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VIEW FROM THE PEAK

Lessons from Climate Transformed

By Paul Krake

VIEW FROM THE PEAK
HUMANS AREN'T DONE YET

What I have learned from Climate Transformed

Spiking gas prices across Europe. Complaints from middle-class families from Madrid to the Midlands. Editorials are written about Europe's over-reliance on Russian gas, yet it flows unabated despite a slew of geopolitical concerns. Politicians from Brussels are doubling down on expediting efforts to upgrade energy supplies with renewables only, while Germany continues to reject the reestablishment of nuclear power. Yet again, Europe has to boost coal production to meet demand. The underinvestment in natural gas storage haunts European policymakers while Nord Stream II continues to deliver nothing.

Does this sound familiar? This is precisely the situation Europe found itself in during the summer of 2021. Russia's invasion of Ukraine did not cause this latest spike in energy prices. Putin's malfeasance isn't the catalyst for one of the highest cost of living adjustments that the average European has seen in decades. While Europe's reliance on Russian gas has become untenable due to the atrocities in Ukraine, the preconditions for the current crisis we are facing were set in stone over the last several decades.

This cycle of ever spiking energy prices on the continent has its roots in the greatest policy imperative of the 21st century. As the global economy transitions from fossil fuels to low carbon energy sources, economic dislocation and pricing malfunction shall be the norm. Given where we are on the technology curve, there is simply no easy way to transition to clean sources of power. When combined with the realization that much of the world's energy supplies come from countries led by dictators, consumers and corporates must wake up to the fact that they can't take energy for granted.

I did not launch Climate Transformed out of some moral imperative. My motives are much more pragmatic. Climate Transformed was established to provide cutting-edge research on the largest investment narrative of our lifetime. No theme or innovation will see more capital allocated in the next three decades than decarbonization, sustainability, and the energy transition. With all due respect to the blockchain advocates, the NFT fans, and the crypto crazies, this is a rounding error compared to the tens of trillions of dollars demanded for climate infrastructure. Blockchain will play a role, and data and digitization will be vital as we move to a more sustainable world, but blockchain and digitization are nothing more than tools to assist climate innovators in our quest to prevent global warming. There is no disrespect meant for those who focus on these areas, but they are secondary to the capital that governments, corporates, financial institutions, and individuals will spend on sustainability in the years ahead.

Climate Transformed has an annual goal of 500 hours of live interviews with the innovators, investors, and corporate leadership that will drive us towards a more sustainable path. I chose an interview format simply because no one person, no one research team, can cover all of the bases needed for a well-rounded assessment of the climate narrative. When defining sustainability through sectors as diverse as nuclear and sustainable protein, there is no one size fits all. That's why we have developed a platform for interviewing those individuals who will drive forward each of the seventeen sectors (See Appendix) that we've identified as essential for all climate investors. We've conducted approximately 105 interviews so far, and in this report, I

By **Paul Krake**, paul@viewfromthepeak.com.hk;
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would like to give you a few of the observations that I have discovered and where I believe the market has it right and has it wrong about both the trajectory and the timing of our transition to a more sustainable globe.

Climate investing is a multi-decade pursuit. Many of you we'll dismiss these themes as outside of the purview of a shorter duration strategy. That's fair enough. Trying to convince speculative traders to buy uranium stocks when it takes nine years to build a nuclear reactor is sometimes a bridge too far. That said, shorter-term trading strategies tend to benefit from momentum, and no investment narrative globally has more policy, corporate, or marketing momentum than sustainability.

Climate will drive the price for many assets and sectors in the weeks, months, and years ahead. The implications of climate change have structurally altered inflationary expectations, budget deficits (therefore bond issuance), the allocation of capital for public, private, and venture strategies, and companies around the world now have a new cost item in the form of carbon, that they have never had to deal with before. The climate narrative affects every company, bond market, equity multiple, and household balance sheet. While you don't have to care about Climate Transformed, the themes we discuss and the people we interview will be major determinants of global beta for decades to come.

Here is a quick synopsis of some of the lessons I have learned from the 100 plus interviews. In no particular order:

- Natural gas volatility will be with us for years to come, particularly in Europe. There is no solution to the root problem of renewables, i.e., solar doesn't work when the sun doesn't shine, wind turbines don't work when the wind doesn't blow. For all the brilliant minds currently engaged in the energy storage universe, scalable solutions are simply not yet available.

- European policymakers remain fixated on the notion that they will be weaned off natural gas as a primary energy source over the next decade. The Europeans will not be seeking multi-year contracts with US natural gas producers because they do not believe in the strategic importance of gas in the 2030s. It is laughable that Germany met with Qatar when Germany doesn't have any LNG terminals. We should not discount how strategically vulnerable Europe is regarding constant and persistent power shortages over the next five years. Russia is but one of a series of concerns for European energy policy, including a lack of storage, not enough LNG terminals, insufficient infrastructure from North Africa, Germany's hesitancy regarding nuclear, poor industrial infrastructure, and a substandard electricity grid.

- The energy transition is in the picks and shovels phase IE the world will have to produce a tremendous amount of toxic, carbon-concentrated metals to build the infrastructure required for a more sustainable path. There is no electricity grid without aluminum. There are no nuclear reactors without cement. Climate advocates must appreciate that we need to take two steps back to vault ourselves forward.

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- It is estimated that over the next decade, the global mining industry will need to spend around $150 billion on extraction capex to keep up with the demand for global electrification, particularly with electric vehicles. They are currently spending between $75-$80 billion a year. Why is the supply response so tepid?. We just are not spending enough on mineral extraction. Resource nationalism is emerging. Global mining majors have a tarnished reputation. It is much more difficult to break ground on a mine. More and more delayed projects due to activism, environmental regulation, and governments appreciating the scale of the opportunity and demanding a bigger slice of the pie. These are global corporations that have the infrastructure to handle this. If the return on capital is there, why is there such hesitancy? The implication for all industrial minerals is clear.

- I am a structural disinflationist, and while I am being challenged to my core in the face of the highest inflation rates in four decades, I remain convinced that inflation pressures will dissipate in the quarters ahead due to poor western, Japanese, and Chinese demographics and tech deflation. Commodity inflation driven by electrification is the one area where we will see structural pricing concerns. The laws of supply and demand remain undefeated, and it is difficult to paint a scenario where the supply of essential industrial minerals won't face sizable shortages in the next five years.

- Ford has announced that it intends to produce 2 million electric vehicles a year by 2026. I see few scenarios where this is possible. Ford is but one example facing the entirety of the global auto industry (ex-China). My great fear is that they won't be able to scale their products because the global commodity supply chain is fragile and ill-prepared to provide them with the underlying inputs to execute. The prospect of wide-ranging, multi-year supply shortages is almost without question. Lithium is the glaring concern as there are few viable alternatives to lithium in the current battery product line. With 20%-25% CAGR likely between now and the end of the decade, and seven to ten year lead times for greenfield projects to come online, the lithium shortages we fear could see low battery output being an anchor on the entirety of the two, three, and four-wheel passenger revolution.

- Electric vehicle adoption will be far less ex-China than what most anticipate. This will not be a function of demand per se, but supply constraints with both batteries and infrastructure, limiting electric vehicle purchases. In countries with large geographies, especially the United States, electric vehicles will be the domain of the wealthy. Nationwide electric charging infrastructure is an enormous undertaking. Only a relatively small percentage of the population can charge their vehicle at home, and working families simply do not have the time to sit around for an hour and wait for their car to charge at a public charging station. Even with price parity to the internal combustion engine, which is still years away given elevated commodity prices, electric four-wheelers will be the domain of the top 15% of income earners

- There is no one solution for the energy transition. Everything is on the table, and most current energy sources and chemistries will play a role. Nuclear, hydrogen, biofuels,

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wind, solar, and natural gas as the ultimate transitional fuel, all need to be part of the mix. The United States and Germany will need to embrace nuclear. Europe will need to appreciate that natural gas will be around longer than Brussels currently anticipates. These are multi-pronged efforts requiring their own CapEx and infrastructure spending programs. When it comes to clean energy, It is not much about winners and losers but rather the degrees of penetration and success.

- There is no secret sauce. Hydrogen is only a viable solution if that hydrogen is produced via renewable means. As we stand today, green hydrogen merely prevents other industries and consumers from using the limited sources of available green power. This applies to green nickel, green copper, and even green cryptocurrency. Unless your energy source is renewable, calling something green is nothing more than a greenwashing slogan.

- There is no easy path to the energy transition. We have seen this consistently over the course of the last several years. However, the excitement around sustainable proteins is justified as there is no disruption to existing food processors when developing more sustainable forms of protein. Whether plant or insect-based, sustainable protein is one of those areas that doesn't require the current system to be broken.

- One incredibly broken system is ESG investing. It has been completely corrupted through greenwashing and dubious marketing. Only a data-driven approach to determining what is truly impactful can prevent a public market ESG investment crisis. I cannot make this point strongly enough. We need to move to a customization model as an off-the-shelf approach does not consider our different values. I may prioritize environmental causes more highly than boardroom diversity. Other investors may want to focus on governance and human rights. We are currently not getting this option. Large asset management firms are doing investors a disservice. The opportunity for investment managers is customized portfolios based on the underlying values of the beneficiaries.

- The greatest strategic vulnerability facing the globe is not a shortage of semiconductors but the fact that China produces 80% of the world's fuel cells. We have spent the last four years panicking about China's access to chips, yet less than 10% are produced in the Mainland. CATL, the world's largest producer of fuel cells, is, in my humble opinion, the most strategically important company on the planet. Munich and Detroit face an existential crisis if the Chinese use fuel cells as a weapon in a future geopolitical skirmish.

- Batteries are but one example of the world's over-reliance on the Chinese supply chain to produce climate-related components. When investing in the climate agenda, public market investors should be scouring the globe for component makers who are based outside of China. They rightly deserve to trade at a sizable premium if domiciled in jurisdictions deemed friendly to the West. WEG In Brazil is a tremendous example. It

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produces components for wind turbines and charging stations, and its primary benefit is that it's not Chinese.

- Global corporates have not had to pay for carbon before now. Whether these sectors are compelled through compliance markets such as airlines, utilities, and oil and gas producers or via the voluntary carbon markets for companies who have made net zero pledges, companies will be looking to offset the carbon generated through their supply chains. New SEC disclosure requirements shine a light not only on Scope one and Scope two emissions but also on the entirety of their supply chains through the reporting of Scope three. If there is one glaring observation I am making, it is that in the vast majority of sectors, companies have no ability from a technology standpoint to decarbonize their supply chains. When a company makes a carbon neutrality pledge, the only way to move forward is to buy voluntary carbon offsets. Sitting down and praying that the technology will exist in 20 years to decarbonize the supply chain will simply not be enough for stakeholders and customers who will hold these businesses to account.

- The world remains littered with failed carbon capture projects. We need to get this right, and currently, outside of a few companies such as Occidental Petroleum, most companies have not been able to find a successful and profitable model for carbon capture.

- Voluntary carbon markets are where Bitcoin was back four years ago. It has tremendous potential, but the quality of the infrastructure rollout is littered with the highest quality investors who compete with many that have suspect business models. This is the anti-gold rush. i.e., the money will be made by owning the offsets themselves and not building the infrastructure.

- There is an arms race in environmental enterprise software. Whether in supply chain optimization or attempting to determine whether an ESG platform is actually impactful, measurement and data analysis are the only solutions. From carbon tracing to ensuring that hiring practices have nothing to do with race or gender, a slew of wonderful startup companies are innovating to ensure accurate measurement. Firms like Adobe, Salesforce, IBM, Oracle, and many more are clamoring to work with and acquire these firms using a data approach to judge the impact of corporate and passive investment.

How to express these investment themes

These are but a few of the sub narratives within the broader bucket of climate investing. one of the great challenges for public market investors is that the majority of the pure opportunities remain in the realm of venture capital and private equity. Those companies that have matured to the point of going public tend to be highly volatile, richly valued, and trade less as climate companies and more in the realm of speculative tech. Conglomerates like Siemens have built some amazing renewable businesses but are hardly pure plays in many cases. The nature of

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innovative technology firms tends to trade at lofty valuations, making them difficult to justify on traditional financial metrics. To own many wind and solar companies around the world is to take an enormous leap of faith.

View from the Peak operates two model portfolios, which I believe is an excellent expression of the narratives outlined above. One is a straightforward climate portfolio that looks at the pure plays and the mining and infrastructure companies that will be essential to build the infrastructure we need in the decades ahead.

The second portfolio is what I call “climate friction.” It's designed to capture the inevitable volatility and dislocations as we transition away from fossil fuels. In short, the price of oil, gas, and coal could rise appreciably in the years to come as resilient demand, and restrained supply should see prices remain elevated. The following is a list of companies and assets for both portfolios

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View from the Peak Climate Portfolio

Instrument	Notional value	Entry price	Monthly P/L	YTD P/L	YTD % P/L	% P/L (since inception)
Kazatomprom	1,989,782	37.19	-154,611	-480,640	-19.46%	-20.51%
Sprott Physical Uranium Trus	3,608,468	10.51	42,816	987,155	37.66%	44.24%
Cameco	3,370,878	21.53	-8,128	838,365	33.10%	34.74%
Northshore Global Uranium	2,638,835	77.79	-34,709	324,270	14.01%	5.45%
Rio Tinto	4,691,729	70.49	129,380	893,176	23.51%	17.19%
BHP	5,627,107	56.37	145,467	1,344,687	31.40%	40.58%
Alcoa	7,518,772	48.21	48,952	2,575,399	52.10%	87.87%
Holcim	4,117,895	9.50	35,789	-130,526	-3.07%	2.85%
Invesco Solar ETF	6,504,145	82.02	64,009	-64,862	-0.99%	-7.18%
Longi Green Energy Technology	2,796,741	78.82	5,750	-527,460	-15.87%	-6.88%
Kraneshares Global Carbon etf	5,930,991	39.85	76,537	-455,458	-7.13%	18.52%
Vaneck Low Carbon Energy etf	2,936,500	149.05	15,261	-287,606	-8.92%	-2.22%
Tesla	5,457,880	794.88	35,175	139,946	2.63%	36.35%
Nio	1,821,429	36.12	73,090	-809,801	-30.78%	-39.39%
BYD	2,617,701	256.31	8,833	-496,095	-15.93%	-12.84%
Freeport-Mcmoran	9,933,723	35.91	237,817	1,799,220	22.12%	41.81%
Global X Lithium&Batt etf	4,816,502	81.20	76,355	-383,005	-7.37%	-3.77%
Samsung SDI	2,624,011	662,000	-48,146	-369,484	-12.34%	-12.63%
Panasonic	2,416,183	1,347.12	-34,841	-342,676	-12.42%	-19.56%
CATL	3,000,329	525.13	27,463	-403,180	-11.85%	-0.09%
Plug Power	3,045,129	27.92	-29,011	11,819	0.39%	1.40%
Direxion Hydrogen Etf	2,950,990	20.20	-14,851	-105,446	-3.45%	-1.73%
Vestas Wind Systems	2,721,123	221.09	128,043	53,105	1.99%	-9.40%
Orsted	2,888,013	827.90	-55,937	-87,354	-2.94%	-3.83%
Siemens Gamesa Renewable	2,317,911	19.70	-8,216	-834,888	-26.48%	-22.84%
Total			762,285	3,188,664		
Closed positions			0	0		

	Monthly P/L	YTD P/L ($)	YTD P/L (%)
Total P/L	762,285	3,188,664	3.19%

Current Capital	103,188,664
Total notional equity exposure	98,342,769
as a % of total capital	95%

The VFTP Climate Model Portfolio is designed to take advantage of the most significant economic transition the world has ever witnessed. The path to decarbonization will not be smooth, but it is essential to place our world on a sustainable path for generations to come. The economic model that has evolved in the past fifty years has sacrificed the environment in the quest for economic efficiency, and the direction we are heading is unsustainable. However, economic prosperity and sustainability need not be mutually exclusive, but you should be under no illusions that the next five years will provide more dislocations than solutions.

By Paul Krake

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This model portfolio is designed to embrace the friction created by the global energy transition. Friction created by supply disruptions, innovative technologies, and an appreciation that we cannot stay the course. We are in the "Picks and Shovels" phase of the climate transition, and this portfolio is reflective of this.

Like with any wide-ranging portfolio, it will face criticism.

1) I haven't been able to cover everything. Utility producers, clean shipping, and plant-based proteins all warrant a place in a climate portfolio. This is not a statement about the opportunities or the value of these innovations to the overall climate agenda. It is simply a function of bandwidth.

2) This portfolio will be volatile. Single strategy long-only portfolios will have wild swings in performance. This is unavoidable. The only means at my disposal to manage this is cash levels. I have debated with many clients whether traditional risk metrics are appropriate when looking at a theme that will be this dominant. A long-only approach will be the best way to extract long-term value out of the climate narrative.

3) This portfolio will never use leverage because it is essential that we can maneuver through the inherent volatility—leverage risks you being stopped out for no fundamental reason. There is no need.

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View from the Peak Friction Portfolio

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Instrument	Notional value	Entry price	Monthly P/L	YTD P/L	YTD % P/L	% Gain (since inception
Long Saudi Arabian Oil Co	5,717,865	37.50	-26,810	891,388	18.70%	9.99%
Long Exxon Mobil	6,584,284	63.12	41,984	1,737,167	35.84%	31.59%
Long Chevron	7,279,255	112.80	61,613	2,077,571	39.94%	45.49%
Long BP	5,074,833	355.00	37,641	509,324	11.16%	1.40%
Long Total Energies	5,070,219	43.81	70,334	88,433	1.78%	1.30%
Long Alerian MLP Etf	5,254,655	36.52	10,953	772,180	17.23%	4.99%
Long Crude oil Fut Opt Dec 23C 100	19,493,671	2.88	329,114	13,012,658	200.78%	482.00%
Long Crude oil Fut Opt Dec 23C 110	-14,000,000	2.09	126,582	-9,367,089	-202.19%	-344.00%
Long Gazprom	1,775,956	36.60	0	-3,203,552	-64.33%	-64.58%
Long Rosneft	334,705	8.99	0	-4,138,042	-92.52%	-93.41%
Long Arch Resources	7,380,878	95.49	187,454	2,599,225	54.36%	47.52%
Long China Coal Energy	5,527,088	5.36	73,090	1,340,956	32.03%	10.44%
Long Coal India	5,217,615	175.90	86,890	1,044,189	25.02%	4.25%
Long Glencore	6,575,423	367.00	84,830	1,565,243	31.24%	31.41%
Long Alcoa	9,200,000	49.25	59,898	3,151,269	52.10%	83.90%
Long BHP	6,956,981	37.65	100,930	1,621,411	30.39%	39.04%
Long Rio Tinto	6,331,210	95.03	79,250	1,231,864	24.16%	26.52%
Long Holcim	4,974,540	45.04	-23,238	-211,837	-4.08%	-0.61%
Short XLE	-34,299,703	67.40	-275,964	-4,329,703	-14.43%	-14.43%
Short Crude Oil	-19,777,778	99.00	125,253	-850,303	-4.25%	-4.25%
Total			1,149,805	9,542,352		
Closed positions			0	0		

	Monthly P/L	YTD P/L ($)	YTD P/L (%)
Total P/L	1,149,805	9,542,352	9.54%

Current Capital	109,542,352
Total notional equity exposure	54,955,804
as a % of total capital	50%

The VFTP Friction Model Portfolio is my hedge against higher energy costs over the next five-plus years due to the friction caused by the energy transition. The global economy has spent decades building out an infrastructure that is dependent on oil, coal, and gas, and while policy efforts have been focused on promoting the use of renewables, restricting the supply of fossil fuels will do nothing but increase prices and create energy shortages over the next several years. While all

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these policy pursuits are essential to meet our climate goals, there will be consequences of which spiking prices and supply disruptions will be omnipresent.

This high-yielding portfolio has a gross yield of 4.70%, versus the return of a US Five Year note (2.70%), and is historically correlated to US CPI and inflation breakevens. While I would not expect significant multiple expansion for this list of companies that need to transition their business models over time, prices for fossil fuels should lead to elevated payout ratios and dividends over the years ahead.

I have broken the portfolio into multiple segments:

1. Oil, Gas, and Coal companies who are producing the toxic fossil fuels that will see spiking prices on suppressed supply and a demand profile that will not peak for at least the next ten years.

2. Conglomerates such as Glencore, BHP, and RIO, who are involved not only in Oil and Coal but also produce energy-intensive commodities essential to climate infrastructure in the years ahead.

3. Companies like Alcoa and Holcim, whose cement and aluminum production will be essential to revamping the electricity grid and constructing the next generation of nuclear reactors.

4. A long-dated WTI call spread is designed to take advantage of a profoundly backwardated crude oil forward curve. December 2023, WTI is trading at approximately $25 below the current spot price. A 100/110 December 2023 call spread generates a 6:1 payoff should the price of forward crude trade to $110 in the next several years. Given the supply dynamics I have discussed, this is a compelling strategy.

Tactically, I took down oil exposure when oil prices spiked in March during the heights of the Ukraine crisis. I believe oil prices will fall to $85 over the next eight weeks.

Conclusion

it is estimated by 2030, that the world will produce approximately 30 million electric vehicles per year. Given the supply constraints I have outlined, this number may be difficult to achieve. If we get close, it will be remarkable as the innovation required to build cost-effective electric vehicles is simply incredible. It would have required a complete recalibration of the global auto industry from hardware-based to software-based in a decade. This is the sort of industrial realignment we will need to see in multiple sectors in the years ahead.

It is debatable whether we can achieve this lofty goal. However, what is without question, is the fact that by 2030, the world will have a record 1.8 billion combustion engines on global roads. Each of these vehicles requires oil and gas and will continue to operate for years to come. The idea that we're reaching peak fossil fuel demand anytime before 2045 fails to address this issue.

Climate Transformed has had the pleasure of interviewing some great climate innovators. Within multiple sectors, the genius we are witnessing in battery innovation, electric vehicle rollout, renewables, and numerous other climate touchpoints will be held back by an inability to access

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the most basic components. We often discuss the strategic vulnerability of the Chinese supply chain. Still, at the most basic level, it is a function of underinvestment in mineral extraction that could slow the rate of electric vehicle adoption, prevent the electricity grid from being upgraded And prevent charging infrastructure from being rolled out globally. This must lead to pricing pressures and prevent price parity versus fossil fuel. We must find solutions to ensure the industrial minerals and rare earth required for global infrastructure are readily available. As we stand today, we have failed miserably.

While this is not the news the climate activists want to hear, it creates remarkable investment opportunities in both clean and dirty processes. Natural gas will remain the dominant transitional fuel for years to come despite the naivete of European policymakers. Even coal will continue to play a role, and not just in the emerging world. In recent weeks we've seen both Germany and Italy increase coal output to compensate for gas shortages across the continent. We just have not learned our lessons.

Only a pragmatic approach to climate investing can ensure that your return profile reflects what is going on in the real world. While the eventual goal is the eradication of fossil fuels, over the course of the next five years, the returns in oil and gas, in particular, could be impressive. While I appreciate that investors and beneficiaries have the right to invest their hard-earned capital any way they wish, to starve oil and gas markets of capital when peak demand is unlikely for 20 years is to create a fundamentally unstable global environment for energy. This helps no one. Opportunity sets will exist in both cleantech and fossil fuels until the end of the decade.

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Appendix

Aviation	Agricultural Sciences
Voluntary Carbon Markets	Metal and Minings
Biofuels	Water Sustainability
Electric Vehicles	Compliance Carbon Market
Wind+Solar	Recycling
Natural Gas	Supply Chain Optimization
Shipping	Oil
Battery Technology	Hydrogen
Nuclear	

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