

Shattering the Oil Mirror: A Holistic Understanding of Crude Oil

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artistic research
science
crude oil
senses
experiments
holistic understanding
Invisible Oil
petro-subjectivity
petrocultures
energy transition

Standing in a dark room, you look into a wood-framed Plexiglas box filled to the brim with crude oil, its odor pervades the entire room. To the quiet hum of a running pump, you gradually make out the reflection of your own face, your own identity, peering back through the circulating oil. The installation *Reflecting Oil* was first presented at the Peacock Visual Arts Centre in Aberdeen, Scotland, in 2008. For me, it encapsulates our petroleum-driven civilization in a haunting way, and this work has had significant bearing on my artistic practice in recent years.

As of late, I have been particularly interested in the term “petro-subjectivity,” which was coined by the American artist Brett Bloom, who describes it as follows: “Petro-subjectivity is something that each of us experiences constantly. It is a sense of self and the world that shapes who we are and how we think. It stems in part from the fact that the use of oil is present in everything we do. It has shaped the concepts that govern our thinking. Our use of language and the basic concepts that structure our existence are breathed through the logic of oil relationships and form the metaphoric universe we bathe ourselves in when we speak to one another about who we are, what we do and what the world around us consists of.”¹

In Titusville, Pennsylvania, in 1859, Edwin L. Drake was the first entrepreneur to commercially extract crude oil, which officially marked the beginning of oil production. At that time, crude oil, in its refined form as petroleum, was initially used to



fuel lamps and replaced the widely available whale oil. It was not until the invention of the internal combustion engine and the serial production of automobiles at the end of the nineteenth century that the extraction of crude oil began on a massive scale. The two world wars of the twentieth century, in which oil played a key role on the battlefield, contributed to the rapid development of oil production and crude oil refining. The 1950s ushered in the Great Acceleration: crude oil served as a fuel for the unbounded mobility of people and goods and, thanks to advances in petrochemicals, as a primary substance for shaping the material world, thus paving the way towards our ubiquitous petrocultures.

In addition to its role as an energy source, crude oil today is a highly versatile, transformable substance, which, in its processed form, governs many spheres of our everyday world, from food production, medical care, and housing to the globally networked work world—as such, it permeates our present at all levels and in very complex ways.

The idea for *Reflecting Oil* came to me on a research trip for the exhibition project *Invisible Oil* in Aberdeen. Fish processing, shipbuilding, and the textile industry were once the most important economic factors for the city, long before it experienced an unexpected oil boom at the end of the 1960s, which earned Aberdeen the title “Oil Capital of Europe.” However, with the progressive decline of the North Sea oil reserves, the city’s self-designation shifted to become the “Energy Capital of Europe” in 2005.

The intensive exploration of Aberdeen and its petroleum industry marked a turning point in my artistic career. It drew my attention to the cultural and economic significance of oil, a resource that has had a momentous impact on modern society. As Brotherstone and Manson noted in 2007: “The product serves its purpose largely unseen, finding its way into internal combustion engines, or the energy market more generally, with little perceived connection to its origins or the process that developed it. [...] Nor has cultural production been such as to draw public consciousness towards the industry, its ways of working, and its broader significance.”²



Invisible Oil exhibition view
Peacock Visual Arts Centre, 2008

For most people, oil is an abstract concept that is primarily perceived in its monetary representation as US\$ per barrel. Unlike tangible objects, substances such as crude oil are often relegated to a subordinate role in everyday culture. This is due to the particular physical and chemical properties of crude oil, but also to the prevailing

visual bias in contemporary society. An automobile, for example, has a high cultural value, while the fuel that powers it is rarely seen as an independent element.

This distorted awareness of crude oil is the subject of my sculptural work *158.987294928 Litres*. It conveys a physical and sensual manifestation of a barrel of crude oil: sensual as the viewer is confronted with the specific smell of crude oil that pervades the gallery space from the open cap of the transparent oil barrel. Visual perception is supplemented on an olfactory level.

Oil is an omnipresent substance that we rarely encounter tangibly with our senses, yet it has profound repercussions on our existence. This ambivalent relationship obscures our actions and gives rise to detrimental effects for our planet and livelihood, as Ross Barrett and Daniel Worden, among others, have pointed out: “Oil culture, we argue, has helped to establish oil as a deeply entrenched way of life in North America and Europe by tying petroleum use to fundamental sociopolitical assumptions and aspirations, inventing and promoting new forms of social practice premised on cheap energy, refiguring petroconsumption as a self-evidently natural and unassailable category of modern existence, and forestalling critical reconsiderations of oil’s social and ecological cost.”³

Our belief in the apparent infinite availability of oil was shaken, at the latest, by the energy crisis in the wake of the Ukraine war in 2022. Since then, the global dependence on fossil fuels and the associated risks have been the subject of heated public debate. Among the grave consequences of our sustained use of fossil fuels and upholding the status quo are human-made global warming, the massive decimation of biodiversity, and the escalation of political tensions and armed conflicts. The solution to this dilemma calls for a holistic understanding of our world—in its complexity, vulnerability, and natural limitations. Scientific knowledge production forms the basis of our modern civilization. However, as a result of its mechanistic approach, science has paid too little attention to the complex networks of life and their interrelationships. The consequences of this one-dimensional perspective on the interwoven aspects and entangled processes of life are now clearly evident on a global scale.

Just a few centuries ago, science was still considered part of the arts, but as it evolved it continuously specialized and abandoned a holistic perception of the world, as Fritjof Capra explains: “Galileo’s strategy of directing the scientist’s attention to the quantifiable properties of matter proved extremely successful in physics, but it also exacted a heavy toll. During the centuries after Galileo, the focus on quantities was extended from the study of matter to all natural and social phenomena within the framework of the mechanistic worldview of Cartesian-Newtonian science. By excluding colors, sound, taste, touch, and smell—let alone more complex qualities, such as beauty, health, or ethical sensibility—the emphasis on quantification prevented scientists for several centuries from understanding many essential properties of life.”⁴

“As such, scientific work is governed by strict methodological rules, yielding a conceptually categorizable type of knowledge: [...] academics are supposed to view their subject matter from an objective distance. Rather than grasping an issue, academics shed light on it. Rather than taking a stand, they have a point of view. The use of such visual metaphors for the pursuit of knowledge discourages an active involvement with the subject matter and promotes a science-based model of detached observation.”⁵

Art, by contrast, attempts to grasp the world with all the senses, to fathom it with artistic means, and to reveal new perspectives while doing so. Artistic research is not only based on sensory perception but also a critical process of reflecting on

what has been perceived, supported by frameworks of conceptual order. In this way, it strives for a holistic understanding of the world in all its complexity and diversity.

In 1969, German artist Hans Haacke already pointed to a broader perspective in the context of real-time systems with his work *Circulation*, an approach that Fritjof Capra sums up in *The Systems View of Life: A Unifying Vision*: “The first, and most general, characteristic of systems thinking is the shift of perspective from parts to the whole. Living systems are integrated wholes whose properties cannot be reduced to those of smaller parts.”⁶ Following this path, artistic research can lead to a new understanding of the world and life, open up unexpected perspectives, and generate valuable knowledge for society.

The ambition of the project *Reflecting Oil: Arts-Based Research on Oil Transitionings*⁷ was to take a holistic view of crude oil in order to understand the substance in all of its facets. The University of Applied Arts Vienna (Department of Site-Specific Art) served as a research center in cooperation with partners from the University of Leoben, Department Geoenergy (DGE, formerly Department Petroleum Engineering), Austria, and the Petrocultures Research Group at the University of Alberta, Canada. The project involved conducting interdisciplinary workshops and crude oil experiments.

Drawing on an intertwined collaboration between art and science, such interdisciplinary investigations into crude oil as the basis of our petromodernity can be vital for the necessary shift towards sustainable energy cultures. A more comprehensive understanding and awareness of how oil and fossil fuels shape our lives can stimulate the necessary cultural, social, and technological transformations towards a sustainable and holistic future, as the Petrocultures Research Group notes: “To image a society after oil means first understanding what oil is to us—how it shapes current desire, identity, and practice, comfort and pain, consumption and penury.”⁸

Reflections on crude oil in the petroleum sciences and humanities typically take place without direct physical experience of the substance. This lack of contact is logical in view of its specific properties (viscosity, lubricity, unusual odor, toxicity, etc.), but the question arises as to why this connection to the material properties and its sensual qualities is not explicitly sought after in the aforementioned sciences.

“The senses, in fact, are not just one more field of study, alongside, say, gender, colonialism or material culture. The senses are the media through which we experience and make sense of gender, colonialism and material culture. And, in McLuhan’s words, the medium is the message.”⁹

A direct engagement with the unpleasant properties of crude oil can help to critically analyze the perceived negative aspects of the substance. Crude oil is a complex mixture of a multitude of volatile hydrocarbons and diverse contaminants. To work artistically with the substance in its original geological state is a challenging process and a laborious endeavor. In the *Reflecting Oil* project, the artistic research process entailed practical handling and observation of the raw substance. This mode of research focused on sensory perception—such as the differentiation of colors and smells, tactile perception, and aesthetic and symbolic interpretation—and provided findings on the levels of multi-sensory and practical knowledge.

The investigations into the physical and chemical properties of crude oil with an eye on its cultural significance were carried out in the laboratories at the University of Leoben together with DGE petroleum scientists and invited experts from various disciplines. At the beginning of the project, we conducted standardized crude oil experiments with a more scientific approach; in the subsequent stages, the experiments were modified artistically in an attempt to incorporate symbolic and cultural



Hele-Shaw experiment
Department Petroleum Engineering (DPE) laboratory
University of Leoben, 2020

aspects and introduce other contextual questions. Viewing the experiments and results from a wide variety of perspectives throughout the project period unfolded an extensive scope for interpretation.

"At the heart of this newfound awareness of oil's importance to our sensibilities and social expectations—our belief, for example, that sociality is of necessity narrated by perpetual growth, ceaseless mobility, and the expanded personal capacities and possibilities associated with the past century's new flood of energy into our lives—is our recognition that over the course of our current century we will need to extract ourselves from our dependence on oil and make the transition to new energy sources and new ways of living."¹⁰

The project was structured into different sections and ran through the following phases: in 2020, petroleum and petroculture experts from different disciplines were invited to online workshops to share and discuss the role of crude oil from their respective fields of expertise. Parallel, the Vienna team (based at the University of Applied Arts Vienna, led by Ernst Logar) performed crude oil experiments together with the Leoben team (based at the DGE, led by Holger Ott) in the laboratories of the University of Leoben. Throughout the cooperation, there were regular online meetings between the two teams to discuss and reflect upon the workshops and experiments. We analyzed the interdisciplinary work process, the different approaches in art and science, and the divergent forms of knowledge production in great depth.

At the interim of the project in June 2022, the *Reflecting Oil Colloquium* was organized at the University of Applied Arts Vienna. Based on the previous workshops and experimental processes, three working groups were formed to address different topics relating to crude oil. Employing coordinated work methods and a variety of different tools, the interdisciplinary working processes spurred numerous artistic and scientific works (texts, photographs, videos, objects, and narratives). In the second half of the project, the experiences gained in the colloquium brought forth new crude oil experiments with the Leoben team. Once again, scientific experiments were undertaken and enhanced with artistic strategies focused on the sensory properties of the substance. These olfactory and tactile examinations were limited due to the toxic properties of crude oil. The sense of taste, which is an important parameter in the sensory evaluation of substances, was excluded for safety reasons.

The complete range of knowledge transfer and practical formats—from the online workshops and crude oil experiments to the *Reflecting Oil Colloquium* and corresponding collective reflections—paved the way for the final project exhibition *Reflecting Oil—Petroculture in Transformation*, which was open to the public from October 3 to November 15, 2024, at the Angewandte Interdisciplinary Lab in the Otto Wagner Postsparkasse (Austrian Postal Savings Bank). The artistic and scientific works by the project participants were curated and presented according to the collective and interdisciplinary research processes and juxtaposed with my own works created as project leader and artist.

The publication before you now summarizes the artistic research project in all its facets and conveys the numerous conclusions and findings in an experimental and open format. The publication in itself is an artistic object that attempts to expand our understanding of crude oil and its accompanying realities. At the same time, I hope that it will encourage us, as subjects of the Oil Age, to make the leap to a more sustainable and holistic energy future.

"Faced with the uncertain and precarious future, our faltering petrocultures are able to do little more than cycle through the hopes, dreams and nightmares of the past. [...] The true adventures lie ahead."¹¹



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Smashed, 2024
Bitumen, sandstone

- 1 Brett Bloom, *Petro-Subjectivity. De-Industrializing Our Sense of Self* (Ft. Wayne, IN: Breakdown Break Down Press, 2015), 4.
- 2 Terry Brotherstone and Hugo Manson, "North Sea Oil, its Narratives and its History: An Archive of Oral Documentation and the Making of Contemporary Britain," in *Northern Scotland* 27, no. 1 (May 2007), 32.
- 3 Ross Barrett and Daniel Worden, "Introduction," in: *Oil Culture*, eds. Barrett and Worden (Minneapolis: University of Minnesota Press, 2014), XXIV.
- 4 Fritjof Capra and Pier Luigi Luisi, *The Systems View of Life: A Unifying Vision* (Cambridge: Cambridge University Press, 2014), 8.
- 5 Constance Classen (ed.), *The Book of Touch* (Oxford: Berg, 2005), 5.
- 6 Capra and Luisi, 80.
- 7 The project is supported by the Program for Arts-Based Research (PEEK) of the Austrian Science Fund (FWF- AR547), www.reflectingoil.info.
- 8 Petrocultures Research Group, *After Oil* (Edmonton: University of Alberta, 2016), 14.
- 9 David Howes, *Empire of the Senses. The Sensual Culture Reader* (Oxford: Berg, 2005), 4.
- 10 Sheena Wilson, Imre Szeman and Adam Carlson, "On Petrocultures: Or, Why We Need to Understand Oil to Understand Everything Else," in: *Petrocultures: Oil, Politics, Culture*, eds. Wilson, Carlson, and Szeman (Montreal: McGill-Queen's University Press, 2017), 3.
- 11 Simon Orpana, *Gasoline Dreams: Waking up from Petroculture* (New York: Fordham University Press, 2021), 238.