

As if a famine
a universal war of devastation
had cut off the supply
of every means of subsistence

Interviews with Edgar Huracán Ramírez ,
November 2008 / January 2020

German Muruchi Poma: About Lithium and the Coup
d'Etat, 2015 / 2020

Robert Sieland, Interview, May 2012



Chapter 1

No 1 e

Mining News

End of November - after the coup
we read this message and glued it into our booklet:
The new Minister of Mines and Metallurgy,
Carlos Fernando Huallpa Sunagua,
has appointed today
three new directors of the central units of the mining company of Bolivia.
The oath was taken
by the citizens
Joaquín Orlando Andrade Claros
by Álvaro Alejandro Herbas Blanco
and by Guicenia Guísela Patzi.
The new directors swore on the bible and the constitution of the state.

This message followed, we do not remember its date:
The Minister of Mines and Metallurgy,
Carlos Fernando Huallpa Sunagua,
has appointed today
Fernando Iván Vásquez Arnez
as vice minister for the mining of metals,
and the engineer Richard Fidel Arancibia Matos
as new head of the department in Potosí.
The new directors swore on bible and lilies.

On December 3 we read and glued into our booklet:
The Minister of Mining and Metallurgy,
Carlos Fernando Huallpa Sunagua,
has appointed today
in front of the bible, the cross and the lilies
Fernando Iván Vásquez Arnez
as Vice Minister for Productive Development
and Rubén Solíz Guzmán
for the mining cooperatives.
In the same way
Jaime Javier Jiménez Villegas
took oath as head of administration
with soldiers at the back
behind the chair
on the wall

Edgar Ramirez was also replaced from the miner's archive,
only for three days,
until he was brought back,
although he is from the other side
- the side of the animals, pagans and communists -
For no one could be found to take the memory from him.
This one, which loads the weight of the work in the pit
onto its shoulders
like a donkey carrying ore bags for 500 years.

This is what some glued into booklets in Deutschland
who does not take interests
at the salt sea
who does not hold shares in Tesla
which shot up in November
for a short time, so that
the forest in Brandenburg
these pine asparagus stalks could be dredged away
for the purchase of Arrbeitsplätze
in this slim region
on the sand.

Foreword

we tell this story about lithium the other way round from back to front, from the present into the past, where the present means "behind" and the past is "in front".

And so we begin with the presentation of an archive that preserves the history of mining in Bolivia. It is presented in the recording of a conversation with Edgar Ramirez, the director of this archive, which Ines Doujak conducted in 2008 for her own textile archive Loomshuttles / Warpaths. During this time the Miner Archive was in process. "These shelves now are already made up, they are like movie actresses; they have put their make-up on. But there are others, in their natural state. And we say, 'we shouldn't have painted anything, we should have left all of them like that, because it is the testimony of how it was made', which was from packing boxes for the engines, and the nails we used were from the boxes too, we would pull them out, straighten and resharpen them, so we could use them for the shelves because no one gave us anything." (Edgar Ramirez, 2008)

When we visited the archive in January 2020, we entered a new building with a dome, a steel construction that represented a large helmet. It was inaugurated in 2018 and is located between a military barracks and the airfield tarmac. The strict guarding of this area extended all the way into the house, where we had to hand in our passports at the entrance and our bags were searched and we were finally led to the director, accompanied by shepherd dogs. There, however, we found ourselves in another area, one with coffee and pastries with many stories to share and many open questions to ask about the present after the coup. They concerned above all the role of lithium as a new important resource for the world hunger of the digital and car industry, and its connection to the coup. Back in Germany and some months later we read the articles by German Muruchi Poma, which partly answered these questions.

These articles took us back to the time when a pilot project between the Freiberg Mining Academy and the University of Potosí was carried out, which concerned the sustainable extraction of lithium. At that time we read the interview with Robert Sieland in the magazine Quetzal. We so inspired by it, that we changed the logo of our project, the Potosí Hill with the two pillars of Spanish colonial rule, for the exhibition in La Paz. But now - in this post-coup state of mind - it was important to make this logo more precise, as if its icons could also function like an archive that preserves the idea of the collaboration between Freiberg and Potosí. For it makes an industry without power interests conceivable. And we were also fascinated by the collaboration between the Freiberg Mining Academy and the University of Potosí, as if looking into a landscape of a long historical period of a transfer of knowledge that began in the 16th century, when the book by Gregorius Agricola ¹ influenced the mining of silver in Potosí.

The current government does not care about industrialization but about selling the resources, says historian Pablo Quisbert in an interview we had with him a few days after our conversation with Edgar Ramirez.

"As regards the issue of industrialisation, I think the discourse of the temporary government is going to end up being counterproductive. Part of that empowering process was also recovering the idea of the country's sovereignty, as well as that of the dignity of the people. When you tell a whole country that "you cannot manufacture a lithium battery", what you are actually telling them is that you completely underestimate their capacity as a people, as a country. ... in fact you are telling people that their pride and their dignity are not profitable, that they have no worth. And for people, all of that has been made with their money, in their country, and in their land. So I think that this strategy of questioning the whole politics of industrialisation of the MAS party, despite all the mistakes that they have made, is going to have the opposite effect. I believe people will rather see the value of it, as something that belongs to them. If you tell the people of Uyuni, for example, that there cannot be a battery factory there, in the salt flat, I think people are going to say "no, the factory has to be here, and if we can make it, then we should". So I think that people's empowerment, their pride, their dignity, will be reflected in this way. And this is not only an achievement of the MAS party, it is part of the struggle of the people themselves." ²

Footnotes

1 Gregorius Agricola: Vom Bergkwerck, 1557, ed. Hans Prescher, Leipzig 1965

The compendium was published 1556 at the Bergakademie in Freiberg when the mining industry in Saxonia was going to react to the competitors from the colonies with an investment in technology and know how. The book was soon getting a basic knowledge for mining world wide. 1569 the compendium was translated in Spanish, and in the Casa Moneda Museum in Potosí you can find the book "De Arte de los Metales" by Alonzo Barba from 1640 which resorts to Agricola many times. Look at: Chapter 1, brochure 1/1e

2 Interview with Pablo Quisbert, Hernan Pruden, and Max Jorge Hinderer, 2 February 2020, La Paz, look at chapter 2, brochure 2/1

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Sack with Litium Carbonate

"Made in Bolivia / We industrialize with dignity and sovereignty"

Edgar *Huracán* Ramírez

Interview from **November 2008**, abridged by Ines Doujak and John Barker

“So you are going to make an archive you say, starting with textiles made here in the Andes. What a textile history we have, but we want to tell you about another Bolivian history, mining, and the Mining Corporation of Bolivia (COMIBOL) archive we are making here in El Alto, La Paz, which we as volunteers started from scratch with documents that had all been dumped. Let us show you around, what they call a guided tour. Over there, where the street is, there was a shed with a roof made of corrugated iron, which hardly protected from the rain. The whole 500-year history of the mines, thrown out like rubbish. We’d always thought God made miracles individually, but this archive is a collective miracle. In Bolivia mining from the invaders onwards has always been the money-maker. When America was discovered and the spices, cinnamon, clove, etc. etc. were exchanged for gold and for silver, everyone asked for mines separately. Gonzalo Pizarro, he was the owner of Porco mine. He asked for Porco for himself, with all the Indians on it. The hill of Potosí was requested by Juan de Villarruel, the Northern area of Potosí, around Chayanta, by Juan del Valle, and in this way everyone asked for different areas. But as time went by, these give-aways started to concentrate in a few hands. In the 19th century, the period of the Silver Patriarchs, the vast majority of mines was concentrated in no more than 5, 6 or 7 companies. And in the 20th century, these same mining sites, after the silver crisis, were acquired by three other, more powerful industrialists, Patiño, Jochil and Araymo. This period in Bolivia is known as “The Men of Tin”. So then, in 1952, the three companies were nationalised and not just the mines themselves but also, and we can’t find any other examples of this in the Americas, the archives. They are in the public domain and cannot be privatised. But what a state they were in! Paper everywhere, like the property titles of the mines, just dumped. So some of us ex-miners, we started to rescue them ourselves and now all kinds of people are working together here, that is, here it is proven that this work can be done, not by those who have studied, but by those who love information, research. Workers right from the base. But then there’s a university student who, for financial reasons, had to stop. He is still studying systems engineering by himself, and is entering the information into the computer for us. This guy here is a history graduate. So you see, not only have we gathered the records of all times, but we have also gathered human beings from all backgrounds. When we started to store the documents we had to fight for this space, which was a warehouse of the COMIBOL, holding car spare parts, there was nothing, no work clothes, no computer. Around 2003 we convinced them to let us use it and store the records here. These shelves now are already made up, they are like movie actresses; they have put their make-up on. But there are others, in their natural state. And we say, ‘we shouldn’t have painted anything, we should have left all of them like that, because it is the testimony of how it was made’, which was from packing boxes for the engines, and the nails we used were from the boxes too, we would pull them out, straighten and resharpen them, so we could use them for the shelves because no one gave us anything. And we had to fight the pigeons, the mice, and we couldn’t kill the mice. Because if you kill a mouse, it stains the paper, with the blood, so we had to catch them alive, and then drown them in water. But then the worst enemy of the documents is neither the mouse, pigeon or the water, it is men always trying to make the evidence disappear. We have learned as we went that archives are not collected in a single heap, all together. They have to be organised according to their vital cycle, like human beings. We could not put babies in an old people’s home. So, for us, the young documents, those that are being born, they are in the office. But after five years of being in the office, they are moved to the central archive. Here they stay until they turn 15. After 15 years, they are transferred to the intermediate archive. They stay there until they turn 35, and then they are transferred to the historic archive. So when we teach archival studies to new colleagues, because we have courses here every week, we tell them, ‘they are like a human being; they are born, they are babies and eat from a bottle, they become teenagers, they come here, then they go to the intermediate archive when they are adults, and in the historic archive they are venerable old people’. Here, our colleagues have the task of classifying the documentation. They analyse archive by archive, because the documents are complete records. Then, the document, this document, for

example, is only useful when taken together with the other documents. If you separate it from the others, it is as if you were taking out an eye. It's not worth anything anymore. Now here we do the work of preventive conservation. First the document must be cleaned, sheet by sheet, and all the iron objects must be removed and discarded. All the metallic objects, everything metallic, is thrown away; clips, pins, paper fasteners, all of that has to be removed and discarded. Once that's done, it goes in these envelopes. Right here. Now for the work of conservation and restoration. These books, for example, are ill, they are patients, so with these books we have to remove the cover, and we have to remove all the binding, and then remove all the mould. They have to be cleaned and put in their place. Here this one is half finished, only half of the work is done. This one has its cover already, it is getting another cover fitted. So it has been cleaned of its binding, and all its things have been replaced. But after the cleaning, a clinical history is made in which it says the date that the patient was treated. Then what kind of document, the size, the type of paper, and the kind of treatment it has been exposed to. For example, cleaning: dry, with a vacuum, or cleaning with brushes: 'task completed by Ernesto Copa'. Then we know what kind of treatment was given to this one. If it deteriorates again, then we have to investigate why it is happening, work wasn't done well perhaps. Then we have to do the work again. Because removing the fungus and the other mites, the bugs – this treatment can be given today, but if the work isn't done well, they come back, and the second ones are stronger than the first. So, this one has its life sheet here. This is going to be part of a hospital. There has also been map restoration and the damaged have been repaired.

Before we started working, the solution was to cut what was damaged. Of course, it needed to be repaired differently, but we are going to be able to fill it out with cellulose, and with the information that we have in its record as a basis we will be able to fill it out. This archive, it is a complex, that's why it is called a system. Apart from the fact that there are documents in the central archive, in the office archive, in the intermediate archive, and historical archive, it's also a library, a museum, and, as part of it, the brushes are going to stay, the hammers, the nails, and part of the documentation is going to stay the way it is, in order to show how it was. What we have here is a massive history, 25,000 metres of history, but it's not just history, it has strategic value for the country, for its development. Simon Patiño, who was called the King of Tin, controlling 70% of the world's tin, extracted rich mineral and left behind 'tails' which we can identify, and the oldest 'tails' have a purity level far, far higher than, say, in Japan. And then, some years ago when there was a conflict in the Puerto Suárez area in the east of Bolivia, a Brazilian company was ready to invest \$80 million in a mining site, but that meant no money for the community. So they kidnapped some politicians there and the order came to renegotiate the deal, that it should be doubled to 200 million. Now even though international mining companies are always haggling over price, we were able to show from old records of geological surveys we'd preserved and catalogued that the site was worth at least \$3 billion and on that basis the Brazilians were pushed to increase the investment to 210 million. I think that helped us to be taken seriously though as I said we started from scratch."



... the memo canceling the other memo

Interview with Edgar Ramirez Santiestevan

20. January 2020, Archive of the Miner Corporation of Bolivia, El Alto
by Alice Creischer, Max Jorge Hinderer y Andreas Siekmann

A.C.: How did you start with the archive?

E.R.: Well, the archive of the Bolivian Mining Corporation (COMIBOL) ¹ was inherited from the former companies that were nationalized. One of them, Patiño, was organized in a scientific manner, technically at a very high level, to the extent that the personnel who worked in the archive were prepared by the Patiño company in Spain, generally in the Simancas archive ².

A.S.: In Spain?

E.R.: In Spain, and for long periods. When the Bolivian Mining Corporation COMIBOL was constituted and nationalized these mines, the system of organization was adopted by COMIBOL. But in 1995/96 this archive was destroyed, because in Bolivia there was an economic model that establishes that mining companies should be managed by private companies, foreign or national, and this archive was deposited in the yard.

I have been working at COMIBOL for a long time. I entered the mine in Potosí, on the Potosí mountain, in 1969. I was promoted to head of the gallery. In 1994 I was sent to Mutum, to a region in the south called San Vicente, then to Tupisa, in the south too, and finally when I was brought here, we found the archive in the street, in the yard, outdoors, in the process of destruction. So, first we began to organize voluntarily, without asking for any salary, because the work here was from 8 to 4, and we stayed voluntarily, from 4 to 8 or 9 at night, without charging a penny to save the documentation. I was particularly interested in the fact that this documentation should serve as one of the levers of information that will allow the reconstruction of national mining. Why? Because the documents have been recording, in each period, year by year, how much ore is being extracted from each of the deposits. But also, pointing out the quality of the mineral, the mineralogical characteristics it has, how it can be melted. There is also the information from the global geological studies that were done, and they said "in this deposit in this block, there is so much ore". If we have the information of how much came out year after year, then we can know by extrapolation how much mineral can be left in a deposit.

A.C.: So it's a help for today's business.

E.R.: Sure, later, today and later. This interest certainly led us to the need to rescue, to save, these documents. Firstly, the first years, voluntarily. There were five workers who were the loaders of the archive. And we didn't need anything else but porters to carry and save the documents. In a second period, we incorporated already specialized personnel. So that we could incorporate the techniques of archival organization, the theory of archives. People were trained in archival legislation, in internationally valid archival description techniques, in ISO standards, in quality control of the organization of archives and their description. But in addition, in this archive we discovered some things which are very peculiar, only from this archive. Which ones? This is a multilingual archive, multilingual that is to say that it speaks several languages. In this archive there are documents in Spanish, in German, in English, in French, in Italian, in Russian, in Japanese, in Hebrew, for example Hochschild's documentation, he is of Jewish origin, so much of his documentation is written in Hebrew.

A.C.: And why in Hebrew?

E.R.: Because he was Hebrew. That's the theme that we discovered in these last years. I have a hypothesis about Hochschild. In the history of Bolivia, of the three great businessmen who were called by the tin barons, the most cruel was Mauricio Hochschild, of German origin. But doing

the study of his documents began to appear strange things, like what? The rescue, the salvage, of ten thousand Jews that were brought from Germany during the Second World War to Bolivia. And we said, Schindler, the German businessman, saved a thousand, Hochschild, ten thousand. In the documents it turns out that there are the employment contracts, the documentation that describes what he does to save the Germans of Jewish origin.

A.S.: What an interesting story and worth to be more known in the history of the rescue of Jewish people. We didn't know nothing about that. But we are here to ask questions about your archive and about a special case, about lithium, because it's a very current question. Are there also documents about lithium or about the geology of lithium in this archive, and are these documents a help in today's business?

E.R.: The lithium company, originally, was formed within the Bolivian Mining Corporation. The first years of work of this lithium company depended on COMIBOL. This documentation is here, in its entirety, from the moment they did the exploration to the moment they designed the pilot plant. At this moment they are finishing the pilot plant to start the industrial plant. That's not here anymore.

We are talking about the year 2009 until 2012. The first documents are from 2007, when a small group was formed to study that. Now, the importance of lithium, without a doubt, is great. One of the uses is as energy, that replaces oil and electrical energy. It's a clean energy. It has the opposite characteristics to the energy generated by uranium. Because uranium to generate energy has to be destroyed in the atoms, the atoms destroy, explode, and create energy. And that's why there is radiation. There is no radiation of lithium, because of the fusion of the anodes and cathodes. They fuse together, and they generate electrical energy.

But it also has uses, for example, in mineral alloys. Tests have been done, and if we go back in time, all the vehicles that went into space, the rockets, would break off in space, and when it returned to the earth would be destroyed. But, in the 21st century, the Challengers vehicles have begun to go into space, they go and come back. And what's the secret? That the alloy in the casing has lithium in it. The alloy, a mixture, of lithium with aluminum, gives rise to a metal that is lighter than aluminum and harder than steel. You can very well place it in the use of the metals that are now being used in aviation. But like in all businesses, to make make ships, spacecraft, airplanes etc. with this, they would have to discard everything that exists at this time. I mean, it's the same phenomenon that occurs in World War II: to cure the wounded, sulfateasol was used, and penicillin already existed, but it didn't enter the market because these products were overcrowded, they couldn't be thrown away to use penicillin. The first man to use penicillin was Churchill. Because he was sick with his lungs, he gets the first injection. But that injection was already twenty years old. And what is the explanation in this case? They couldn't move this other product, nor the factories, because it cost so much. At this moment, putting all the planes from all the companies to the dump to be replaced by these others costs a lot. So, for that reason, experts say that the replacement is going to be very gradual and that is why the projections for the opening of the lithium market are big.

A.S.: Evo Morales said concerning the worldwide hunger of Lithium that there shouldn't be a second Potosi. And then, there was a great effort to create a national industry of its own, with science and knowledge which is generated here in Bolivia.

E.R.: The knowledge was not acquired, because in this case, the conception is the following: since I know how to drive, I'm going to buy a cab and I'm going to work as a cab driver. To be a cab driver I am buying a made cab. I would be a fool to start studying how a car is made. Same thing in the lithium business. What is already developed, is bought and made in the domestic industry. That's why the agreement with Germany was important. Because they managed to develop the manufacture of the lithium battery, with greater results, with greater advantages than other industries, such as the Japanese. That's why there was interest in the lithium company to have the agreement with the German company and do a joint work.

A.S.: Why did the cooperation with the German company end? That was temporarily very close to the resignation of Evo Morales.

E.R.: Yes, one of the causes actually. I do not know if it is that, but from my intuition, what I think: at this moment, on the planet, there is a silent war for the possession of the largest lithium deposits. Everybody wants it. And the one that wants more is, without a doubt, the United States. It turns out that in the triangle of Argentina with Vaca Muerta, Chile, with the lithium they have there on the coast, and Bolivia, with the Salar de Uyuni, they have 85% of the world's reserves. Bolivia alone has 65% of the world's reserves, and where is the rest? It has China, it has the United States, it has Russia, but the deposits, for example in the United States, are phyllionic lithium. It is in veins in the rock. As in the hill of Potosi the silver, so in Silver Peak, the lithium, very difficult to exploit. But the deposits of Bolivia, in Argentina and Chile, are brine lithium. What does it consist of? By the conformation of the planet earth, these zones were, surely, sea. And when the structure that it has at this moment was formed, these remained in the altiplano, but the salinity of the millions of years remained there, and for that reason, when the salt is taken out of the Uyuni salt flat, the salt is taken out like some brick blocks, there remains water. The next day one returns, and the water has become a salt crust again. Again you can take out the salt crust and again there will be water left. And again it becomes a salt crust, because inside the salt crust there are remains of water. The phenomenon is exactly like when we boil salt water in a pot: if we put water in this pot and put enough salt in it, and let it boil as much as it can, that salinity multiplies. That's the point of the Salar de Yuni. Until now lithium batteries are made with phyllionic lithium, with lithium that comes out of the rock, not with this lithium yet. It is already manufactured in Chile, but here, the problem is that since about twenty years ago, there are lithium companies that have been around these areas. In the decade of, at the end of the 80, the Salar de Uyuni was given to a North American company called Lithium Corporation³, in 70 million dollars all the salt flat. But by then, the lithium market was still not opening up, they still didn't know what lithium was for, unless those who had done previous research. And that's why Evo Morales, when he arrives, nationalizes lithium. He nationalizes and starts the lithium company with the project of making a pilot plant and then an industrial plant.

A.S.: What is the difference between a pilot plant and an industrial plant?

E.R.: In the project, when it is a laboratory, tests are done to see if it works, if it merges. They find the results that it does work that way, then the pilot plant is made. This pilot plant is already with the results here, but on a larger scale. It is already indicating what size the plant should be. If it is too small one and we lose money. If we make a little more money and we make more money. Or suddenly we put in a lot of money, we oversize, and work at a loss. So, this is to dimension the economy of the project, and the technology that will be used. However, the plant here should produce lithium carbonate, and that's the raw material to make the battery cells. Until that period, until the lithium carbonate, Bolivia is developing the technology alone, this technology from the salar to the lithium carbonate, by evaporation of the water. But from the lithium carbonate to the lithium battery then already technology has been developed in the world. Then what is necessary to do is to make agreements.

A.S.: What is the current state this international cooperation? They stopped with the German company with which you had cooperated up to now. Is there a link for any other international cooperation?

E.R.: Not to my knowledge, publicly. But I'm afraid it's Lithium Corporation again. For what reason? Because the technical manager is a man who has been working as a consultant for this type of company in Chile, fundamentally in Chile. I am very afraid that the war that is now beginning is not a war for democracy, nor for Evo, no, for me it is the war for the possession of lithium.

M.J.H.: You, if you allow me the question, are you also implying coups d'état, civil wars, are we talking on that level of politics, of intervention in Bolivian politics?

E.R.: I am going to answer with an experience that has taken place in Africa, and with the German industry, the chemical industry, with Bayer ⁴. Bayer has set up a private army, has organized a private army to go into the Congo. And there it has fought a war, it is still fighting. And for the possession of what? The Congo? No! It's for the possession of Tantalum. Tantalum it is called when it is in a state of stone, of earth. And when it has become metal it is called Coltan. It is one of the raw materials, at this moment, of high level. That's where lithium comes in, rare earths like gallium, and other rare minerals that were not worked and that unfortunately are setting the pace even for the confrontation between the old powers and the new ones that have appeared. Because they are needed for the cell phones, for the digital industry.

M.J.H.: What are rare earths?

E.R.: They are the metals that allow me to drive with the screen, the television, etc. But also big transmitters of energy. If this is an electric power generating plant, I put a copper or aluminum cable to reach the place where it is used. From here, 100% comes out and 60% arrives there. And that's why on the roads, we see the high voltage cables with some balloons that are rising. Are there other energy conductors like that? Yes, silver and gold. Could I put some gold cables to carry...? From the energy plant 100 percent comes out, if I put a gold wire and it arrives at the place, it will be 80 percent. But if I put the power generator here, in this case it comes out of here 100 and arrives here 100 percent. That's why they begin to investigate and discover the rare earth elements. So that's why 97% of the rare earth reserves are in China, the remaining 3% are in Russia, in Iran, in Mongolia and Canada. Will they give it to the US? No. But now there is another territory as rich as the Himalayan mountain range, and that is called Bolivian Altiplano. So, for that reason, it seems to me that rare earths suddenly, if we don't have a vision, can play the same role as the silver ore in its time, the tin ore in its time, and now that can happen with lithium and the other minerals.

A.S.: So you think that the extraction of Lithium can get another Potosí?

E.R.: I am very afraid that what happened before could happen again, that we will be filled with foreign companies that are going to give us a tax, but they are going to take the lion's share away. I was allowed to participate several times in conferences about mining - I am not a professional, I am simply curious. In the conference I took two examples: one of the largest mining companies in Bolivia is owned by Sumitomo, the Japanese company ⁵, which here is called San Cristóbal. The others are nationalized by the Mining Corporation of Bolivia. I showed them, with the data published, officially by the National Institute of Statistics that in the year 2016 the state company, paid taxes of 304 million Bolivians to the general treasury of the nation, for all its companies: Huanuni, Colquiri and Corocoro. But the largest company, which is San Cristóbal, paid 124 million bolivianos in the same time. If there were a law that tells Sumitomo that it has to double the tax, it would reach 240, the state company would continue to tax more. But will production be the same? No! Every day San Cristóbal moves 50,000 tons of earth, 50,000 tons. Huanuni extracts 1,000, Colquiri, 1,200, and Corocoro, 300. Make it three thousand, but against 50,000? And what is the issue? Will San Cristóbal be hiding money? No. They don't cheat a penny, nor mock the law. No. The problem is that the company that exports minerals must pay tax on the net value of the sale, not on the gross.

A.S.: How do you think that the coup will influence the Lithium production?

E.R.: I spoke with Engineer Echazú, who was the Vice-Minister of Energy. Echazú is the one who designs the entire plant. In short, he was a manager for a long time. He is no longer there. I told him: "The contract with Germany is being broken, what are you going to do?" And he said: "I think it is serious what is happening. Unfortunately, the government has decided that way ... what worries me is what Bolivia is going to do now, because we have committed 500 million

dollars in a firm contract. And I said to him: "what does 'firm contract' mean?" And he said to me: "we have signed so that the technology etc. comes and both partners lend us the money from a financier. Whatever we have, we're going to put in, but we're going to borrow 500 million from the funder, and that's a firm contract. Bolivia is going to have to pay."

A.S.: Without receiving anything, just to indemnify.

E.R.: Yes. And he said: "unfortunately this money is going to have to come out of the international reserves that the central bank has", and the decrease of these reserves is going to cause an imbalance in all the other economic indicators. So he said, "We're going to be screwed. I do not agree with that, we have broken the best business that Bolivia was doing," he told me.

M.J.H.: And who broke it?

E.R.: They made Evo sign that it is annulled. He signed the decree on November 5th, and on the 8th, 9th, 10th we had the coup, 9th, 10th.

M.J.H.: But how did they manage to do that on November 5? I work in Plaza Murillo, in the museum, I was there in the middle of everything, how did they manage that in this turbulent time?

E.R.: Potosi was on strike in these days. Evo wanted to put out all those fires, believing that with that Potosi would no longer be in trouble. I still do not understand how that strike was going to manage to remove the most important contract of the Bolivian economy. It is inexplicable to me.

M.J.H.: For me too.

A.S.: For the Germans, this contract would have been also important. I wonder why in those days of acute crisis, the Germans didn't say anything about protecting the Bolivian government. The day that Evo unwrapped the contract with Germany, Tesla's shares went up. A week later, Tesla announced that it was going to open a battery factory in Germany for the German automobile industry.

E.R.: For me it's also a big question that there are forces here that don't want us to defend those resources.

A.C.: In Germany, the official public opinion in the media and in the press is the narrative that there was no coup here.

E.R.: Of course. The problem is that now the coups are not like the ones before, they are coups of other characteristics. There are coups with sugar. Coups are not always the same, there are bloody ones, but also those ones like the coup in Brasilia, the coup against the government of Dilma Russef.

M.J.H.: I lived in Brazil at that time, it is not a coincidence that the three countries with the most resources have experienced blows. Bolivia with lithium, Brazil with all that is fresh water and wood, and well, Venezuela with oil, where they are continually trying to strike that blow, but they are not succeeding in breaking the resistance on the part of the government. All these coups are another type than in the decades before. What prevails is the image in the international press that they are democratic processes. In Brazil it was said that it was a democratic process. I remember when, still under Michel Temer, who was the one who carried out the coup against Dilma Russef, I was living in Rio de Janeiro, and the tanks were standing on Copacabana beach. And that was still in a supposedly democratic process.

E.R.: I was lucky enough to have access to some American documents. Not on this topic, but on the previous one. There, a description of the American domination strategy, step by step and

year by year, in which they inscribed their strategy: from the form of the sanitary belt, the cold war, the national security doctrine and spoke of the last phase, the doctrine of low intensity conflicts, which occurred in this last period. In my opinion, the form of implementation of this strategy after the last step failed - because there was a trail of anti-American events, not only in Latin America like Brazil, Argentina, Bolivia, Ecuador, Venezuela, even Chile. So now there are a number of strategists, American, mainly military, who incorporate lawfare as the most suitable modality for this moment. The legal war. According to them, they sum it up in one word. They say "it is the cheapest thing at this moment to change the political situation in the countries". They don't have to take out tanks, or guns, or anything. They say "they stand on a tripod," and the tripod is the judiciary - judges and tax officials - the press, and a group representing civil society. In Bolivia, I am told that these are the pititas and the motorcyclers ⁶. So, in this period I think that's what's going on. I don't think it will be resolved in an election.

M.J.H.: I also think that this is going to be long, it's going to be many years.

A.C.: As a last question, we wanted to ask you, about what happened after the coup. The hierarchical positions in COMIBOL were also changed, including your person.

E.R.: Yes, everyone. I am here by miracle. Do you believe in miracles?

A.C.: There were protests after you resigned?

E.R.: I was the first retired person of COMIBOL. They didn't send me the memo with the messenger, nor with the secretary. Some managers of COMIBOL personally brought it to me. And of course, I am flattered, they told me that they recognize everything I have done, and they told me "You are old enough to leave COMIBOL and this is your retirement memo. We ask you to come by the post box and pick up your benefits," and I said "okay, but I'm going to respond in writing to your memo." I sent a letter to the president and I told him that I agree with the withdrawal, but that *he* has to withdraw me, "You have to withdraw me because if not, you are not fulfilling your obligation, and I would be ashamed if you do not withdraw me." And so I went out of the archive. I don't go on the Internet, my cell phone is one of the oldest. So I was noticing nothing. Later here when I returned, the workers received me very well. They told me "Don Edgar, you have overshadowed everyone at this moment, because the whole planet has protested against your retirement, even the opposition like Roberto Brockmann, Carlos Mesa, have said "he is from the left, but in these cases of culture, it should not be politicized." So while I was making arrangements to get paid, I got a call. It was the vice-minister of communications, and he told me "Don Edgar, there has just been a press conference in the palace, and the president has announced that you should be reinstated". I told him "thank you, I was doing my paperwork here at the Comptroller's Office", "No, no, at this moment, you should go to the Ministry of Mines, because the president has ordered the minister to wait for you." I went to the Ministry, and in the Ministry they didn't make me wait a minute. I arrived, I said to the secretary "the vice minister sent me, he told me to put myself at the disposal of the minister of mines." "He is waiting for you, come in". I passed by and he said "Mr. Ramirez, we have called you, you are reincorporated as of this afternoon". I told him, "but first I'll have to go to the president of COMIBOL", and I went at that moment to look for the president. He had been ordered to receive me, and he told me "Mr. Ramirez, I have brought you the memo canceling the other memo". But, that doesn't mean that I am here in peace. This thing the police did at the entrance with you, making you leave your badge, etc., is strange. That never happens.

A.C.: Is it new, that visitors have to leave their passport at the entrance?

E.R.: Yes, yes. Because when visitors come with special purposes, it is enough for me to say "they are gentlemen of such a place, let them pass", but this time they made you leave their passport, and at this moment they already know in the ministry in La Paz that you have come. They are going to ask me and I am going to say "I have been interviewed about the problems of the archive". Even I have been ordered to sign at the entrance, to be fingerprinted. In addition,

they have made me put my face, so that I register. I have told them "he who does nothing, fears nothing". In that letter to the ministry I wrote "this is the fifth time they have removed me because of my way of thinking". What they don't know is that I am a survivor of the Condor Plan. I have been exchanged with Argentine prisoners, I have been handed over to Pinochet on June 21, 1987. I have been in the islands for two years.⁷ The head of the Communist Party, Luis Corbalán, was 300 km. further north than me. I was further south. Then, Queen Juliana made the decision to adopt me. But also, because she knew that I was coming out as an outcast from the Condor Plan. So they made a campaign there to give me a house in Groningen, they gave me an apartment in property, but my dream was to return to Bolivia. So I came back here clandestinely, leaving the house to some friends, and I came to plot. That's the figure. So these things don't hurt me, they're like pinches.

Footnotes

1 The History of the Archive is divided into three stages: The first stage covers the period from 1952 to 1970. With the promulgation of the Law of Nationalization of Mines, the expropriation of the archive documents of the nationalized companies was ordered, which implied the organization of this documentary heritage; ... The second stage from 1971 to 1986. During this period it was decided to improve the archive materials, equipment and infrastructure, however, in spite of this, in the 80's the documentation was neglected and abandoned in the warehouses located in the city of El Alto. ... In January 2002 COMIBOL designated the personnel responsible for the reorganization of the Archive; then on May 14, 2004 by Supreme Decree No. 27490 the Historical Archive of National Mining was created in the city of El Alto on the basis of the old historical documentation of the former mining companies of Simon I. Patiño, Mauricio Hochschild and Carlos V. Aramayo and the Bolivian Mining Corporation (COMIBOL)
http://www.comibol.gob.bo/archivo/sistema_de_archivo_comibol

2 The General Archive of Simancas (also known by its acronym, AGS) ... was founded in 1540, making this the first official archive of the Crown of Castille. The chronological evolution of the institution has been influenced by the history of the Crown of Castille. ... Currently, the AGS is a cultural institution funded by the Ministry of Culture of Spain dedicated to conservation, cataloging and research..
https://en.wikipedia.org/wiki/Archivo_General_de_Simancas

3 We are the dominant land holder in AN exciting NEW Nevada SEDIMENTARY lithium project American Lithium Corp. ... American Lithium currently holds a significant land position within 3-4 hours drive of the Tesla Gigafactory consisting of over 4,000 acres at our TLC project near Tonopah, NV, one of the most promising and underdeveloped lithium sedimentary basins in North America today. Our recent drill program produced core samples up to 2,285 ppm lithium with numerous samples over 1,000 ppm lithium, and near surface sampling has shown as high as 1,690 ppm of lithium and an average 760 ppm lithium to-date. ... Initial production tests have shown the regional mineralization can result in 90% extraction in minutes instead of days or months as compared to traditional lithium extraction techniques.
<https://www.americanlithiumcorp.com/>

July 10, 2020

American Lithium (TSXV: LI) announced Friday it will buy back 1.5% of the existing gross overriding royalty pertaining to its wholly owned TLC lithium claystone property from Nevada Alaska Mining, an arm's length party. The TLC project, located approximately midway between Las Vegas and Reno near the town of Tonopah, Nevada, is a new lithium claystone discovery within in the same basinal environment as Albemarle's Silver Peak lithium mine. ...
<https://www.mining.com/american-lithium-buys-back-royalty-on-tlc-project-stock-soars/>
July 10, 2020

VANCOUVER, July 27, 2020 - [American Lithium Corp.](#) ... a leading lithium exploration and development operator is pleased to announce the signing of a letter of intent to acquire a 100% interest in certain privately held lands and the accompanying 1,176 acre-feet of water rights ... The acquisition of the water rights will allow American Lithium to continue advancing its flagship TLC project, near Tonopah, Nevada, by guaranteeing a supply of water for any planned future development. The water rights come from a 326-acre farm whose water rights are part of the same hydrographic basin as the TLC Project, Basin 137-a, or 'Big Smoky Valley - Tonopah Flat'. The purchase of the farm is a critical step in securing the required makeup water for the innovative patent-pending lithium recovery process for TLC's unique lithium bearing claystones.

<https://www.goldseiten.de/artikel/458643--American-Lithium-to-Secure-Water-Rights-for-Continued-Development-of-TLC-Lithium-Project-Nevada.html>

4 Plundering of DR Congo natural resources: Final report of the Panel of Experts (S/2002/1146)
<https://reliefweb.int/report/burundi/plundering-dr-congo-natural-resources-final-report-panel-experts-s20021146>

5 The San Cristobal mine in Lipez, Potosí Department, Bolivia is an open-pit silver, lead and zinc mine near the town of San Cristóbal, Potosí. The mine, operated by Sumitomo Corporation, produces approximately 1,300 metric tons of zinc-silver concentrate and 300 tons of lead-silver concentrate per day, as of August 2010, by processing 40,000 to 50,000 tons of rock. It is one of Bolivia's largest mining facilities and, according to Sumitomo, the world's sixth-largest producer of zinc and third-largest producer of silver. ... The mine has been in various stages of development since the early 1980s but only recently came into full operation.

The San Cristobal mine faces some controversy with the Bolivian government due to Bolivian President Evo Morales's desire to nationalize, at least in all but name, the mining industry in Bolivia. ... initially the nationalization took shape in the form of increased taxes for profits in this industry - from 50% to 83%. There has been great fear that next would be the mining industry. However, on May 1, 2007 President Morales signed Presidential Decree 29117 that assured all mining concessions existing at the time of the Decree will be respected and will remain in effect.

[https://en.wikipedia.org/wiki/San_Crist%C3%B3bal_mine_\(Bolivia\)](https://en.wikipedia.org/wiki/San_Crist%C3%B3bal_mine_(Bolivia))

6 "Time and time again, we read in the newspapers in La Paz that the youth rose up in November. It has two faces: the kind one of the Pititas, who built street barricades with thin threads, cuddly toys and nice songs, and the groups that during this time beat up the indigenous, raided government agencies and drove MAS politicians from their homes." Letter from La Paz, Brochure 2/1

7 Dawson Island ... is an island in the Strait of Magellan ... After the 1973 Chilean coup d'état, the military dictatorship of Augusto Pinochet used the island to house political prisoners suspected of being communist activists, including government ministers and close friends of the deposed President Salvador Allende, ... In addition, according to an International Red Cross report in 1974 and the Report of the Chilean National Commission on Truth and Reconciliation (Rettig report) some 99 political detainees were held here who were sentenced to forced labor. Others have estimated that as many as 400 prisoners were held at the two camps. Members of the International Red Cross, BBC, and Brazilian press corps were permitted to visit the camps.

https://en.wikipedia.org/wiki/Dawson_Island

Translated with www.DeepL.com/Translator (free version)

Villa Imperial de Potosí y Cerro Rico con 21 Lagunas, ca 1755 - 1757 

We wrote about this painting at the Museum of Defense in Toledo in chapter 1 / brochure 7 to compare it with the Vista de Potosí of Berrio. "The painting is concentrated on the water reservoirs than on the town. Certainly it was done as a strategical mapping of the most vulnerable points to defend in case of siege or to destroy in case of a conquer. The image suggests to think about the ponds as the energy source to drive the mills, but we can think about water as a rare good in the Andes, about the struggles for water in Cochabamba in 2000, in El Alto in 2004 and the struggles to come / the business opportunities to come facing the disappearance of water with the disappearance of the glaciers..." We concluded then that the lakes were time holes that could lead us to Lithium Sources of the Salar de Uyuni.



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Chronology of the November 10th coup seen from the lithium perspective

1. On October 7, 2019, indefinite strike. The COMCIPO (Comité Cívico Potosinista) decides to initiate an indefinite strike on the issue of lithium. The annulment of the DS (Supreme Decree) 3738 was one of the demands of this institution. This decree regulated the agreement between YLB (the stateowned enterprise Yacimiento de Litio Boliviano), and the German company ACISA.
2. On November 3, 2019, Decree 3738 was abrogated. In the midst of growing pressure from the Civic Committee of Santa Cruz, which began to coordinate actions with COMCIPO, the government of Evo Morales abrogated DS 3738. Possibly it did so in order to dialogue and thus break the union of the two civic committees. COMCIPO did not dialogue.
3. On 10 November 2019, Evo and Linera resigned. Around 5:30 pm they resigned their positions, an hour later a meeting of the then opposition politicians was held. In that meeting, Añez, the current president, is discussed. Two days later, Ms. Añez takes office. A few days before November 10, COMCIPO sent fleets full of cooperative members and others to the city of La Paz. No one spoke of lithium, but everyone spoke of electoral fraud.
4. On July 25, 2020 Elon Musk speaks of "we will strike". They asked him, "Do you know what was not the best thing for the people? That the United States government organize a coup d'etat against Evo Morales in Bolivia so that you can get the lithium there" The answer: "We will coup whoever we want! Deal with it", "We will coup whoever we want! Suck it up," according to La Razon.

COUP D'ÉTAT IN BOLIVIA OVER LITHIUM?

"the fish falls through the mouth"

German Muruchi Poma/ 27.07.2020

The department of Potosi was left empty-handed.

Both the demand for the repeal and the political pressure achieved their goal. However, the Potosina claim of economic benefits for the department remained zero to the quotient. They wanted more royalties for Potosi. One of YLB's managers who was an advisor to COMCIPO, when asked about the royalties, responded that "this issue will be addressed within a law on evaporative resources, which is expected to be drafted in the coming months. After he had to resign, Potosi was left empty-handed.

COMCIPO loses golden opportunity.

The most curious thing about the COMCIPO case is that it loses the golden opportunity to improve not only the agreement with ACISA, the German company, but also the entire industrial policy of the government's lithium. They had achieved the repeal of decree 3738. It was time to improve fundamental points of that agreement, such as the royalties, the 70-year term, the actual fulfillment of the 51% state participation in the mixed company YLB-ACISA, actual technology transfer, and others. I say golden opportunity because the constitutionally elected government with a parliamentary majority had no other alternative and was possibly willing to give in. But COMCIPO didn't. Even after the coup and having their trusted man as manager of YLB they didn't propose an alternative or an improvement of decree 3738, why? Did they have a plan B hidden up their sleeves, maybe with Tesla? Well, neither does the argument that ACISA is a small, insignificant company have legs. Already on November 8, 2019, it was known that large German industrial companies, including Volkswagen and Varta, were behind this German company.

Tying up ends and Tesla appears again

Bolivian privatization expert Doria Medina, now a vice-presidential candidate with Añez, who seems to have quite a lot of influence in the government, proposed on February 22, 2020 to form a Brazilian-Bolivian battery production project. He did so just as Bolsonaro said he would ask Tesla's manufacturer to install a factory in Brazil. But why would the US and Tesla be so interested in Bolivian lithium?

Because US imperialism has economic interests, well that's blah blah and talking like that is worse than trusting our intuition. It is necessary to have concrete arguments.

When I was already back in Germany from my trip from Bolivia, I read the following interesting article in the Deutsche Wirtschaftsnachrichten on December 6, 2019: "Lithium reserves in Bolivia: Morales' fall is a bitter setback for China". With astonishment he read: "According to the report, the Bolivian government had partnered with the Chinese group TBEA Baocheng of Xinjiang through its state-owned company Yacimientos de Litio at the end of September to build new lithium carbonate processing plants in the salt areas of Pastos Grandes and Coipasa and to be built in the cities of Potosi, Oruro and Tonga. The total investment should be \$2.4 billion. The report mentioned in the quote refers to information from the Dialog website, a US military magazine. It is known that this was a preliminary agreement to form a joint venture similar to the one with the German company. There were also plans to produce potassium sulfate, lithium hydroxide, metallic lithium, bromine and sodium bromide.

The Morales government acted under the principle of Bolivian sovereignty. Looking after Bolivia's interests, it was signing agreements with two industrial powers of the world, with China and Germany. In those countries are the first competitors of Tesla, VW of Germany and Byd in China, among others. Both Germany and China were accessing the largest reserve in the world, estimated at 21 million tons of lithium. USA and Tesla were out. They couldn't rest assured. They had to do something. Possibly from here tens of years will be able to demonstrate with internal documents what they did for the coup d'état in Bolivia to be successful.

TO WHOM WILL YOU SELL OR GIVE AWAY BOLIVIAN LITHIUM?

German Muruchi Poma/ 21-05-2020

There is no doubt that the de facto government of Áñez is going down the road of privatization of state enterprises and mining concessions. So it will only be a matter of time to whom it will give away the Bolivian lithium. In the government of Evo Morales, the laws and the Bolivian constitution were respected. Under this constitutional mantle there was a plan to form two mixed companies: with the German (ACISA) and the Chinese (Xinjiang TBEA Group Company). The two foreign companies were to participate with 49% and Bolivia with 51%. With the de facto government, is the delivery of the lithium to the North American company Tesla coming?

Delivery of lithium to Tesla under a Brazilian-Bolivian project

When well-known neoliberal politicians, such as Doria Medina, candidate for the vice presidency of the de facto government party, talk about state enterprises, it is not that they are referring to keeping them less powerful, but rather to administering them statewide for private interests. The Bolivian expert in privatizations, who seems to have quite a lot of influence in the government of Áñez, proposed on February 22, 2020 to form a Brazilian-Bolivian project for the production of batteries, he did it just when Bolsonaro said he would ask Tesla's manufacturer to install a factory in Brazil.

First Brazil, then the rest

A Brazilian-Bolivian project? Why do you put first the Brazilian and then the Bolivian? Even the order of the words in his written sentence gives away Medina's servile thinking. They definitely do not have the Bolivian self-esteem. So it is unthinkable for him to talk about a Bolivian project. The Bolivian elite with a colonized mind does not think of promoting the national project of lithium industrialization. From raw materials to finished products, everything on Bolivian soil. Whether we like it or not, in the Salar de Uyuni and La Palca in the city of Potosi there is the following gratifying reality built during the 13 years of Evo Morales' government: a potassium plant in operation, but now paralyzed, another under construction of lithium carbonate with the potential to produce by the year 2021. Four pilot plants (for potassium chloride, batteries, cathode material and lithium carbonate), all four with production and income generating capacity, although in reduced quantities.

All in Brazil

Will that candidate's project be born on Bolivian soil? He did not say where that proposal should be implemented, which was surely discussed with Bolsonaro. From the words of a neoliberal we cannot conclude even in our dreams that his proposal is for Bolivian soil. Both Bolsonaro and his settler must be thinking of a project to be implemented on Brazilian soil. Already the urea plant, located in the Cochabamba tropics, the Bolivian government wanted to move it to the Brazilian border.

All privatization needs to be managed by the state

Can anyone believe the privatizer that his project is state-owned or at least has state participation? Believing him would really be like waiting for pears from the oven. The privatizer is very well informed that the two plants and the four pilot plants are under the tuition of the state-owned YLB. In La Palca de Potosí there is a state-owned pilot project for the production of ion batteries. Medina also knows that it cannot destroy them overnight. From experience, he knows that the people of Potosi, who are originally from the countryside and from the city, will not allow this. Those are the reasons why he covers his intentions with the words "state-run". That's why he refrained from saying that his project is private, but simply that "he would not lose the faculty to administer this wealth statewide". All privatization needs to be state-managed, he knows better than anyone else because he was once the minister of privatization.

Racist and regionalist privatization

Not every private enterprise is bad, when it is governed by national laws, social balance and the creation of jobs. In Bolivia it is a problem, because there are regionalist and racist privatizations.

It is regionalist, because the State was used and is managed to maintain and promote only the eastern agro-industry. Camacho, who led the coup at the head of the Pro Santa Cruz Civic Committee, owed the State. He assaulted the government to have his debt forgiven. The private initiatives of the west, Bolivian highlands, received little or nothing from the colonial and neo-colonial State. It is racist because that State always benefited the white eastern oligarchy.

Tesla in Brazil?

Will Tesla be willing to install a factory in Brazil? In the long term it has to, but in the short term it is unlikely. At the moment it has a lot of stone to bite with his project in Germany. In Grünheide, near Berlin, it plans to build an electric car plant. Watch out, electric cars and not a battery factory. Originally it was said that Tesla would produce 500,000 electric cars by 2021. Lately they talked only about the start of production. Tesla's application to build the factory is said to have had 360 observations. German laws are rigid and any star has to abide by them, even Trump himself experienced this in his own flesh. So Tesla must be very busy with its third Gigafactory in Shanghai, China, and with his Grünheide project (the fourth factory), as the latter is the key to his exquisite entry into the German and European market. Here it has to assert itself against world giants like VW, Mercedes and BMW. Brazil will wait, if Bolsonaro managed to talk to Elon Musk.

Is Tesla the right consortium for Bolivia's interests?

Let's see what Tesla did both in the U.S. and in China to provide the lithium-ion batteries for the electric cars it produces. In the north of Abya Yala it worked with Panasonic, Japan's leading company. In China, it works with CATL China and LG-Chem South Korea. They are leading companies with a long tradition, i.e. with a lot of experience, in the production of lithium-ion batteries. In Germany, we are sure that you will turn to these leading international companies. CATL is building its plant in Thuringia and LG-Chem already has one in Poland. And in Brazil, in three years' time, if there is a decision to set up a factory there? Can anyone at least guess which companies Tesla will turn to for lithium-ion batteries? Any expert will say that it will be the same consortiums. This does not rule out the idea that Tesla will do everything possible to secure by any means possible, including bribing its devotees, the lifeblood of its survival: Bolivia's lithium.

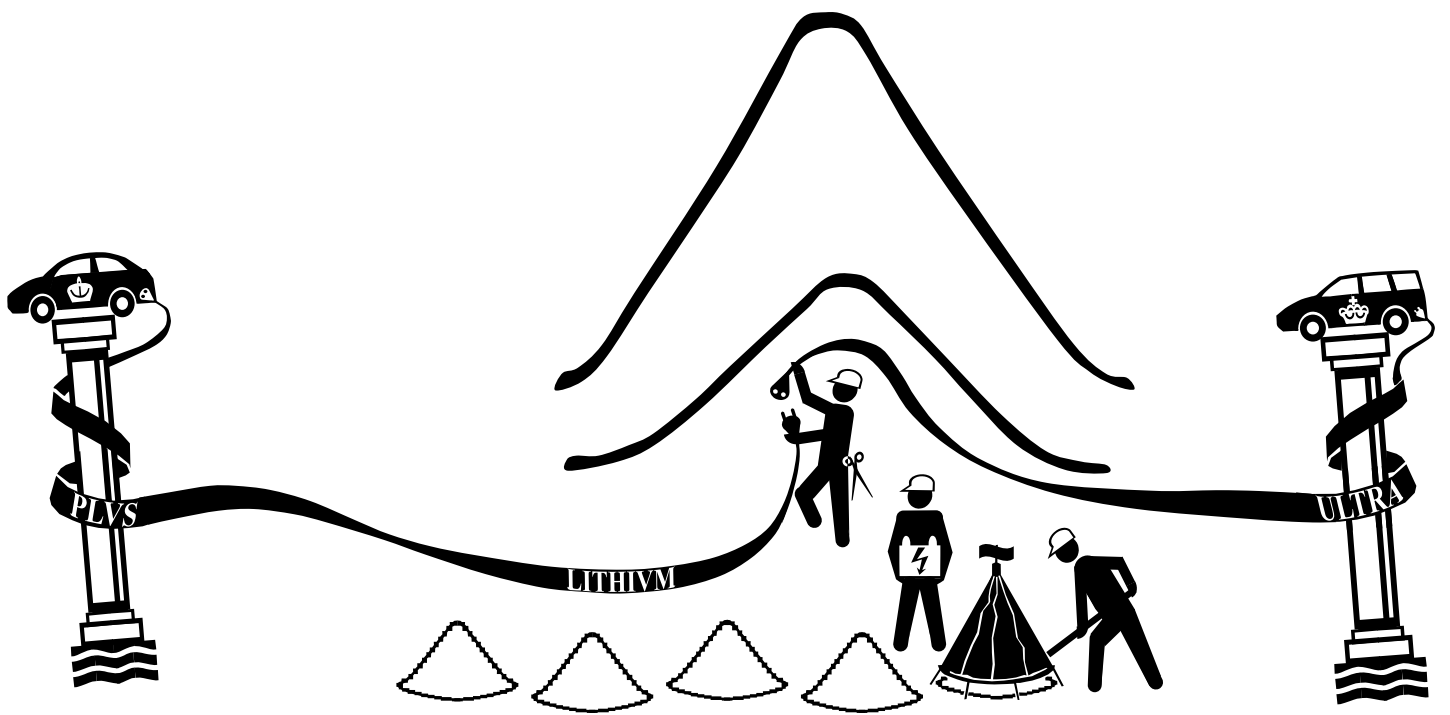
Bolivia must reactivate its state and semi-state project of industrialization of lithium and other salts. We need highly qualified Bolivian personnel and a Plurinational State that watches over the interests of all, not just the white people.

<http://www.tanitani.de/index.php?id=litio-tesla-y-bolivia>

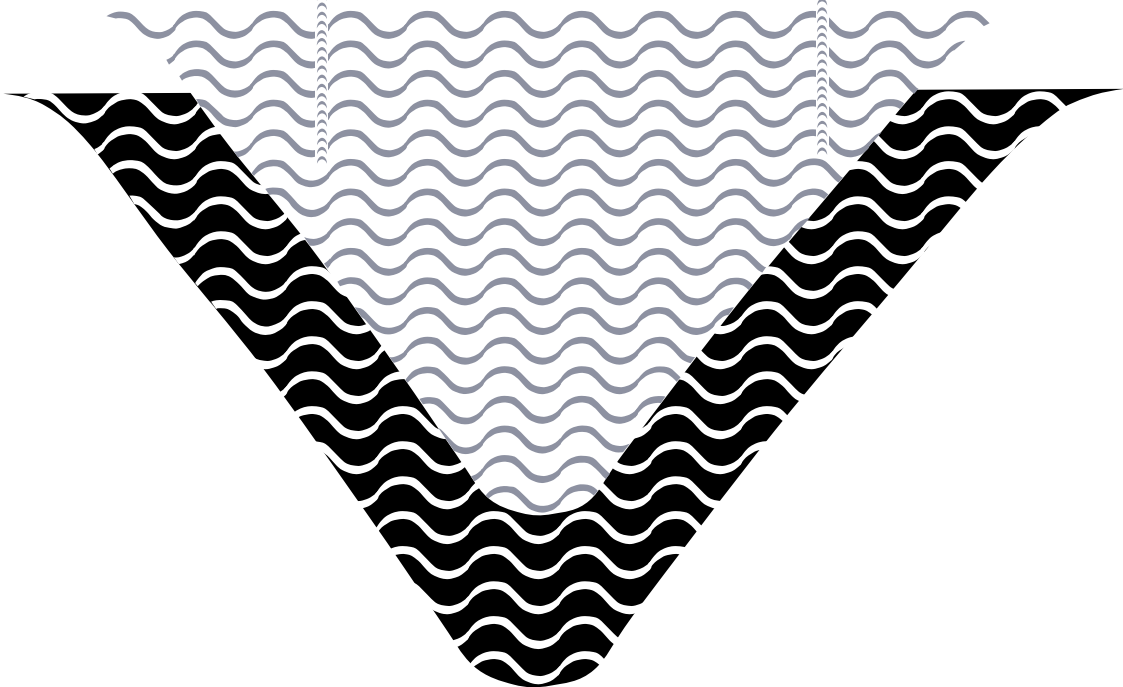
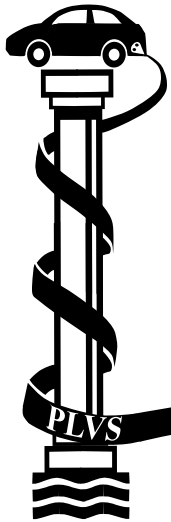
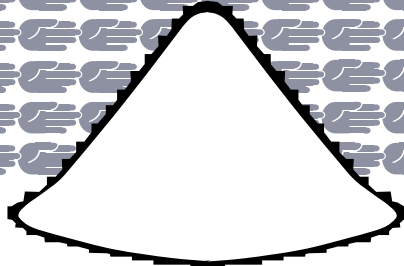
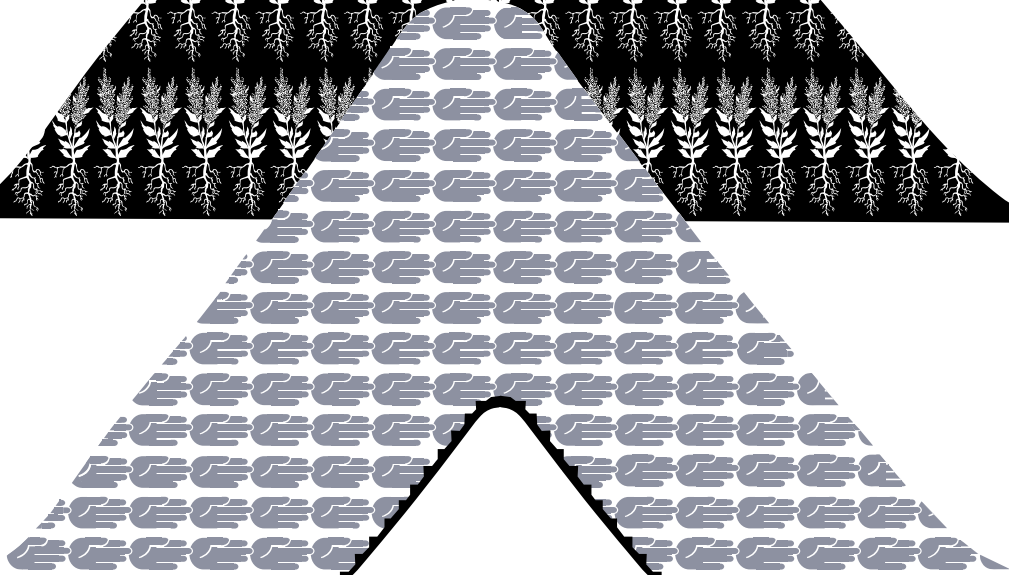
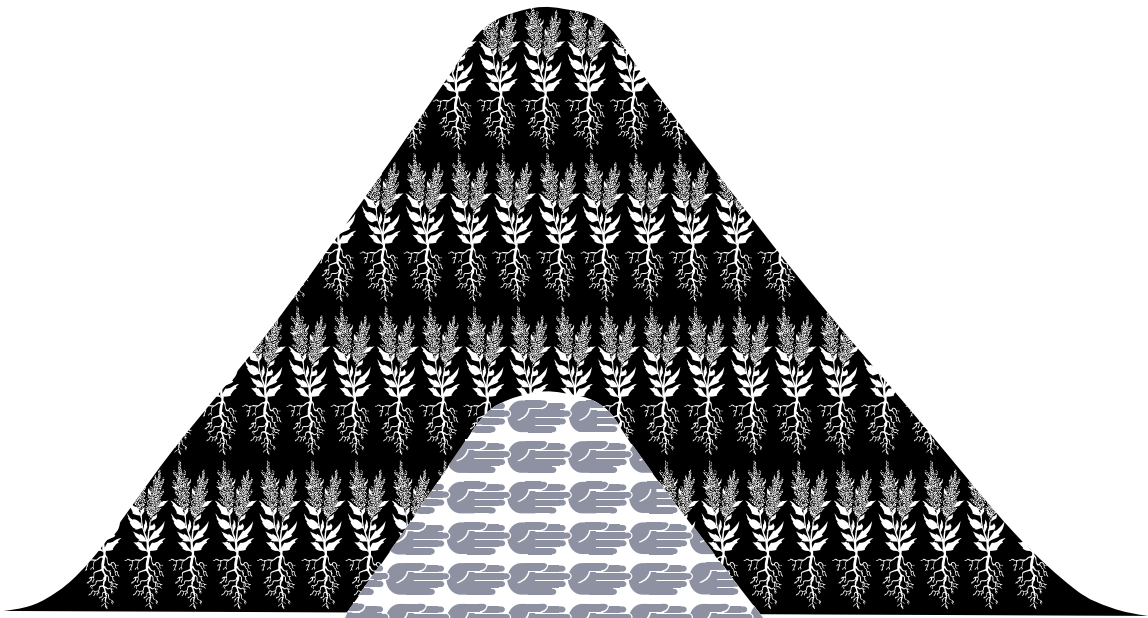
Translated with www.DeepL.com/Translator (free version)



For the exhibition in La Paz 2011 we converted the logo of the project and related it to the new lithium production in Bolivia. We read about a joint venture between the mining academies in Freiberg and in Potosí. We were so delighted by the historical depth of this connection that we forgot that this collaboration is a bubble like our project and did not correspond to any real economic pressure



P r i n c i p i o P o t o s í





But the quinoa can still live in 500, 1000 years



Potosí supplied silver for 500 years



Lithium entails in 50 or 100 years a dried-up salt lake and devastated land



- Joint Venture between Bergakademie Freiberg and Tomas Frías University Potosí, 2007 - 2009



- Each community 300 cones



- Estimated hunger of the plus / ultra world for electric cars, 600 million, done 2012



Brine: 5.4 to 9 million tons of lithium
less than 0.1 % per liter / 70% of the world reserves



Groundwater: between 90 to 1000 years, non-renewable

Excerpts from an interview with Robert Sieland, on the lithium deposits in the Salar de Uyuni

by Andrea Lammers and German Muruchi Poma for Quetzal Leipzig, May 2012 /

Part 1

The largest lithium deposit in the world is believed to be in the salt lake Salar de Uyuni in Bolivia. The state mining company has so far preferred an exclusively industrial approach to the future mining of this raw material, which is essential for battery production. Scientists from the Technical University of Freiberg, in cooperation with the University Tomás Frías in Potosí, have developed an alternative that could possibly involve the inhabitants of the region, who up to now have lived from salt mining and agriculture. On April 30, 2012, QUETZAL spoke with Robert Sieland, member of the Freiberg research team, about some "basics" of lithium mining and the special features of the Salar de Uyuni.

Quetzal: With regard to the world's lithium deposits, there is an incredible juggling of numbers and different categories and terms such as "reserves" etc. Sometimes 70 percent in Bolivia - and there mainly in the brine of the Salar de Uyuni - and sometimes only about 20 percent of the world's lithium is suspected. Is there a reasonably serious, scientific estimate that is not guided by interests? ...

Sieland: The figures are very different: The USGS (US Geological Survey), which I would say is still the most serious source, says: 5.4 to 9 million tons. Until 2009 it stated 5.4 tons every year in its report, and now it has increased to 9 million tons. The Bolivian government itself claims that the Salar de Uyuni has a total stockpile of 350 million tons of lithium and at the same time says that only 40 percent of it is degradable. But that would still be 140 million tons of lithium. That in itself is well above the total worldwide estimates. So one should be very careful. But even if it were "only" 9 of a total of 13 million tons, that is still a lot: just 70 percent of the world's reserves.

...

A French research group had made very detailed investigations at the end of the seventies, but only of the uppermost salt crust. This has a maximum thickness of up to eleven meters. So they made estimates for this uppermost salt layer and in their report they stated 9 million tons. And that is, I think, the figure that the USGS still uses today. Since then, however, there have been two deeper drillings, in 1986 and 1999, to depths of 120 and 220 meters respectively. It has been found that the salar does not consist of only one salt layer, but of many, which, however, are repeatedly separated by layers of clay. This has to do with the origin of the salar. The interesting thing is that the 220-meter drilling ended in a salt layer. This means that the bedrock had not yet been reached, the basin could be even deeper. So the Bolivian government probably assumed a depth of 220 meters, of which it says "there is still salt, so lithium may be present", and assumed the same concentration and porosity as on the surface for its calculations. This is probably how they arrived at this huge amount.

Quetzal: So we have to say goodbye to the idea of a salt "lake", with a crust on top and water below, and think more of a Swiss cheese?

Sieland: That anyway. We have a solid layer of salt, but the salt contains pores, small cavities and cracks. And in these cavities is the salt solution. And the crux of all these estimates is the porosity of the salt layer. There is no serious information about this at all. The only one comes from the French research team mentioned above. At that time, they estimated a porosity of 30 to 40 percent using methods that were not quite comprehensible. This is a very high value, and they extrapolated it to the entire salt crust. On the other hand, I suspect that the porosity decreases with depth, because more and more layers of salt lie on top of each other and compress everything. No such large cavities can be preserved. This means that even if we have deep salt layers that were not known in the past, it is possible that the porosity is much lower than was assumed at the time and

therefore the total amount of lithium in the brine cannot be extrapolated in this way. Further investigations would be urgently needed in this case.
(End of part 1)

Part 2

In the first part of the interview we talked to Robert Sieland about the lithium resources in the Salar de Uyuni in Bolivia. The second part deals with the different technical processes of lithium mining, the so-called "cone project" of the TU Freiberg and the possible consequences of large-scale lithium mining for the environment.

Quetzal: How is lithium extracted from the salt solution?

Sieland: Lithium is present in the salt solution in comparatively high concentrations, but to extract it technically, the contents are very, very low, sometimes even below one percent. You would have to invest an enormous amount of energy in a treatment process to extract the lithium. In order to make the extraction reasonably economical, this salt solution must therefore first be concentrated. To do this, one simply uses the natural conditions, i.e. sun and wind, to evaporate the water and enrich the lithium, which remains dissolved in the water until the end. A second advantage is that by this evaporation you can also separate certain salts that you do not want to have, especially sodium chloride or potassium chloride. These precipitate earlier than solids and can thus be separated.

Quetzal: As far as we know, there are different methods to concentrate the lithium. How does that work?

Sieland: The Atacama Desert currently has the world's largest production of lithium (about 70 percent). There, evaporation takes place via huge evaporation basins. This means that basins several square kilometers in size are created, the salt solution is pumped in and allowed to evaporate over a very long period of time due to the very intensive natural sunlight. Once a certain concentration is reached, the solution can be drawn off and prepared in the next technical step. The Bolivian government is also trying to work on the Salar de Uyuni with such huge evaporation basins. But the basic problem is that we have completely different climatic conditions there than in the Atacama Desert. This is the driest region on earth with less than 10 liters of rainfall per square meter per year. In the Salar de Uyuni, on the other hand, we have a rainy season from December to March, and there is annual precipitation of about 150 liters per square meter. This is still very little compared to Germany, for example, where the average rainfall is 800 liters per square meter, but during the rainy season it is enough to make evaporation impossible.

Quetzal: The Technical University Bergakademie Freiberg has gone a different way. You are working on the so-called "cone project". Such a cone looks a bit like a Bolivian "Chulu" cap...

Sieland: TU Freiberg has had very close contacts with the University of Potosí in Bolivia for forty years, and on the basis of these good, long-standing relationships, the cooperation partners in Bolivia have just suggested that we could work together on a project that deals with this huge lithium deposit in the Salar de Uyuni. Initial talks were held in 2007 and an agreement was then signed. We considered that we had to do the evaporation faster than is possible in huge basins, and that's when we came up with cone constructions. So the salt solution is pumped up and then flows down the outer skin of the cones. This means that we also have an additional movement and thus the evaporation by sun and wind is much more effective and faster.

Quetzal: Can this difference be measured?

Sieland: With the cones, the salt solution is "ready for harvest" in a few days, up to a maximum of one week. In the case of the basins, this usually takes between eight and twelve months, although the three-month rainy season plus any flooding that may last even longer must be taken into

account. This means that one year may not be enough if the precipitation starts shortly before the end of the evaporation process.

Quetzal: But on the other hand, aren't the cones rather small?

Sieland: The prototypes that we developed were no more than three meters high and were built with very simple materials that are available everywhere on site, i.e. metal rods and plastic tarpaulins or various fabrics. It is also conceivable to build the cones directly out of salt by heaping up piles of salt and stretching a tarpaulin over the surface. In this respect, the costs for such cones are very low. But of course such a small cone is fast, but does not deliver a large quantity. In order to operate the whole thing industrially, you have to set up several hundred of these cones. We once had about 300 cones. The cones, which are still in the development phase, can be used in various sizes and diameters to optimize the process for larger quantities of salt solution.

Quetzal: It also sounds like this, so would the separation of the other salts be easily possible?

Sieland: Exactly. This can be done particularly elegantly with the cones. The salts precipitate on the outer skin in the order in which they can no longer be chemically dissolved in water. Sodium chloride is the first to precipitate, because that is what is most present in the solution. So if I know the concentration of sodium chloride up to which it precipitates, I can interrupt the process briefly and scrape it off and sell it separately as table salt. If I then let this continue, the next thing that precipitates is potassium chloride, magnesium sulfate and other salts. So that I have a temporal separation of the salts and can hey in each case.

Quetzal: If the cones wanted to compete with the Bolivian government's evaporation basins, wouldn't you have to have about 4,000 cones, at least that's what we tried to calculate to get the same amount of lithium carbonate? That would be a forest of cones...

Sieland: That can be.

Quetzal: But the Salar is also very large - about four times as large as the Saarland or half as large as all of Saxony-Anhalt...

Sieland: Yes, ten thousand square kilometers. But you have to take into account that in a "forest of cones" they influence each other, e.g. the humidity increases. This means that the effectiveness of the evaporation would be reduced. One would have to build smaller and smaller groups of cones and place them always a bit apart from each other.

Quetzal: The technology would actually fit in well with a decentralized structure in which the local population, the indigenous comunidades (communities), are involved.

Sieland: That is true. The cones can also be used very mobile everywhere, and when the rainy season begins, they could be dismantled or simply shut down. As soon as it becomes dry, the process could be restarted. In this way, there would only be losses for a short time if the rain came unexpectedly. Another advantage of the cones is that - unlike the large basins - they do not permanently change the landscape.

Quetzal: And how much would a cone cost?

Sieland: Our goal is to keep the manufacturing costs below 200 US dollars. But you can do a lot more by using cheaper fabrics and tarpaulins, depending on what you want. In addition, five cones always need a solar panel for the power supply.

Quetzal: You have done experiments in the community of Tahua. Is it realistic that the comunidades or families manage and operate these cones?

Sieland: Theoretically it would be possible. It would need a little training. You don't need to study, you just need someone who can explain and show the people in an appropriate way. Whether the comunidades really want to implement and do this depends on many basic conditions, not least perhaps also on how people accept and adopt such a new technique.

Quetzal: Have you seen if there is a certain willingness? Or did the people immediately fight back?

Sieland: No, no! They were euphoric and really wanted to participate. Several villages at once wanted to have the cones with them. The problem was that the twenty villagers who came to watch the procedure only came for one day and disappeared the next. We do not know why. We would need locals who could convincingly explain the project. And also ethnologists who are familiar with the structures and centuries-old traditions of these comunidades and are thinking about how to introduce something new. As natural scientists, we are overwhelmed.

Quetzal: Finally, another important topic - the ecological consequences of lithium production, especially water consumption. What do people know about this?

Sieland: The Bolivian state mining company COMIBOL has - based on data from Chile - made an estimate that it will consume about 4,000 cubic meters of fresh water and about 5,000 cubic meters of slightly salty brackish water per day for the industrial production of lithium. To produce these quantities per day, the river water from the Rio Grande - the main tributary - is far from sufficient. This means that a great deal of groundwater must also be extracted. However, isotope studies have shown that the groundwater is very old - between 90 and over a thousand years. This means that what is extracted as groundwater is not formed by today's precipitation, but was formed many hundreds or thousands of years ago. So it is virtually a non-renewable resource. When it is extracted and consumed, this "reservoir" in the underground slowly becomes empty.

This means that the concern of the inhabitants around the salar, what could happen to their vegetable and quinoa cultivation and their llama breeding, is quite justified...

I would already see it that way. With these quantities of extracted groundwater, the water table is lowered. This can cause springs to dry up and damp places to dry up, which means that cultivation of quinoa, for example, is no longer possible. The question is also where the water is extracted and how large the impact is. But also for the cones the question is how much fresh water is needed to wash them clean etc. There is not yet a pilot project that would allow us to estimate this from experience.

part 1:

<http://www.quetzal-leipzig.de/lateinamerika/bolivien/interview-mit-robot-sieland-lithium-salar-de-uyuni-bolivien-t1-19093.html>

part 2:

<http://www.quetzal-leipzig.de/lateinamerika/bolivien/interview-mit-robot-sieland-lithium-salar-de-uyuni-bolivien-t2-19093.html>

At that time Robert Sieland was a graduate geoecologist. He studied at the TU Bergakademie Freiberg from 2003 to 2009 and specialized in hydrogeology and hydrology, as well as ecology. Immediately after his studies he started his doctorate, also in Freiberg, on the topic "Hydraulics and Geochemistry of the Salar de Uyuni". For his research work he visited Bolivia three times between 2009 and 2011. Currently he works at Wismut GmbH in the department of Mine Remediation and Geotechnics as subject manager in hydrogeological modeling. Here he deals with the remediation of uranium legacies in Eastern Germany with special focus on monitoring and modeling of the contaminant release of uranium tailings ponds and waste rock dumps.

Quetzal, Politik und Kultur in Lateinamerikas, Online Magazin, Leipzig

Translated with www.DeepL.com/Translator (free version)

Excerpts from an interview with Germán Muruchi Poma,
Green light for lithium mining in Bolivia
by Sven Schaller and Lisa Krause for Quetzal Leipzig, September 2015 /

Part 2

Quetzal: The TU Freiberg together with the University Tomás Frías in Potosí tried to develop alternative technologies for lithium mining in the Salar de Uyuni. Was this continued? There were certainly efforts to conduct a test in the community of Tahua...

Muruchi Poma: This technology was actually intended to culminate in a pilot plant. It was by no means intended to be a large-scale production facility. The project was not pursued further. A patent has been applied for it in Germany and I believe the Bolivian side has done the same. And it has remained that way.

In 2006, when Evo Morales came to power, they said at the University of Potosí that now was the time to mine lithium. And then we established contact with Jaime Clarus, an engineer who studied in Freiberg and who also worked at the University of Potosí. He then worked out the idea together with Prof. Voigt and created this project. The University of Potosí had contact with Evo Morales. He probably agreed, according to Jaime Clarus, and said: Okay, we'll do it. We will invest the money. I suppose, but I can't prove it, that in the meantime the group around the current leader of GNRE ¹ Ing. Luís Alberto Echazú, has gained influence. (...) My guess is that there was an internal power struggle in which Echazú prevailed. And then the project of the TU Freiberg and the University of Potosí was brought to a standstill.

(...)

I find this project, which was developed by the TU Freiberg and the University of Potosí, very interesting. It seemed possible that cooperatives or families could use this cone technology to extract lithium in an initial phase, which they could then hand over to a state company for further processing. But they stopped the project and this technology. (...) As "Ayni" ² we wanted to get involved in it at the beginning, although this technology was initially suspect to me. But when I started to research more intensively on it, I came to the conclusion that this is actually the technology that should be used in Bolivia, in the Comunidades, even though the TU Freiberg and Potosí may have the patents for this technology. Unfortunately, in Bolivia you have to be a political decision maker to determine something like this.

Quetzal: The cone technology has the advantage that it takes social concerns into account. You have repeatedly emphasized that the indigenous people in the region are only marginally involved in the planning for lithium extraction in the Salar de Uyuni. Has anything changed in the Lange?

Muruchi Poma: I would like to clarify the following: Capitalist colonialism in Bolivia is continued by left colonialism. The original concept of plurinationality, is a great idea that is not being enforced. If one enforces plurinational identity, then one would of course have corresponding power relations, in which the inhabitants of Potosí, for example, would have representatives in parliament and say: Wait, it doesn't work like that. Left-wing colonialism wants to make us believe that we [the indigenous people, author's note] must understand and follow everything that the government decides. The middle class in the cities is still dominant. This is what the left does not see here in Germany. We must gradually eliminate this colonialism, not according to the European idea of one nation, but according to the idea of plurinationality. Only in this way can we move forward. The government of Evo Morales and also the indigenous people have made the mistake of saying that there are 36 nations as cultural nations in Bolivia. They have excluded the mestizos and the white population from the constitution. That was a big mistake. One could have said that there are 36 indigenous nationalities, one white nationality and the mestizos. Then everyone would have had the right to participate in the government. So the white population and the mestizos have developed their strategies to get back into power. Now we have a government again, which actually does not represent the indigenous people, but still represents these oligarchies. In May 2014 the new Mining Act ³ was passed. It stipulates that the Departamentos, like the Departamento de Potosí, and municipalities, like Uyuni, etc., are not allowed to establish their own

state enterprises, nor can they participate in state enterprises. Lithium is a raw material. According to Bolivian law, only a central government agency can establish state-owned enterprises. I think there is no difference between Somitomo Corporation in San Cristóbal, the Japanese company that works in Potosí, and a state enterprise. It is still impossible for local residents to participate. There is also an important point: many indigenous people are still excluded from education, even though Evo Morales is in power. For this reason, there is still an effort to train indigenous specialists. There are, for example, proposals to establish a university or a technical school for lithium in Uyuni. This idea is not accepted because the politicians are pursuing their own political interests.

Quetzal: How have the local indigenous people reacted to the new mine law? Has the Federación Regional Única de Trabajadores Campesinos del Altiplano Sur called for protests again, or are they now trying to wait and see?

Muruchi Poma: In June/August there was a revolt in the department of Potosí. The citizens' movement COMCIPO called for a general strike. They marched from Potosí to La Paz. However, the demands were not only about lithium. Other demands existed primarily in regard to autonomy. At that time they had proposed that the new mining law should be amended, namely to the effect that they, too, should have the option of founding a regional company or taking a stake in state enterprises. Nothing was achieved. This resistance lasted about three weeks, and the Bolivian government did everything possible to ensure that this movement would fail. The only thing that has been achieved is that Evo Morales has lost popularity in Potosí. It is clear that if the MAS were to call for an election today, it would not win in Potosí. (...)

Quetzal: We have now discussed the technological, social and political aspects. But the Salar de Uyuni is also a rare natural phenomenon. Many people fear that the lithium mining will spoil the landscape. And even more serious is the question of water consumption in this region.

Muruchi Poma: That is an important question. I call this policy, which is now being implemented in Bolivia, a **policy of contempt for nature**. Here again, I see no difference between what an international corporation does and what the state-owned companies do. We know, for example, that the water consumption of the Japanese company Sumitomo in San Cristóbal has lowered the water table. There have been many complaints about this. So far the Bolivian government has not reacted. (...)

The second problem is that the water shortage threatens the production of quinoa, around the Salar de Uyuni and the Salar de Coipasa, which is the second largest salt lake. Although quinoa needs little water, we know that the moisture will slowly sink into the ground. So the ecology in the region will change. I think the government has not taken this into account in their planning. And then there is another important aspect, namely the regional supply of local food. Potatoes are cultivated there, Olluco, Oca, and llamas are also bred. These are the foundations for feeding the local population. And if masses of water basins are built now, this will ultimately cause many problems. I have read that about 250 hectares of water basins are being built at the moment. That would be about 250 soccer pitches, and they intend to make thousands of pools. So I think it is important to inform the population about the impacts. At the moment there is no information of the inhabitants about what lithium mining entails.

For the Bolivian government and Bolivia, lithium is particularly important because natural gas production is declining and now the price is also falling. In this situation, the government is endeavoring to further expand lithium mining. In this situation of financial emergency the Bolivian government is pursuing a policy of blindness towards nature and thus also towards the population. It actually forgets what they once said at the beginning. **We want to defend the mother earth. Nothing has remained of the principle of buen vivir.**

Quetzal: What happens now? Will all this be implemented?

Muruchi Poma: The Bolivian government has no choice but to implement its plans to mine lithium. However, we have pointed this out in the brochure mentioned above, and many contacts we have

in Bolivia agree that the Bolivian government should focus on the production of quinoa. One could set up a research plant for this purpose and promote the industrialization of quinoa. Not only in the salar, but also elsewhere. As far as I know, the government has spent perhaps 100 million US dollars for the production of quinoa; for the mining of lithium about 1 billion US dollars is planned. Lithium mining, they say, will yield returns for about 50 or 100 years. But if you think in longer term dimensions: Potosí supplied silver for 500 years. And what has remained? Only holes have remained. If you look at the Salar de Uyuni in 50 or 100 years, you will probably see a dried-up salt lake and devastated land.

It is a relatively short-term actionism to bet on a raw material that is worthwhile at the moment, but which in the end brings nothing. But the quinoa, it can still live in 500 years, 1000 years and bring money and income for the families in Potosí. Since the colonization nobody has remembered these small farmers. They have always lived in subsistence, always only on the minimum subsistence level. In the last ten years the quinoa became popular and for the first time they had more income. Now the danger of water shortage threatens - because of the Lithium decomposition. But the Bolivian government has so far always said: Don't be afraid. There will be no problems with the water etc.

The smallholders are not informed until now. And I hope that we can contribute to the educational work. Above all, I think it is important that the "Ayni" and other non-governmental organizations in Bolivia and in Germany form a kind of alliance to develop studies: on water consumption, on quinoa production, on all the alternatives that exist there. In this way, the quinoa producers can be informed, and perhaps a turnaround in politics will be achieved after all. It is wrong to think that mass mining of lithium is the solution, so that Bolivia will live on lithium alone. We have had the experience with silver, with tin, now with natural gas. Breaking this mentality is incredibly difficult.

<http://www.quetzal-leipzig.de/lateinamerika/bolivien/bolivien-lithium-k-utec-interview2-19093.html>

Footnotes

1 Gerente Nacional de Recursos Evaporíticos
<http://www.gerimexbolivia.com.bo/project/comibol>

2 Ayni ... can refer to either the concept of reciprocity or mutualism among people of the Andean mountain communities or the practice of this concept. As a noun, the law of ayni states that everything in the world is connected, and is the only commandment that rules daily life in many communities like the Q'ero. As a verb, this often refers to the cooperation between the members of a community when one member gives to another, he or she is entitled to receive something back. Well-known practitioners of Ayni include the Quechuas and Aymara, as well as numerous other tribes that live in the Peru, Ecuador, and Bolivia.
<https://en.wikipedia.org/wiki/Ayni>

Since 2011 Dr. Germán Muruchi Poma is chairman of the association "Ayni - Association for Resource Justice", which aims to systematize the information on the raw material lithium and its processing in Bolivia and to sensitize the public for the ecological and social issues in the Bolivian Andes.
<https://www.ressourcenwende.net/akteurinnen/ayni-verein-fuer-ressourcengerechtigkeit-e-v/>

3 The new mining law has also been heavily criticized by grassroots organizations representing farmers, irrigators, and indigenous sectors for privatizing water rights to mining operators, restricting consultation by affected communities, and criminalizing protest activities against mining. Popular organizations like CONAMAQ, the highland indigenous people's federation which has been at odds with Morales over mining—and extractivist policies generally—on indigenous lands, were excluded from the negotiations altogether. While irrigator groups exacted some concessions during the renegotiation, a "social summit" of 800 delegates from civil society groups has denounced the law as unconstitutional, and is demanding a referendum to develop a new, socially responsible mining code.

<https://nacla.org/blog/2014/5/9/conflict-over-new-bolivian-law-highlights-mining-sector-contradictions>

References

For the logo of Principio Potosí we had referred to the painting of the Virgen del Cerro, which is in Museum Casa Moneda in Potosí and has become iconic for the history of Potosí.¹

In the picture, in the middle of the mountain, you can see an Inca dignitary who seems to be arguing with another person. There are two legends of the silver find, which are mixed up here. One tells that the Inca prince Huayna Capac² ordered his men to search for silver. But at the first blow in the mountain there was a booming bang and a loud voice admonished them that the silver was not reserved for them but for others. The other told that Diego de Huallpa had found silver in 1545 while making a fire. Huallpa who "did not acquire any estimation, before that he was very badly looked upon by the Spaniards as a cover-up for that first discovery", ... The legendary Indian chief Chaqui Catari, who fiercely resisted the Spaniards in Potosí, sends them this message: And tell them that the bad man Hualca (Huallpa) must be punished by the great Pachacámac because he has discovered the Potocsi"³

But in the first phase of the exploitation of the silver, indigenous companies dominated. Before the reforms of Toledo the Spanish were dependent on the mining technologies of the indigenes because of their lack of know how.

In the picture, the mountain (the Cerro Rico) in which this legend is depicted is crowned and subjected by heavenly and earthly powers. One does not know whether these powers kneel at the bottom of the picture in front of a globe or a coin. They might be subjected in the same way as the mountain itself to the globe and the coin, and its circulation.

In the logo we have replaced these powers by the Plus / Ultra columns of the Spanish empire which continues in the current emblem of the Spanish state.

But the mountain is not a slag heap of ore rubble. Rather, it is - as in the tapestries of the Middle Ages - a garden with many paths, animals, with people discovering silver, leading animals or praying, where the bocaminas, the mine entrances, stand on one level with trees and animals - painted without perspective - as if at that moment all could have the same value.

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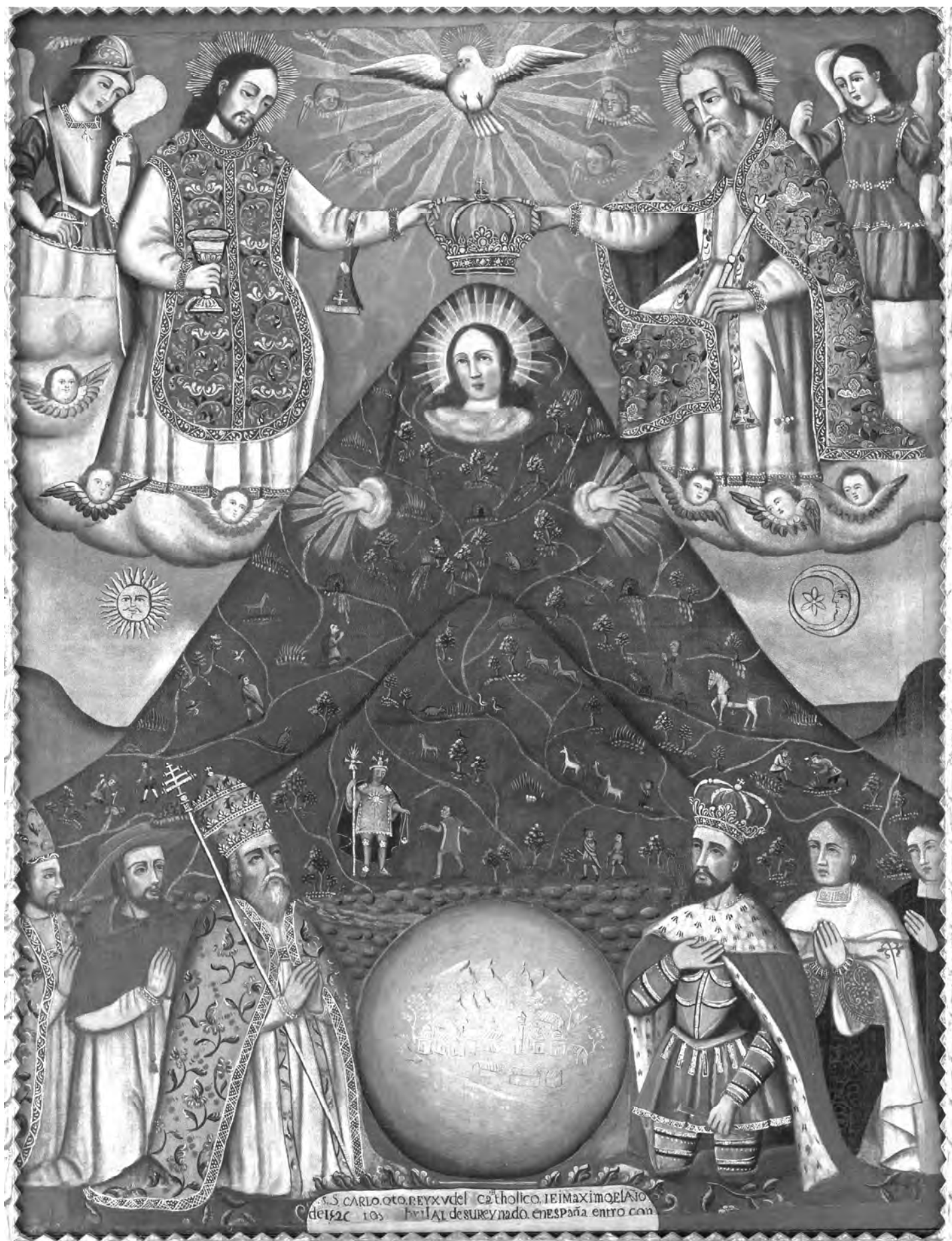
12

1 For the exhibition we have borrowed a painting with the same motif from the Museo nacional de Arte in La Paz. Anonymous, Virgen del Cerro, 1720.

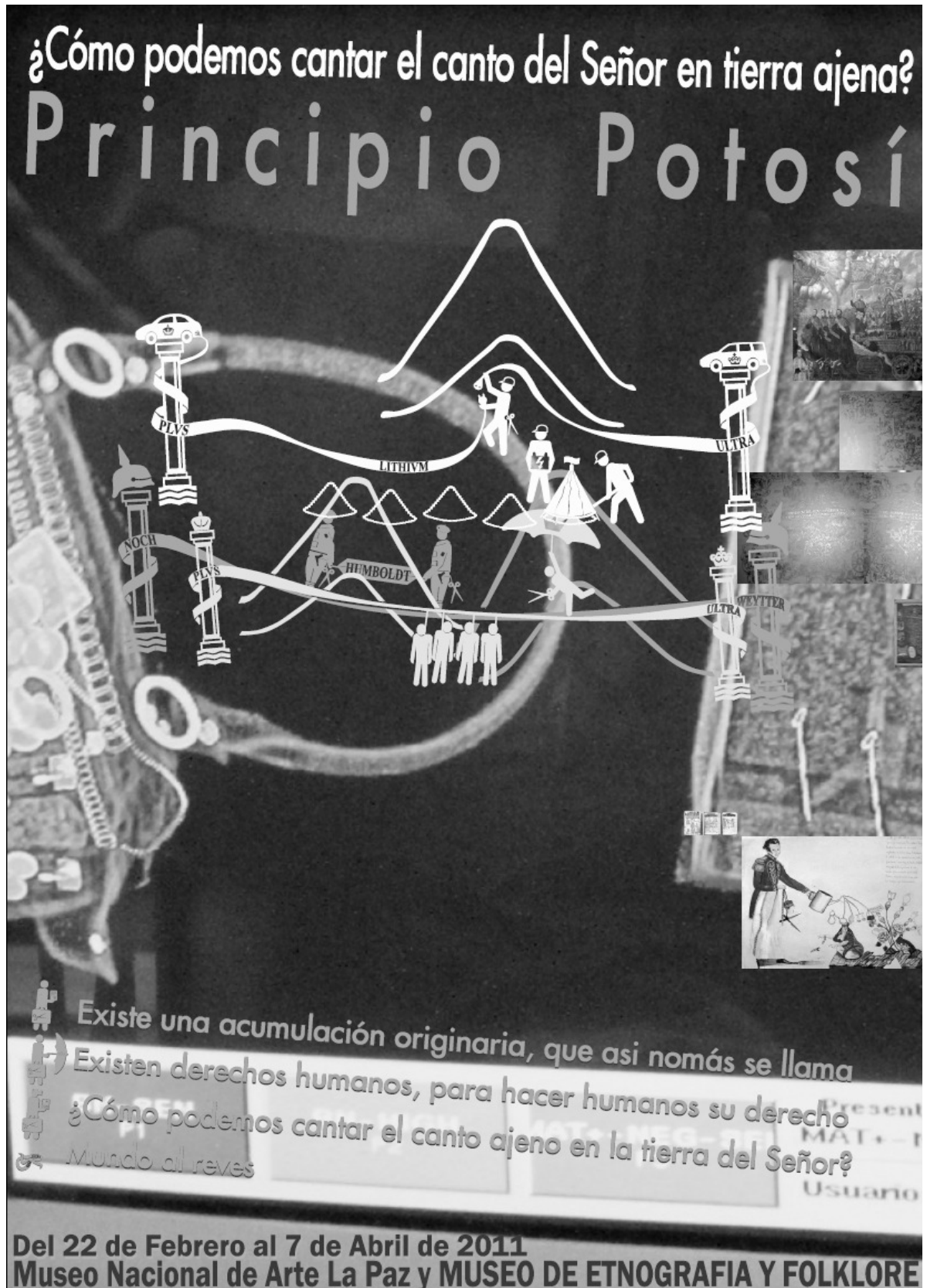
2 "Huayna Cápac received his name, which means "young ruler" in Quechua, because he probably succeeded his predecessor Túpac Yupanqui (Tupaq Yupanki, also Thupa) on the throne around 1493 as a very young man of about 17 years of age. https://de.wikipedia.org/wiki/Huayna_C%C3%A1pac

3 https://es.wikipedia.org/wiki/Diego_Huallpa





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Poster of the Exhibition in La Paz, 2011

with three Logos overlapping
 Green: Logo for the exhibition at Reina Sofia, Madrid 2010
 Orange: Logo for the exhibition at House of World Cultures Berlin
 White: Logo for La Paz