the real-time soundscape, we developed audio streaming units strategically placed within the natural environment in the vicinity of the area where the robotic R-Bus was driving. These audio streaming units, designed to blend seamlessly into their surroundings, housed the essential equipment for continuous audio streaming. This real-time data contributed to the evolving soundscape but also served as training material for our machine-learning network [1].

Inside the aimlessly circulating robotic bus, visitors were immersed in a rich tapestry of sounds derived from the environment, including those generated by animals, human activity, urban construction, and weather. These natural sounds intertwined with the technological sounds created by the imagined species, resulting in a continuously evolving auditory experience that reflected both the vibrancy and the fragility of the ecosystems we inhabit.

The R-Bus functioned as an active participant in its environment, guided by its own internal mapping system within the hybrid ecology [8]. Unlike conventional transportation methods that prioritize efficiency in moving from point A to point B, the R-Bus emphasized the journey itself as an experiential adventure. Passengers aboard the bus are enveloped in a soundscape that reflects and interacts with the surrounding hybrid environment.

On the streets, bystanders and motorists encounter this unique vehicle as an intriguing new species within the urban landscape, exhibiting behaviours that differ from the usual flow of traffic. The artist's aim was to create this work as a kind of a connection point between technology and nature, inviting all who encounter it to reconsider their relationship with the surrounding ecosystems.

2.1. Description of the R-Bus

This artwork became an action and a transformation of the experienced immediate reality. The project presented an exploration of the capacities of imagination and sensation that allow us to apprehend the world. As the bus moves through the city, it encourages viewers to consider our relationship with emerging technologies and the natural environment.

In Helsinki, the R-Bus attracted a diverse audience— young and old, families and solo visitors, both Finnish and international. The crowd differed notably from typical museum visitors. Some were drawn by the driverless robotic bus navigating urban traffic, as of 2025, self-driving buses are not yet part of Helsinki's regular public transport system. Others were captivated by the artistic concept itself, particularly the experience of listening to the AI-generated imaginary creatures.

Stepping into the bus initiates a unique sensory experience. As it departs, the soundscape emerges, blending real-time sounds from the surrounding green spaces interwoven with urban construction. The ambient environment—breezes, birdsong, rainfall, rustling plants, barking dogs, cawing crows, and human voices—is captured and analyzed by a Machine Learning system. This system then generates additional sounds, filling gaps in the acoustic landscape by imaginary creatures. Among the most common generated sounds were high-pitched, bird-like chirps and deep, low-frequency rumbles.

A realization for many was that it was impossible to distinguish between real-time environmental sounds streaming into the bus and those filtering in from the immediate environment outside of the bus. However, the generated sounds of the imagined species stood out more clearly, though they still invited speculation if the particular sounds are part of existing nature or generated sonic ecology.

3. Conclusion

Building on the themes discussed in the story of Aramis, the concept of the R-Bus provides an artistic and philosophical exploration of the interplay between humans, technology, and their shared environment. Latour wrote about the rise and fall of a failed transportation system, Aramis, through the sociotechnical lens [2]. The artwork, the R-Bus, dives into the evolving nature of reality and narrative within a

hybrid ecology—a space where biological and technological entities coexist and interact dynamically. [8] The R-Bus also highlights a critical issue: the creation of AI creatures to occupy the empty spaces left in the natural environment due to ongoing biodiversity loss and rising extinction rates. This raises important questions about digital colonization—what it is, how it is unfolding, and the various levels at which it may be occurring.

The Aramis project aimed to transform urban life through an auto-mated transportation system that addressed visible, measurable needs: congestion, convenience, and personalization. The artwork, the R-Bus, challenges the traditional understanding of reality itself. It suggests that in the algorithm-driven world we inhabit today, reality extends beyond what we perceive with our biological faculties. It encompasses the vast, often invisible flows of data and algorithmic processes shaping our experiences and environments. This aspect resonates with Latour's perspective on Aramis - technology is not merely a tool but an active participant in human-social narratives.

The R-Bus and Aramis, though separated by decades and different objectives, both serve as powerful explorations of humanity's evolving relationship with technology. Aramis revealed the sociopolitical and technical challenges of integrating innovative systems into society, while the R-Bus offered a glimpse into a future where hybrid ecologies redefine the boundaries of reality and narrative. Together, they underscore the profound ways in which technology shapes, and is shaped by, human desires and imaginations.

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Author Biography

Laura Beloff (Ph.D.) is an internationally acclaimed artist and researcher, who functions in-between artistic production and academic research with a core in artistic methods. Beloff’s concept- and practice-driven research is in the cross-section of art, science, and technology. The research engages with art, humans, environment in affiliation with science and technology, biology, artificial intelligence, robotics, human enhancement, and their theories. Beloff’s interest in recent years has focused on investigating the diminishing gap between concepts and disciplines of biology and technology. Laura Beloff is currently Associate Professor in the Department of Art & Media at Aalto and Vice-Dean for artistic and creative practices at Aalto University - School of Art, Design and Architecture.

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Figure 3. The R-Bus © Sonja Hyytiäinen HAM 2023