



HEAVY METAL

EARTH'S MINERALS AND THE FUTURE OF SUSTAINABLE SOCIETIES

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known as Do), representing the chemical symbol of copper, Cu. Water is represented through the use of the base note H (for H₂O), which is the German representation of the note B (also known as Si). Within the C major scale, the notes C (Do) and H (B or Si) represent the 2nd and 9th intervals, together forming 29, the atomic number of copper. The distance between these notes forms a major 7th interval, which is associated with musical dissonance, and can be taken to represent the conflicts that have arisen from the social and environmental impacts of copper mining in Chile. At the same time, the note Si resolves musically back to the root note of the C major scale. This resolution can provide inspiration in our quest for a truly circular economy, where metals can be reused and recycled, rather than continuously extracted from primary sources.

Kypros 29 is infused with the exploration and layering of various melodic elements, derived from the chemical properties of copper and the nature of its extraction and processing. At the same time, the music reflects the particular geography and climate of Chile's northern mining regions. Much of this territory lies in the high mountainous region of the Atacama Desert—one of the driest places on Earth, in a landscape of barren rocks shaped by sun and wind. This interplay of climate and geology is reflected in the instrumental sounds of the brass quintet, which range from light and airy to grounded and solid. This provides a metaphor for the challenges ahead, as we seek new mineral resources to harvest energy from the sun and wind.

Zinc

Yao Chen

In seeking to explore the relationship between humans and the environment, the *Heavy Metal Suite* bears features that reflect elements of a globally interconnected social and ecological system. There are threads of conductivity running through all the movements, written by composers from around the world who represent the

increasing globalization of our societies. Each composer takes a different mode of expression for their work, with the individual movements coexisting aesthetically through a set of common brass instruments (shared resources) and subject to a limited duration in time (finite supplies).

Like the other movements in the suite, *Zinc* takes its cues from the physical and chemical nature of the element itself. The metal is lustrous and bluish-white, and is brittle at room temperature, but malleable when heated to temperatures between 110 and 150°C. The pure metallic element is soft, yet hyper-reactive when placed in contact with other metals. At the same time, zinc is also used to protect other metals from corrosion, forming ‘sacrificial’ galvanized coatings that react with oxygen. This duality is reflected musically as somber moments interspersed with flashes of vivid interaction. As zinc is a component in all brass instruments, I had the fanciful idea that one might hear the resonance of the element itself, an idea that led me to a surprising musical representation near the end of the movement.

Augusta Read Thomas’s *conductivity* motif, with its dominant six-note structure (A \flat , B \flat , F, G \flat , E \flat , C), links all the individual movements together. This motif leads naturally to a pentatonic scale (A \flat –B \flat –F–E \flat –C), which is a common intervallic structure in the folk songs of China, my homeland, and the world’s largest producer of zinc. Inspired by these facts, my piece incorporates some brief transfigured descending fragments from the famous Chinese folk melody *A Little River Flowing*. By doing so, the music reflects *water*, another overarching theme of the *Heavy Metal Suite*. This water-related folk melody originates from Yunnan province located in southwest China, in the center of the Asian continent. This province has the largest lead and zinc reserves in China, and plays a crucial role in the country’s smelting (metal refining) industry. A resource-recycling industrial chain has been built in Yunnan to promote cross-regional, collaborative utilization of renewable resources. Here, again, we see an inherent duality; between primary resource extraction and recycling.

My work, *Zinc*, is itself cyclical, opening and closing with a solo trombone. The speed and intensity of the music gradually increase and decrease, in an auditory parallel of chemical reactions. The two trumpets play bustling, almost breathless

material midway through. At the end of the movement, the activity slackens, and the instrumental lines thin out until only one remains. This is a metaphor for surplus and scarcity, and a call to action for global environmental stewardship.

Platinum

Vuma Levin

The history of mining in South Africa, particularly platinum mining, is intertwined with settler colonialism and apartheid. The industry was built on a continuous supply of inexpensive migrant labor, which formed the backbone of a racist economic system supporting a whites-only social welfare state in South Africa. Over time, mining in South Africa evolved from a disorganized, informal arrangement into the cornerstone of apartheid in the early twentieth century. In the post-apartheid era, the South African political landscape has shifted with the extension of voting rights to people of color. But the economic model and demographics of the mining system have endured: labor remains cheap and racialized. Workers reside in makeshift townships near mines, sending money to their families in the rural periphery. Calls for social justice and racial equality in the sector have been met by state repression, as epitomized by the Marikana massacre on 16 August 2012, where thirty-four miners advocating for improved working conditions were killed by the South African Police Service.

The *Platinum* movement of the *Heavy Metal Suite* seeks to critically engage with issue of historical and contemporary exploitation of Black bodies in service of the South African mining industry. Conceptually, the movement aims to reclaim the narrative and creative space surrounding the future of platinum mining and production. Drawing inspiration from the Kenyan academic and author, Ngũgĩ wa Thiong'o, Black Indigenous forms and practices were employed as a 'liberating perspective', providing a creative lens to reinterpret the essential features of platinum. The movement is also infused with the concept of *conductivity*, drawing on the motif written by Augusta Read Thomas.