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*Chinese Corporate Investments in Rural Thuringia
and the Expanded Reproduction of Capital after
Western Hegemony*

SHIFTING GROUNDS
Hannes Langguth

Hannes Langguth, born 1987, is an urban researcher and PhD candidate at the Habitat Unit, Department of International Urbanism and Design at Technische Universität Berlin. His research engages at the intersection of urban-regional theory, planning and sociology. Hannes is co-founder of studioetcetera, an urban research cooperative based in Berlin. He studied architecture and urban planning at the Technische Universität Braunschweig and the Academy of Fine Arts in Vienna.

It was big news. Not only locally in the region around Arnstadt, a small German town with 25 000 inhabitants located on the north eastern edge of the Thuringian Forest, but Europe-wide. Contemporary Ampere Technology Co. Limited (CATL), the global market leading manufacturer of lithium-ion cells for electric vehicles (EV), headquartered in Ningde, Fujian Province China, announced an investment of 240 million euros in the construction of a new battery production facility in rural Thuringia in July 2019. Soon after, this commitment was scaled-up to a total investment of 1.8 billion euros. Wolfgang Tiefensee, the Thuringian Minister of Economic Affairs, who had travelled to China in spring 2017 to promote the location's advantages to the CATL chairman Zeng Yuqun in person, speaks of a «gigantic investment that will push the Free State of Thuringia towards [being] one of the most important European sites for the manufacture of EV batteries». ⁽¹⁾ From 2022, the projected annual production capacity for the new manufacturing site is planned to be about 280 000 cars per year, each using a medium-sized 50 kilowatt-hour battery engine. By 2026 CATL even expects to reach its capacity in Thuringia of 1 000 000 cars, which would be significantly larger than Tesla's much-discussed Gigafactory currently under construction in Grünheide.

In late 2019, CATL's plans caught the attention of «The New York Times». The journalist they sent to Arnstadt reported a high anticipation and optimism about CATL's recent announcement among both local officials and citizens. According to the article, Frank Spilling, the mayor of Arnstadt, welcomed the development and diplomatically countered concerns about CATL's investment with the excuse that his humble position as the mayor of a small town does not qualify him to make any comments about wider geopolitical topics and affairs. ⁽²⁾ Given the 2000 potential new jobs that were announced together with the investment, the expected increase in business tax revenue, and the new demand for services and housing, the investment does indeed represent a great prospect for the town that has been badly hit by demographic developments. Having already faced incisive socio-economic and demographic change processes caused by the German reunification in 1989, today Arnstadt has lost 11 per cent of the population it had 25 years ago. ⁽³⁾ New investment, bringing hope for new jobs and economic recovery, is naturally welcome in this context. But who exactly are Contemporary Ampere Technology and what are the driving forces behind their global expansion? How should the overarching geo-political frameworks within CATL's global investments in the EV market be understood? And how do these developments affect rural Thuringia?

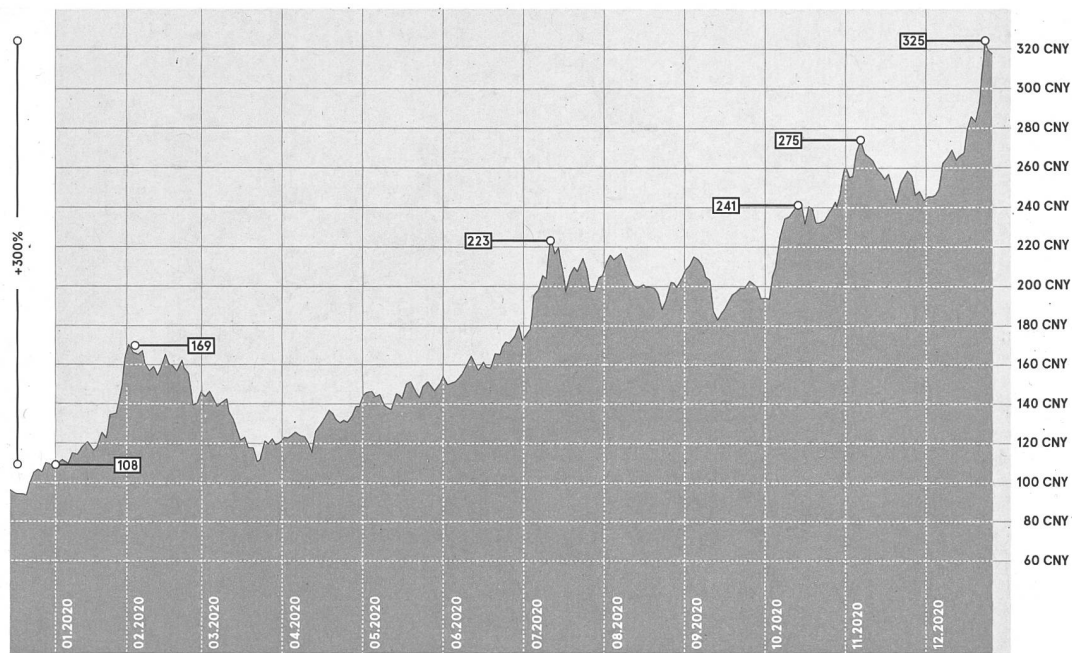
I CATL, THE FOURTH MACHINE AGE AND THE END OF WESTERN HEGEMONY

Since its foundation in 2011, CATL's rapid economic growth has been closely linked to the unique state-driven development strategy pursued by the Chinese government under the «Made in China 2025» initiative. ⁽⁴⁾ Besides subsidising the domestic purchase of EVs, this involves considerable support especially related to tax breaks and cheap land to

build manufacturing facilities across China, the lifting of production caps, the support of local authorities to increasingly convert their vehicle fleets to e-mobility, and the construction of EV charging or battery swapping infrastructures. Since 2009, the Chinese government — both central and local — has invested more than 50 billion euros in supporting its EV industry, to be followed by another 40 billion euros for the next ten years to consolidate this development path both at home and internationally. ⁽⁵⁾

Although benefiting from government subsidy, as a non-state owned corporate entity CATL's success has, from the beginning, been mainly based on its strong commitment to in-house technological innovation. No other global lithium-ion battery manufacturer has mastered this part of EV production as well as CATL. Compared to other companies in the field, the Chinese market leader makes relatively high and regular investments into research and development (R&D). In 2017 this was around 390 million euros, which is equivalent to 11 per cent of its total revenues in the same year. CATL's innovation-driven spirit has led to the technological advantage in the field of lithium-ion battery production based on highly optimised manufacture processes, almost fully automated and operating around the clock. Robots perform their work in sterile shelters, whereas human work is limited to the control and maintenance of the machines. The production of lithium-ion batteries is a highly sensitive and precise affair, hidden in large-scale industrial buildings of the kind now also being established on the outskirts of Arnstadt in rural Thuringia. The company's engagement in Thuringia will also contain a collaboration with the Fraunhofer Institute for Ceramic Technologies and Systems IKTS — one of the largest battery research institutes in Germany — to work on joint research focusing on improving the service life of EV batteries. ⁽⁶⁾ Based on this intensive research background, as it stands in 2021, CATL's efforts in R&D are on the cusp of resulting in one of the greatest technological leaps forward in the field of lithium-ion battery development: the first prototypes not requiring the primary commodity cobalt, an expensive and rare resource which, in addition, is mostly obtained under poor working conditions in mainly African mines.

Throughout the last two years, this innovative strength has led to increasing trust in CATL's achievements and thus numerous long-term contracts for future sales of EV batteries to leading car manufacturers. The German BMW Group AG became a key partner and recently made a binding order of 7.3 billion euros to receive batteries for its future production of EVs to be sold on the European market. Presumably this is one of the key reasons for choosing to invest in Arnstadt, given its very central location in Germany and close links to BMW's production facilities in Eisenach, Leipzig and Dingolfing near Munich. Other agreements have been made, among others, with Daimler, Volvo-Geely, PSA Group, Hyundai, Honda and Toyota. Such increasing demand is also reflected in CATL's share price. Taking the first half of the year 2019, the company's profit increased by a remarkable 130 per cent and during the last 12 months, despite the drastic economic effects caused by the Covid-19 pandemic, the value of the company's shares have tripled. ^(fig. 1)



Contemporary Amperex Technology Co Ltd, Class A (300750)
 Trade: Shenzhen, CHN / Currency: CNY / Market: China / ISIN: CNE100003662

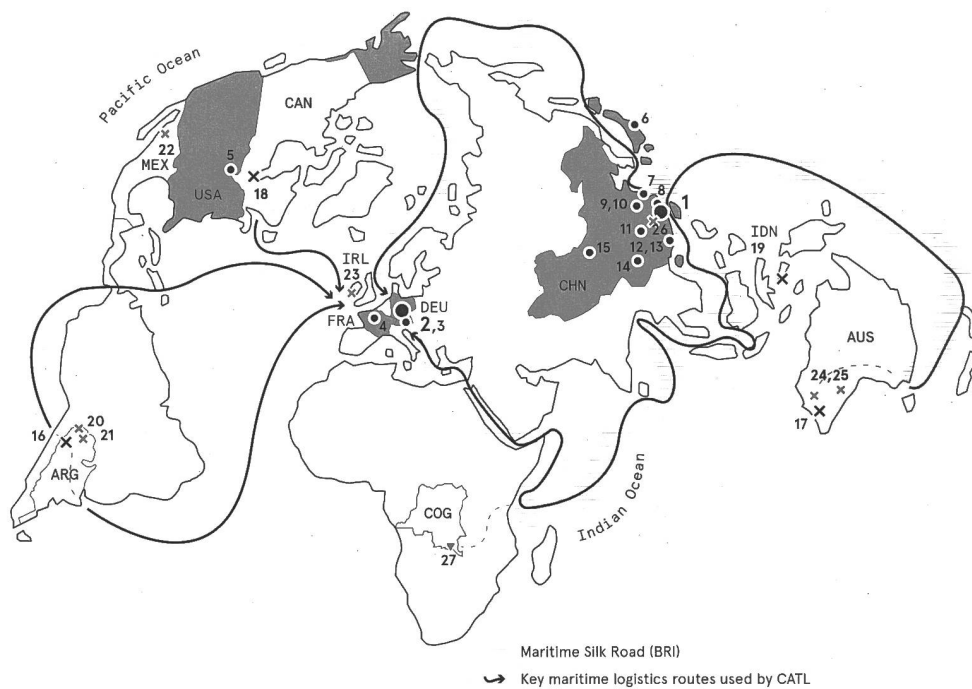
(fig. a) CATL share price performance during 2020 including 300 per cent profit within 12 months, 2020. Image: author

Throughout history, innovation in productive technology of large-scale industry and capital accumulation have always been closely linked to each other. According to Ernest Mandel, this entanglement, that he classified along three breakthroughs in motive machine development of the last two centuries, led to the rise of the long lasting domination of Western markets.⁽⁷⁾ Following CATL's latest engagements in the light of an increasing global EV industry, we can currently observe another crucial breakthrough in productive technology. This not only refers to the highly automated and computerised manufacture of EVs and their lithium-ion batteries, but also implies the global extent of its related extraction, production and controlling processes. It includes the automated extraction of primary commodities, digital and big-data driven infrastructure systems, and algorithm-controlled asset management of related profits and investments. Given the extended scale, scope, and complexity, these arising «cyber-physical systems» can be framed under the «fourth industrial revolution [that] represents entirely new ways in which technology becomes embedded within societies and even our human bodies».⁽⁸⁾ Thus, the specificity of today's leap forward in large-scale EV industry stems from the systematic fusion and interaction of new technologies across physical, digital and biological domains. Referring to Mandel's former periodisation, these entangled processes have become crucial aspects of the «Fourth Machine Age» which is not only decisively characterised by the reconfiguration of our social forms of labour and thus

of social reproduction, but also marks a shift in the underlying political forms that drive these globally interconnected modes of production and consumption, toward a global capitalist society as an organic whole.⁽⁹⁾ Whereas Mandel's three major technological revolutions have constituted the long lasting Western phase of capitalism, that was decisively backed-up by the political form of imperialism, today, the tide has been turned in the wake of the Fourth Machine Age. Based on technological advantages and underlying supportive policies by the Chinese government, CATL's rapid economic rise reflects this representative turning point in global geo-political configurations including the shift towards competitive Post-Western forms of capitalism.⁽¹⁰⁾ It is this context in which Western nations have ceased to be the structuring centre of human civilisation and technological innovation, instead becoming one among several other world provinces.

II THURINGIA IN THE GLOBAL WEB OF HINTERLANDS AND THE REPRODUCTION OF CAPITAL

CATL's engagement in Thuringia must be put in relation to its numerous other global investments that the company has made over the past two to three years in order to increasingly secure its influence on the entire value chain of EV production and consumption.⁽¹¹⁾ With new shares in Australia's Pilgangoora Lithium mine and the Tres



<ul style="list-style-type: none"> Contemporary Amperex Technology (CATL) Headquarters & Global Subsidiaries 	<ul style="list-style-type: none"> 8 - CATL-FAW Auto Battery Co., Ltd. Office - Xiapu, Ningde, Fujian, CHN
<ul style="list-style-type: none"> 1 - Contemporary Amperex Technology Co., Ltd. (21C Innov. Lab) Headquarter / R&D / Production - Ningde, Fujian, CHN (2011-) 	<ul style="list-style-type: none"> 9 - Jiangsu Contemporary Amperex Technology Co., Ltd. R&D / Production / Office - Liyang, Changzhou, CHN
<ul style="list-style-type: none"> 2 - Contemporary Amperex Technology Thuringia GmbH Production / Office - Arnstadt, Ilmkreis, DEU (2019-) 	<ul style="list-style-type: none"> 10 - United Auto Battery Co., Ltd. Office - Liyang, Changzhou, CHN
<ul style="list-style-type: none"> 3 - Contemporary Amperex Technology GmbH R&D / Office - Munich, Bavaria, DEU (2014-) 	<ul style="list-style-type: none"> 11 - Dongfeng Amperex Battery System Co., Ltd. Office - Wuhan, Hubei, CHN
<ul style="list-style-type: none"> 4 - Contemporary Amperex Technology France Office - Paris, Île-de-France, FRA 	<ul style="list-style-type: none"> 12 - CATL-GAC EV Battery Co., Ltd. Office - Guangzhou, Guangdong, CHN
<ul style="list-style-type: none"> 5 - Contemporary Amperex Technology USA, Inc. Office - Detroit, Michigan, USA 	<ul style="list-style-type: none"> 13 - Guangdong Brup Recycling Technology Co., Ltd. Office - Foshan, Guangdong, CHN. (2015-)
<ul style="list-style-type: none"> 6 - Contemporary Amperex Technology Japan KK Office - Yohohama, Kanto, JPN 	<ul style="list-style-type: none"> 14 - Sichuan Contemporary Amperex Technology Co., Ltd. Production / Office - Yibin, Sichuan, CHN
<ul style="list-style-type: none"> 7 - Shanghai Jiao Tong University-CATL Joint Research Center R&D - Shanghai, CHN (2016-) 	<ul style="list-style-type: none"> 15 - Qinghai Contemporary Amperex Technology Co., Ltd. Production / Office - Xiniñg, Qinghai, CHN (2013-)

<ul style="list-style-type: none"> CATL as Corporate Shareholder in Global Mining Projects 	<ul style="list-style-type: none"> 21 - Mariana Lithium Mine, Salta, ARG 84.6 % Ganfeng, CHN; 15.4 % International Lithium Corp., CAN
<ul style="list-style-type: none"> 16 - Tres Quebradas 3Q Lithium Mine, ARG Neo Lithium Corp., CAN / CATL: 8 % (2020-) 	<ul style="list-style-type: none"> 22 - Sonora Lithium Mine, Sonora, MEX 50 % Bacanora Lithium, MEX; 50 % Ganfeng Lithium, CHN
<ul style="list-style-type: none"> 17 - Pilgangoora Lithium Mine, AUS Pilbara Minerals Limited, AUS / CATL: 8.23 % (2019-) 	<ul style="list-style-type: none"> 23 - Avalonia Lithium Mine, Leinster, IRL 55 % Ganfeng, CHN; 45 % International Lithium Corp., CAN
<ul style="list-style-type: none"> 18 - Abitibi Val-d'Or Lithium Mine, Québec, CAN North American Lithium Inc., CAN / CATL: 95 % (2018-) 	<ul style="list-style-type: none"> 24 - Mt Marion Lithium Mine, AUS 50 % Ganfeng, CHN; 50 % Mineral Resources Limited, AUS
<ul style="list-style-type: none"> 19 - Morowali Cobalt & Nickel Mine, Sulawesi, IDN Consortium with TESLA, LG Chem, Daimler, Volkswagen (2020-) 	<ul style="list-style-type: none"> 25 - Pilgangoora Lithium Mine, AUS 93 % Pilbara Minerals Limited, AUS; 4.55 % Ganfeng, CHN
<ul style="list-style-type: none"> Global Mining Projects supplying CATL (via BMW AG, Ganfeng & GEM, 2020-2024) 	<ul style="list-style-type: none"> 26 - Ningdu Heyuan Lithium Mine, Ganzhou, Jiangxi, CHN 100 % Ganfeng, CHN;
<ul style="list-style-type: none"> 20 - Cauchari-Olaroz Lithium Mine, ARG 62.5 % Lithium Americas Corp., CAN; 37.5 % Ganfeng, CHN 	<ul style="list-style-type: none"> 27 - South Luishia Cobalt & Nickel Mine, COG 66 % Glencore plc, CHE; 33 % GEM Co. Ltd., CHN

(fig. b) Network of global investments recently made by CATL to secure access to core supply and value chains related to the EV market, 2020. Image: author

Quebradas Lithium (3Q) mine in Argentina, the company now accesses the two key regions with the world's largest lithium deposits. Together with TESLA, LG Chem, Daimler, and Volkswagen the development of a new mining project in Sulawesi, Indonesia is currently on the way, and early 2020 concluded contracts with the BMW Group AG and the Chinese Ganfeng Co. Ltd. have additionally secured CATL's supply with Lithium, Cobalt and Nickel for the next four years. ^{ii a, b} Such global commitment across the entire value chain can be described as what Parag Khanna has denoted the effort to build a «global supply chain empire» aiming to connect the company's operations in mainland China outward to myriad resource peripheries related to primary commodity, manufacture and labour. ⁽¹²⁾

Over the last few years, CATL's large-scale global investments and business agreements across various domains have created a global system of material and immaterial entities that not only entail automated production facilities worldwide, but also connect to numerous locations of primary commodity extraction and logistical infrastructures, networks of financial intermediation and asset management, at the same time producing new global geographies of labour. How exactly these globally intertwined processes will actually affect and transform the local socio-spatial context in the region around Arnstadt in Thuringia cannot be answered at this point in time because the production facilities are still under development. But what is certain is that Arnstadt is on its way of becoming a highly globalised and specialised manufacturing site deeply enmeshed within an export-oriented and highly automated transnational production network that is shaped by CATL and its global partners. Lithium which is mined robotically in large-scale extraction sites in Argentina's Catamarca Desert, being loaded in fully automated Chilean ports that are controlled by geospatial information systems, to be later processed in digitised production facilities in rural Thuringia: given the large scale of technological advantage, the great extent of geographical expansion and the post-western dominated geo-political shift these production processes are embedded in, CATL has become a crucial driving force within the world market that is increasingly shaped by East Asian driven capitalist development based on a great leap forward in productive technology of large-scale EV industry.

As outlined above, the company's economic achievements are based, firstly, on its strong innovation-led technological advantage in R&D. Secondly, on its radical expansion strategies to ensure self-controlled processes in all areas of production, sales and asset management across the entire value chain of the EV market. Considering the strong supply function of CATL's new global operational sites, be it the extraction of primary commodity in the Argentinian desert or the production of lithium-ion batteries in rural Thuringia, a globally outreaching and interconnected network of hinterland sites has been shaped to be serving the corporate profits that rely on the increasing global production and sales of EVs. Looking at this metabolic network in the context of the Fourth Machine Age it becomes all the more clear what scholars have denoted as new «configurations of large-scale territorial-ecological machinery:

mechanised assemblages of human and non-human infrastructure oriented towards capital accumulation within a planet-encompassing profit-matrix». ⁽¹³⁾ As the new manufacturing site in Arnstadt becomes a crucial gearwheel in this matrix, it connects rural Thuringia to other numerous global hinterlands. After all, it is this global web of CATL's operational hinterland sites that is animated by the capital's inherent drive to increase labour productivity and extend its interspatial connectivity in order to push forward the accumulation of the corporate's capital within the EV world market. ⁽¹⁴⁾ Given this setting that hardly knows any limits, it remains to be seen whether the high hopes for consistent profits within the region, as postulated by local authorities and the Thuringian government, will actually be realised in the long term. While jobs and profit will be temporarily generated, living labour may run at risk of getting even more replaced by machinery, equipment and digitised infrastructure pushing forward the already present social and cultural extinction of the region. Besides, through its specialised, capital-intensive and globally interdependent links to large-scale zones of extraction, the new battery production in Thuringia increasingly relies on the progressive depletion of global resources and ecological systems. Vice versa, this further accelerates capital's drive to improve and mechanise related operations across hinterland geographies.

The prospects for Arnstadt therefore remain ambivalent. On the one hand, a future-oriented development in the EV industry is almost impossible without the competence, capital and the networks of the Chinese world market leader CATL. On the other hand, a further high dependency on capital-intensive processes of value accumulation are to be expected across all respective domains. This demonstrates the contradictory nature of such a planet-encompassing system: the fact that as the world market continuously expands, an increasing struggle and aggression with which these very resources (primary commodity, labour, knowledge, big data) are fought for is arising. Crucially, in looking at the large-scale extent and scope of this planet-encompassing system of operational sites allows for superseding the ubiquitous notion of the world market to be the sum of single national economies. Instead, it helps to problematise the methodological nationalism that applies to international political relations of nation-states, be it either under the guise of imperialism, or dependency, and/or unequal exchange between cores and peripheries. It is this perspective which, most likely, would also help in the currently wedged debate on Sino-German cooperation including its possibilities and limitations, as it opens the view to a rather global interstate system reinforcing class antagonisms that are lying at the heart of our modern capitalist society.

