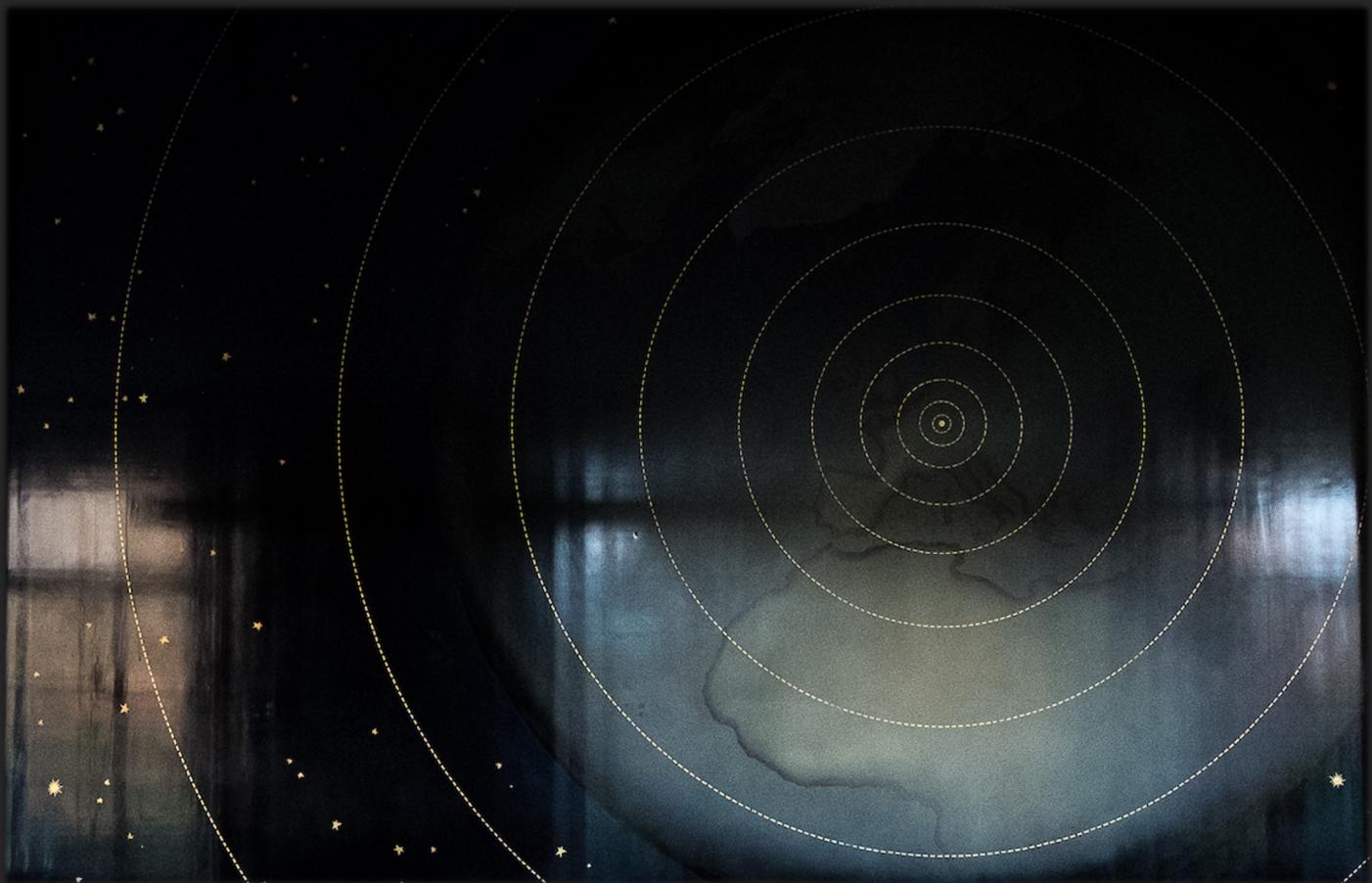


ALIENOCENE – DIS-JUNCTION

THE SPACE OFFSHORE



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In June 2017, amid great pomp, Luxembourg launched its Space Resources platform,¹ an initiative created by the country to locally establish the NewSpace and budding space mining industries, with a view to encouraging and supporting private companies that specialize in space exploration or the mining of asteroids and other celestial bodies.

The Grand Duchy's space initiative is supposedly motivated by the "environmental" emergency, namely to mitigate the predicted exhaustion of terrestrial resources. The narrative informs us that "Luxembourg aims to contribute to the peaceful exploration and sustainable utilization of space resources for the benefit of humankind,"² echoing the Space Age's rhetoric steeped in humanism. Space exploration is described as a virtuous competition involving scientific knowledge, industrial technology, and financial innovation, an endeavor that is beneficial for all, and first and foremost for the planet.

The country soon passed the "Law of July 20, 2017 on the exploration and use of space resources,"³ following on the heels of the United States⁴ by duplicating the NewSpace "legal framework" on this side of the Atlantic. With this law Luxembourg

¹ SpaceResources was officially created in February 2016, although the media campaign dates from June 2017. It included a website <http://spaceresources.lu>, a number of promotional videos, and a series of international conferences.

² Taken from the commentary to the SpaceResources Initiative video available at <https://www.youtube.com/watch?v=FogEAd9vYGw> (published June 14, 2017).

³ <http://legilux.public.lu/eli/etat/leg/loi/2017/07/20/a674/jo>.

⁴ In 2015, the Obama administration passed a similar law, known as the Spurring Private Aerospace Competitiveness and Entrepreneurship Act, or Space Act, with no international consultation.

offers a legal basis for the privatization of space, in an effort to attract companies to its territory. The Grand Duchy also announced the creation of a national space agency. This sudden determination to enter the race for asteroids is intriguing given the country's size compared to other global space powers. Does Luxembourg truly intend to compete against the historic giants that won renown during the Cold War, or even with Europe, China, and India?

MINING INDUSTRY AND FINANCIALIZATION

Some historical background clarifies what motivated this mysterious project. Around 1870, the rise of the steelmaking industry led Luxembourg to lay the foundations of its modern state. The extraction of iron ore and coal left a profound mark on the country's landscape and architecture, as well as on people's minds: its rapid development fostered sustained economic exchange with neighboring countries. This exchange was formalized by the Benelux Union, which served as a basis for the future European Community. This mining past provides the first clues regarding the symbolic aspect underpinning SpaceResources, which could be interpreted as a nostalgic desire to reconnect with its industrial golden age. Yet things are not that simple.

The mining industry declined in the 1970s, and was permanently abandoned in the 1990s. Like almost everywhere else in Europe, mining sites were reconverted into heritage resources, such as museums or cultural centers, as well as into innovation centers. However, the country had already been preparing this conversion for a long time. In the late 1920s, the Grand Duchy began an initial phase of financialization, developing a highly competitive international financial sector. It attracted foreign capital through its lax taxation policy, and a specific status for holding companies

adopted in a 1929 law.⁵ The strategy paid off, gradually transforming the country into a tax haven. In the 1950s, Luxembourg also firmly positioned itself in the eurodollar xeno-currency market,⁶ which was typical of speculative offshore markets, and issued the world's first euro-bonds in 1959.

The harmonization of European rules would soon shake up this business plan, although Luxembourg's financial circumvented restrictions through creativity and reactivity, effectively recycling the former status for holding companies. At the beginning of the 21st century, Luxembourg has become the second global center for investment funds after the United States, the largest European center for captive reinsurance, and the leading private banking center for international clients in the Eurozone. It remains one of the preferred destinations for major multinational corporations, who set up there to optimize their taxes through the legal void that the country has arranged in the heart of Europe.

Its prominent role in the construction of Europe has also made it a prime location for lobbying. Strolling through the new neighborhood of Kirchberg, one can admire gleaming buildings designed by starchitects, which serve as the headquarters of holding companies for some of the world's largest multinationals (Amazon, Pfizer, AXA, etc.), in addition to major international banks (UBS, Crédit Suisse, Julius Baer, BNP, Deutsche Bank, etc.) and accounting firms specializing in tax avoidance schemes (known as the Big 4: KPMG, EY, PWC, and Deloitte). Kirchberg also has a concentration of important EU political, legal, and financial institutions, including the Secretariat of the European Parliament, the Court of Justice of the European Union and the General

⁵ The 1929 holding company tax scheme, which was abolished in 2010, notably allowed for ingenious systems of intra-group loans, thereby helping to circumvent international tax agreements.

⁶ See: Reijer Hendrikse and Rodrigo Fernandez, "Offshore Finance: How Capital Rules the World," in "State of Power 2019," Transnational Institute (TNI), January 2019. https://www.researchgate.net/publication/330713868_Offshore_Finance_How_Capital_Rules_the_World

Court, the European Court of Auditors, the European Investment Bank, the European Investment Fund, and the European Stability Mechanism. It is also home to the Chamber of Commerce, the jewels of local industry (Space Cluster, RTL, etc.), an airport, the Luxembourg Freeport, and of course the uncontested star of the visit, the Clearstream clearinghouse.

Luxembourg's dubious tax arrangements and tax avoidance schemes were denounced in 2014 during the LuxLeaks revelations,⁷ a series of leaked documents orchestrated by Antoine Deltour and Raphael Hallet from within PricewaterhouseCoopers (PWC). The leaks meticulously document complex tax avoidance schemes, built on "fictitious" intra-group loans and shell corporations. Many major multinationals took advantage, including Apple, Amazon, Deutsche Bank, Disney, Heinz, Pepsi, Ikea, Starbucks, etc.⁸

LuxLeaks also revealed the porousness and conflicts of interest affecting local and European political elites. These tax rescripts, which were established under the government of Jean-Claude Juncker, came to light when he assumed the Presidency of the European Commission (2014-2019), with no European sanction whatsoever—neither a moratorium nor a challenge to the country's functioning within the EU.

Is Luxembourg's interest in NewSpace driven more by the survival of the extractivist ideology projected into outer space, or by the short-term advantages that its financial industry could secure?

BEYOND FRONTIERS

The SpaceResources.lu website proposes another genealogy. "It all started with

⁷ See the ICIJ's investigations: <https://www.icij.org/investigations/luxembourg-leaks>

⁸ See the LuxLeaks document database on the ICIJ website.

radiofrequencies.” The country is known globally for something entirely different than its mining past and lax taxation, namely the RTL media empire. It all started indeed during the interwar period, which saw the growing civilian uses and strategic interest of radiophonic waves, and with them a desire for regulation on both the national and international level. Despite the support of the League of Nations, Luxembourg refused to sign the regulatory agreements. In 1930, a private company was given monopolistic rights over radio broadcasting in Luxembourg, a first in the history of radio. SLER, which later was renamed the Compagnie Luxembourgeoise de Radiodiffusion (CLR), operated “Radio Luxembourg,”⁹ the only official station and the ancestor of RTL. The private station quickly arranged to be heard across borders, beaming to radio sets in neighboring countries. It stretched out 2,000 km from its location in Junglinster, where its full-power transmission of a trilingual program used a frequency¹⁰ that encroached on the bands of other stations, which were either public monopolies or subject to strong state control.

Radio Luxembourg became a genuine transnational wave pirate, and soon competed against radio stations in France, Germany, and England. It attracted young listeners through its free tone, and aired commercials and advertisements that made its commercial model highly profitable.¹¹ Radio Luxembourg gave rise to a long line of imitators, including offshore pirate radio stations¹² in Great Britain and the Netherlands in the 1960s, and *radios libres* (independent radio stations) in France and

⁹ The CLR took over Radio Luxembourg, a former nonprofit radio station created by the Anen brothers a few years earlier.

¹⁰ The exact name of the station, which had a wavelength of 1,191 meters, was *Radio Luxembourg expérimental 1191*.

¹¹ Véronique Pouillard, “La Publicité Transnationale en Europe : le cas de Radio-Luxembourg, 1933-1960,” *Association Revue du Nord* 2010/4 n° 387, p. 967-980.

¹² Offshore radio stations inspired the Mont Pélerin think tank, which was created in 1947 and led by Friedrich Hayek, who saw them as a practical way to break state monopolies. See Adrian Johns, “Death of a Pirate: British Radio and the Making of the Information Age”, W. W. Norton & Co., 2012.

Italy during the 1970s, prefiguring the broad privatization of the radio frequency spectrum that followed in the 1980s.

A visit to Villa Louvigny, RTL's historic headquarters, was an important stop during our trip to Luxembourg City. Its meeting room has a striking fresco by the Art déco painter Jean Dunand, which was commissioned in 1939, painted in the middle of the Nazi occupation, and then forgotten for years hidden behind a poor leather reproduction.¹³ This unique fresco represents Luxembourg at the center of the Earth, its waves stretching out to the ends of the Universe. This painting can also be seen as a subconscious image of the small country's cosmic ambitions.

Radio Luxembourg became RTL in 1984, and then RTL Group in 1992, Europe's leading broadcaster. The rapidly growing RTL established satellite coverage, which gave rise in 1985 to Europe's leading private satellite manufacturer, Société Européenne des Satellites (SES), whose motto is "Beyond Frontiers." Upon its creation, the newly-formed Luxembourg company raised fears of serving as "a vehicle for 'US cultural imperialism,'"¹⁴ as it would compete with the space industry of its French neighbor. SES equipped Rupert Murdoch's Sky TV in 1988, and today broadcasts over 6,000 channels. In 2017, SES was the first European manufacturer to work with Elon Musk's SpaceX, during the launch of a satellite on board the Falcon 9 rocket. Today SES has a fleet of over 70 satellites, and is listed on the Euronext 100 stock blue chip index. A space industrial hub known as the Luxembourg Space Cluster¹⁵ emerged in Luxembourg around the SES.¹⁶ The country became a central actor in the space industry, and joined the ESA as a member in 2005.

¹³ Malgorzata Nowara, "Un panneau en laque de Jean Dunand (1877-1942) découvert dans la Villa Louvigny," *Empreintes* #05, 2014.

¹⁴ See <https://www.ses.com/about-us/our-history-highlights>

¹⁵ <https://www.luxinnovation.lu/cluster/luxembourg-automobility-cluster/space-cluster>

¹⁶ Ibid

NEWSPACE

In 2016 everything accelerated. Through the impetus provided by its Minister of the Economy Étienne Schneider, Luxembourg acquired a stake in Planetary Resources in order to establish its positioning and strategy for NewSpace. This iconic NewSpace company was launched in 2010 by the billionaire Peter Diamondis, the founder of Singularity University, and financed among others by Larry Page, Eric Schmidt, and James Cameron, the producer of the sci-fi blockbusters *Terminator*, *Aliens*, and *Avatar*. Luxembourg invested 12 million euros in a company registered in Delaware (known for its aggressive tax exemptions, as highlighted by members of the Luxembourg Chamber of Deputies themselves). Its management was entrusted to an ad hoc company, S.A.A.M SARL, specially created by the public SNCI.¹⁷ Less than two years later, S.A.A.M SARL sold its stake for a ridiculously low price, just a few days before the company was bought by the American startup Consensys,¹⁸ which specializes in cryptocurrencies. While the amount was not made public, the financial loss was sizable, and highly commented upon in the Chamber of Deputies. Was this a renouncement of the space project? The Planetary Resources affair actually revealed the nature of Luxembourg's interest in the space industry, which is seen as a market with high speculative potential and immediate returns, rather than a long-term industrial investment for the "benefit of humankind."

When asked about it over the telephone, the Director of the Luxembourg Space Agency (LSA) Marc Serres explained to us that the SpaceResources initiative, which

¹⁷ Registration for SAAM SARL in the Electronic Register of Companies and Associations, <https://moien.lu/wp-content/uploads/2018/11/SAAM-sarl.pdf>

¹⁸ "Fin du partenariat entre le Luxembourg et Planetary Resources," RTL, November 3, 2018.

was initiated in February 2016, marked the end of the monopoly of national space agencies, and the beginning of a new era dominated by the private sector. The LSA (sometimes referred to in the local press as “NASA Luxembourg”) is no more than the new name given to the Space Affairs Department from the Ministry of the Economy, whose walls are covered in wallpaper dotted with stars. This cosmetic operation nevertheless came with a budget that matched the importance of the service’s new mission. Marc Serres explained in detail the “five pillars” strategy on which Luxembourg’s project is based. The orientation of the strategy confirms the financial aim of the SpaceResources program, with Luxembourg sending signals to this niche sector by making arrangements for: (i) political support on both the national and international level to disseminate this new space doctrine (more on this later); (ii) a legal framework favorable to privatization and the use of space resources; (iii) the creation of a Space & Business Master’s program to train the next generation of talent; (iv) business development support for companies and startups in the space industry; and (v) financial instruments to help finance projects, notably through the creation of a venture capital fund.

In other words, for Luxembourg it involves strengthening its role as a financial hub by attracting NewSpace capital through very lax taxation policy, a deregulated legislative framework, aggressive lobbying policy, and training for future management. The advantages of NewSpace—its innovative character, powerful imaginary, exclusivity—serve as bait to attract investors.

In 2020, Luxembourg completed work on its fifth pillar by massively investing in two funds specializing in the space industry, Orbital Ventures and especially NewSpace Capital. It did so for good reason, for that is its stock in trade. The Grand

Duchy, which has defined itself as the “home of the global fund industry,”¹⁹ is doing everything it can to attract the opaque market of alternative investment funds and shadow banking.²⁰ These efforts have met with success, as 98 of the 100 most important global funds are domiciled there.²¹ Its market share amounts to 5 trillion euros in assets under management.²² In addition to its highly advantageous taxation, as well as its lax and favorable legislation, fund managers from Luxembourg enjoy a “European passport” that gives them access to the entire European market, which they secures during the heated negotiations surrounding the European Directive (AIFM, 2011)²³ seeking to regulate the shadow banking sector.

ADAPTIVE GOVERNANCE

The law of July 2017, the second pillar of SpaceResources, was an important legal lever for the program. Luxembourg’s project should be analyzed through the prism of offshore governance, which is to say through the spread of lax legislation. Written in favor of the space industry, this Luxembourg law arms the NewSpace industry against Space Law, which is unfavorable toward it but remains the authority. The *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*,²⁴ which was ratified in 1967,

¹⁹ According to its agency LuxembourgForFinance: <https://www.luxembourgforfinance.com>.

²⁰ See the investigation conducted by 16 media outlets on the Register of Effective Beneficiaries of Luxembourg Companies, which was made public in 2019 (European Directive 2018): “OpenLux – Enquête sur le Luxembourg, coffre-fort de l’Europe,” *Le Monde*, February 2021.

²¹ “Fonds d’investissement. Berceau de l’industrie mondiale des fonds,” see <https://www.luxembourgforfinance.com/fr/la-place-financiere/fonds-dinvestissement>.

²² Thierry Labro, “Nouveau record pour les fonds,” *Paperjam*, January 4, 2021.

²³ Jean-François Pons, “L’Union européenne et la réglementation du système financier parallèle,” *Revue d’économie financière*, 109(1), 2013, p. 239-248. On the same subject, also see the technical data sheet for the BIL Fund, “La société d’investissement en capital à risque luxembourgeoise.”

²⁴ “Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies,” UN, 1967.

expressly forbids any exploitation and appropriation of space, as stipulated in Article 2:

“Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.”

UN international treaties define space as a common and inalienable heritage, and protect it against all forms of appropriation. How then to accept a privatization of space or the appropriation of its resources? In this ideological and legislative battle, Luxembourg law must do away with the inhibiting “Doctrine” of the Space Treaty, and instead impose the notion of merchandisable space.

The opinion of the Luxembourg Council of State²⁵ on the bill precisely identified how to do so. It emphasizes the important precedent of the deep seabed, the other common heritage that new international regulation has opened up to exploitation by the budding industry of deep-sea mining.²⁶ Transforming a common heritage into an opportunity for private exploitation appears to be within the reach of Luxembourg, which became a master in privatizing the ether nearly a century ago.

The law of July 2017 echoed the humanist rhetoric of the 1960s, playing with and distorting words. It took advantage of the legal void left in the Space Treaty, which did not rule out—perhaps intentionally—the possibility of private actors appropriating space for purely economic ends.²⁷ Luxembourg used reassuring and neutral

²⁵ Opinion of the Council of State on the law regarding the exploration and use of space resources, 2017, <https://conseil-etat.public.lu/dam-assets/fr/avis/2017/07042017/51987.pdf>.

²⁶ See Clémence Seurat, “Les forages en eaux profondes. Une nouvelle frontière,” in *Controverses : mode d’emploi*, Paris, Presses de Sciences Po, 2021.

²⁷ Ewen Chardronnet, in his article “Récession terrestre, “Bull Run” pour le “Newspace”?” about that the privatization of the space industry had already begun at the time of the Space Treaty (in “The Great Offshore”, UV éditions, 2021).

vocabulary: it is no longer a matter of space “exploitation,” but of “exploration” and “use.” This is a fine example of *blanchiment par le langage* (whitewashing through language), to use Alain Deneault’s expression.²⁸

The delegitimizing of an international treaty cannot occur unilaterally, or through simple semantic nuance. It requires tedious political lobbying efforts over the long term, which is something that Luxembourg has clearly understood. This is why the Luxembourg Space Agency simultaneously conducted an audit of the legal framework, in the form of the supposedly informal working group named The Hague International Space Resources Governance Working Group.²⁹ The group is hosted by Leiden University in the Netherlands, which is also home to lax offshore legislation.

The working group has proposed “building blocks,” a modular legal toolbox for a dynamic approach to legislation, one that adapts to the pace of technological and financial innovation. In short, it is a matter of fashioning laws that are tailored to the needs of companies. The working group includes a number of countries and observers, and is led by the ESA. It is very much in keeping with a formal lobbying group, and shares its recommendations for implementing “adaptive governance,” the watchword of the white paper that concluded the working sessions of 2017.³⁰

²⁸ Marion Rousset, “Dans les paradis fiscaux, le blanchiment concerne aussi les mots,” *Le Monde*, January 7, 2018.

²⁹ <https://www.universiteitleiden.nl/binaries/content/assets/rechtsgeleerdheid/instituut-voor-publiekrecht/lucht--en-ruimterecht/space-resources/bb-thissrwg-cover.pdf>.

³⁰ “Final Report,” the Hague Space Resources Governance Working Group, 2017, https://www.universiteitleiden.nl/binaries/content/assets/rechtsgeleerdheid/instituut-voor-publiekrecht/lucht--en-ruimterecht/space-resources/final-report_the-hague-space-resources-governance-working-group-7-6-18.pdf

COSMIC ANTHROPOCENE

Luxembourg's determination to enter the race to exploit asteroids therefore appears to be motivated first and foremost by a desire to continue attracting shadow banking, to be a "financial black hole," in the words of Nicholas Shaxson.³¹

Beyond the advantages that Luxembourg would reap, the prospects provided by the SpaceResources project are dizzying. Propelled by the wild-eyed hubris of its most active promoters such as Jeff Bezos and Elon Musk,³² NewSpace proposes to export the extractivist and productivist model to outer space. It also celebrates a new age of colonization and its unhealthy mechanisms of exploitation, with the offshore finance governance model ensuring it will be entirely free of legal constraints.

The resulting hybrid object, which combines extractivism, colonialism, and offshore finance within a single entity, is presented as the only reasonable option for survival, namely that of capitalism. However, in proposing to export to the Universe the model that led to environmental catastrophe on Earth, it promises to expand the anthropocene to a cosmic scale for the immediate benefit of the few.

³¹ Nicholas Shaxson, in "Treasure Islands: Tax Havens and the Men who Stole the World," Palgrave Macmillan, 2011.

³² One example among others: Elon Musk has already announced that his company's conquest of Mars will signal the end of the reign of international law. See Anthony Cuthbertson, "Elon Musk's SpaceX will 'make its own laws on Mars,'" *The Independent*, October 28, 2020.

IMAGES AND CAPTIONS



Long wave broadcast antenna, RTL, Junglinster back up site, Luxembourg.



Pictures of the location of CLR's historic transmitter in Junglinster (1931), today a backup site for RTL. Longwave antennas: pylons 217m, frequency 234kHz, 2x600kW, DRM shortwave antennas, 6095kHz and 5990kHz, and antenna satellites.



Jean Dunand, “Le rayonnement de Radio Luxembourg” (1939). Lacquered panels, Villa Louvigny. Luxembourg, 2018.