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Risk and responsibility: Private equity financiers and the US shale revolution

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Drawing on ethnographic research in Houston, Texas, I explore how private equity financiers in the US hydrocarbon industry are empowered to define and take financial risks on our collective behalf. The US shale revolution could not have unfolded without the financial risk-taking activities of private equity financiers who channeled billions of dollars into US unconventional exploration and production ("fracking"). These financiers are motivated not only by their own capitalist projects but also by feelings of responsibility to take financial risks for the benefit of others. Shedding light on this enigmatic community, I attend to the relatively neglected area of hydrocarbon finance and highlight how perceptions of financial risk and responsibility become entangled to shape our collective energy present(s) and future(s). As an essential piece of the financial infrastructure that connects investors around the world with US hydrocarbon activities, I suggest that private equity firms are conduits not only of capital but also of responsibility.

Keywords Hydrocarbons; Oil; Finance; Private Equity; Risk; Responsibility; Ethics

Revered by many in US hydrocarbon finance as the "cowboys" of financial risk and reward, private equity (PE) financiers provide a way for institutional investors, such as colleges and pension funds, to invest in companies that are not traded on stock exchanges (Souleles 2017, 2019).[1] In the oil and gas sector, PE financiers have played and continue to play a central role in funding the US "shale revolution" through small to medium exploration and production (E&P) companies specializing in unconventional extraction (colloquially known as fracking). The financial rewards of hydrocarbon E&P can be massive, multiplying the value of investments by several times over the span of a few years.[2] Investors, however, risk losing everything they invest—the quantity and composition of hydrocarbon reserves underground are often uncertain, and the value of these reserves fluctuates with commodity prices (Watts 2015).[3] Many PE interlocutors described their high-risk, high-reward investment activities as "fun" and told me that they enjoyed the thrill of "chasing oil." Many also described being animated by deep-seated feelings of responsibility—responsibility to use their financial expertise to take risks to generate profit for their institutional investors, to financially support their employees, and to advance "American capitalism." Arthur, a managing partner at a successful medium-sized oil and gas PE firm in Houston, whom I got know, explained:

> I feel an enormous sense of responsibility. … Our investors are primarily college endowments or pension funds. That's not something you take lightly. I genuinely think about the fact that we're taking this money from such-and-such university. They're believing in us. They're investing with us in our projects. If I lose their money, it's very bad for the university, very bad for scholarship programs and infrastructure on campus. If I can grow this money, there's a lot of good that can be done with this. Same for pension funds. These are people's retirements. (interview, August 29, 2020)

He saw it as his professional responsibility to take financial risks to make profits where other financiers would not. He told me, "That's our job. To say, Hey, this is a risky asset. This is a risky area, a risky proposition. We're going to take on that risk."

A growing pool of work on finance has shown how risk taking is a formative part of financial expertise (Miyazaki 2013; Oritz 2013; Tripathy 2017; Zaloom 2004). According to Zaloom (2004, 365), Chicago Board of Trade commodity traders forge a "productive life of risk" by combining aggressive risk taking with routinization to perform a "kind of alchemy" that turns the buying and selling of futures contracts into profits. She argues that it is "their responsibility" as experts to voluntarily and actively "engage with risk" to produce profit, not simply heed caution in the face of potential financial losses and personal financial ruin (Zaloom 2004, 366, 383). In a similar vein, Miyazaki (2007, 2013) has documented how Japanese traders actively engage with risk through the practice of financial arbitrage—the practice of buying and selling identical (or similar) securities in two different markets and profiting off the price differential. Traders enthusiastically engage with the financial risks of arbitrage not only to generate profit but also because these traders believe in the "power of money" to positively make the Japanese economy more "efficient" (Miyazaki 2013, 15, 51–52). According to Miyazaki (2013, 92–93), arbitrageurs internalize their role as the "strong individuals" who are "willing to take on risks and responsibility" to seize economic opportunities, provision their own well-being, and usher in free-market reforms for the perceived benefit of the Japanese economy. What these scholars demonstrate is that various forms of financial expertise are entwined with feelings of responsibility to materialize capitalist outcomes that have personal as well as broader socioeconomic significance.

In the oil and gas literature, a few scholars have explored how experts actively engage with financial risks in pursuit of profits. Johnson (2015), for example, shows how the financialization of disaster risk moved from the realm of insurance into tradable derivative contracts after a series of hurricanes and the 2010 BP Gulf of Mexico explosion. While insurance is meant to indemnify the financial risks associated with weather and accidents, futures contracts for oil and weather, she shows, allow speculators and hedgers to bet on the potentiality of disaster—turning the possibility of destructive weather events and accidents into something that is profitably traded and speculated on. In another vein, Mason (2007, 368) explains that calculating financial risk in the oil and gas industry has become central to conceptualizing "all loci of uncertainty while increasing the chance of economic success."

He shows that expert financial consultants have become central to this practice of risk conceptualization and speculation because they present "an objectivized view of how the industry operates" that can be marketed to investors in terms of financial risk–reward ratios (Mason 2007, 368–69). Wood (2016, 2019), meanwhile, has shown that investments in small- to medium-sized oil companies create shared moral horizons between investors and managers. These horizons are shaped as much by hopes of future profits as by financial managers' feelings of "commitment, responsibility and perseverance" (Wood 2019, 83) to be good stewards of capital in the face of financial risks and uncertain economic outcomes. Geology and finance, Wood (2016) shows, become entangled in the process of "derisking" hydrocarbon reserves to be exploited for future expected profitability.

This article advances the anthropological literatures on US PE finance (Ho 2009; Souleles 2017, 2019) and the US hydrocarbon industry (Appel, Mason, and Watts 2015; High 2019, forthcoming-a, forthcoming-b; Mason 2007; Wood 2016; 2019) by exploring the intersection of high finance with unconventional onshore oil and gas exploration. I frame my discussion in terms of the ethical entanglement of financial risk and social responsibility. While I explore the calculative practices and financial methodologies deployed in hydrocarbon finance elsewhere (Field, n.d.), in this article, I focus on PE financiers in particular and the crucial role they play in advancing financially risky forms of energy extraction, specifically, how interlocutors I know in this area of finance see it as their responsibility to take financial risks to advance US hydrocarbon capitalism using unconventional extraction techniques. By channeling billions of dollars into unconventional E&P companies, Arthur and his peers' ethical disposition to take financial risk turned a sunset industry in the United States, with most of its onshore oil resources extracted at the turn of the

millennium, into an expanding sector in the midst of a technological renaissance. In the process, these PE financiers profoundly changed our collective energy landscapes by unlocking previously unthinkable quantities of oil and gas (Haines 2013a; McLean 2018; US Energy Information Administration [USEIA] 2020).

To make my argument, I draw on ethnographic field research that I have conducted with oil and gas financiers in Houston, Texas, since late 2018. My interlocutors include PE partners, managing directors, bankers, lawyers, accountants, consultants, and engineers engaged in the practice of energy investing and lending (most in senior and leadership positions). They let me into their offices, their homes, and their lives,[4] enabling me to carry out interviews, participate in private industry events, "hang out" with them socially, and observe the oil finance sector from inside its close-knit social circles, which cut across firms. Understanding the people in this enigmatic "petroculture" of financial capitalism and the work they perform is as important as understanding the extractive technologies that produce energy, because the speed and expansiveness by which these extractive technologies are deployed are dependent on how they are capitalized and the financiers who capitalize them (Labban 2008; Wilson, Carlson, and Szeman 2017).

Risk and responsibility

The concepts of risk and responsibility in the anthropological literature on oil and gas are frequently framed within the context of corporate social responsibility (CSR), moral imperatives, and the need to mitigate environmental contamination. CSR, scholars have shown, allows corporations to pursue capitalist political economic objectives while diffusing responsibility for poor business practices and reinforcing unequal gift relations in the communities where they operate (Cross 2014; High, forthcoming-a; Rajak 2011). Responsibility has also been framed in terms of accountability for the negative anthropogenic impact that fossil fuel production and consumption have on people and the environment (Hughes 2017). For Hughes (2017, 14–15, 62), the "great evil of dumping carbon dioxide in the skies" through fossil fuel consumption requires a "moral reckoning" whereby responsibility for the risks posed by anthropogenic climate change must be assigned to those working in the hydrocarbon industry and those "complicit" in the consumptive petroculture economies of the world. In another strain of this literature, risk and responsibility are framed as the responsibility to avoid or mitigate the environmental and health risks associated with the toxicity of hydrocarbon production (Wylie 2015). What ties this literature together is that it frames responsibility in terms of accountability for untoward consequences and to mitigate various risks—from anthropogenic to health to socioeconomic—distinguishing it from scholarly work on financial risk.

The conceptual pairing of individual responsibility to take financial risks in pursuit of financial rewards has been around in various forms for a long time. Hawley (1893), for example, conceptualized risk taking as a factor of capitalist production alongside the classical economic factors of land, labor, and capital. He argued that what distinguishes profitable enterprises from nonprofitable ones are individuals' entrepreneurial appetites for risk taking. Knight ([1921] 1964) advanced this risk theory of profit by arguing that it is entrepreneurs' ability to take financial risks on uncertain futures that is the source of capitalist profits. More recently, Appadurai (2011, 2016) has taken up this conceptualization of risk and uncertainty in his analysis of the spirit and mechanics of short-selling derivatives. For Appadurai, it is financial speculators' capacity to take speculative financial risks on exploiting uncertain futures that allows them to earn profits where others will not. This narrow focus on the financial risks and rewards of exploiting uncertain futures rarely enters anthropological literature on energy, and fossil fuels in particular, most likely because of the various and complex ways that risk can be conceived.

Some of the closest scholarly work in this vein is Weszkalnys's (2015) exploration of "first oil" in São Tomé and Príncipe. With the blessing of state actors and help of technical experts whose job it is to estimate the uncertainties of hydrocarbon production, Weszkalnys (2015, 625) shows that profit-seeking "risk-taking entrepreneurs" play a central role in E&P activities in the country. Wood's (2016, 2019) ethnography of a small Canadian E&P

company is particularly insightful. She shows that hydrocarbon E&P entails grappling with multiple externalized and internalized risks—ranging from market price volatility to competing corporate practices of evaluating the financial worth of hydrocarbons deep underground. These financial risks not only threaten investors' capital but are entangled with the moral obligation of managers to return capital to shareholders in ways that challenge their durational ethics of responsibility and commitment (Wood 2016). The point that Wood (2019) makes is that the disposition of these managers toward risk and responsibility can be conceptualized as a kind of "energy ethics," one that has broad-based implications that transverse "awkward scales" and ethical worlds (Comaroff and Comaroff 2003). For High and Smith (2019, 10, 20), on whom Wood draws, "energy ethics" draws attention to how people make sense of energy in terms of what they consider to be "right and good," and the contradictions therein, without endorsing the standpoints of interlocutors or their ethical worlds.

The way that Arthur describes his personal sense of responsibility to take financial risks on the uncertainties of E&P is a kind of energy ethics. It resembles the notion of using his agency as a financial expert to act "on behalf of another" to yield envisioned future outcomes (Laidlaw 2014, 188; see also Raffoul 2018). This conception of agential responsibility is not limited to the causal efficacy of people to be held responsible or liable for adverse or unforeseen outcomes—Arthur's sense of responsibility does not gaze into the past, nor is his agential sense of responsibility rendered through his opposition to "systems of value and power" (Laidlaw 2014, 182). Instead, his sense of ethical responsibility to take financial risks is forward looking and gazes toward materializing envisioned outcomes that are rooted in the (re)production of the fossil fuel economy and financial modes of capitalism, much in the same vein described by Wood (2016, 2019). His disposition is suggestive of what Laidlaw (2014, 181) calls the "complex processes of the attribution of responsibility" that expose the connected and ethical dimensions of human actions.

Indeed, as a social relationship, the ethical responsibility to take risks to yield capitalist outcomes is internalized by interlocutors like Arthur as part of what they see as their identities as PE financiers, in ways similarly described by Zaloom (2004) and Miyazaki (2013). This forward-looking disposition to take financial risks on behalf of others resonates with Ortiz's (2013, 2014) account of French fund managers trading financial securities for their institutional investor clients. By taking responsibility for trading securities on behalf of institutional investors, fund managers take a forward-looking disposition to meet particular capitalist financial goals connected to material outcomes in ways that locate "political responsibility" for these outcomes, not with investors, but with financiers (Ortiz 2013, 76). Thus, responsibility is also something that is placed on them, through contractual agreement and the exchange of capital, by their institutional clients. The ethical entanglement of investors, investment managers, and the objects of their investments may be characterized as part of capitalist credit relationships that tie people and groups together well into the future, binding them to envisioned capitalist outcomes (Graeber 2012; Harvey [1982] 2016).

In the anthropological literature on oil and gas, there are few examples of how entwined perceptions of financial risk, financial reward, and responsibility—especially among those in positions of power—constitute a formative part of the petrocultures of financial capitalism. In the sections that follow, I map the role of PE in the US hydrocarbon industry, show how risk is narrowly framed in geofinancial terms, and explore the ways my PE interlocutors conceptualize their ethical sense of responsibility in their professional roles to shape our energy worlds.

Private equity and US E&P

Private investors have played a central role in the US oil industry by financing small E&P companies since the industry was founded more than a century ago. In the first part of the twentieth century, a limited number of bankers were willing to risk losing depositors' life savings on loans secured by prospective oil reserves as "collateral that could neither be measured nor seen" (Clark 2016, 43).[5] Greater technological sophistication in estimating potential oil reserves expanded commercial reserve-based lending to independent oil producers beginning in the 1950s, but lending practices rarely provide all the capital E&P companies require (Clark 2016; High, forthcoming-b).

The introduction and expansion of alternative financing schemes in the twentieth century creatively provided capital to E&P companies beyond what commercial lending would provide. However, many small- to medium-sized E&P companies have been, and continue to be, reliant on private investors to fund operations — a gap that PE firms bridge by connecting investors with companies. The preference of oil and gas PE firms to invest in smaller, start-up E&P companies is part of what distinguishes this subsector from the broader US PE sector covered by Souleles (2019), which has historically preferred larger, mature corporations.

PE firms provide capital for what are considered financially risky investments in the oil and gas industry. By contrast with owning stocks in publicly traded companies, for which shares can be bought and sold through exchange houses, owning PE means owning shares in private companies. Private companies do not have to regularly publish financial details or comply with regulations stipulated by regulatory bodies like the US Security and Exchange Commission. This not only makes what these companies do and how much they profit more secretive but also means they can take greater financial risks than the regulators and shareholders of public companies might allow (High, forthcoming-b; Souleles 2019). PE managers, who buy and sell shares in these private companies on behalf of investors, use proprietary information to carefully evaluate potential investment opportunities, which interlocutors tell me requires "boots on the ground" and "deep" local knowledge that is not publicly known.[6]

The first oil and gas–specific PE firms in the United States were established in the late 1980s in Texas.[7] Houston-based EnCap and Enervest and Dallas-headquartered Natural Gas Partners were the pioneers of this genre of PE in the United States. Established by experienced commercial oil and gas bankers, an interlocutor joked that the founders of these firms were a "bunch of unemployed bankers" who turned oil and gas PE into something that "you can make a lot of money" doing (interview, November 18, 2019). At first, they acted as private lenders and consultants, but they soon crafted a model to buy direct equity ownership in small- to medium-sized private companies, grow the prospective hydrocarbon assets of these companies, then sell these assets to larger companies to further exploit them, a process that my interlocutors called the "food chain" (see Wood 2016). Now numbering in the dozens, these US PE firms (many located in Texas, Houston in particular) compete with investment banks, such as JP Morgan and Goldman Sachs, to raise PE funds, then invest money from these funds into companies. Minimum investments can range from hundreds of thousands of dollars to tens of millions of dollars per investment, and funds can have targeted fund-raising goals ranging from several million to several billion dollars (Ho 2009; McLean 2018; Souleles 2019).

The US PE financiers whom I know from my fieldwork specialize in onshore US unconventional oil and gas E&P. The problem with onshore US unconventional E&P, my interlocutors said, is finding *profitable* (or "economic"; Field, n.d.; Wood 2016) reserves. For my interlocutors, this was the "right" kind of financial risk, marketable to institutional investors. It is perceived as "safer" because E&P happens in the United States and involves exploiting known onshore hydrocarbon reserves previously inaccessible with conventional extraction technology. Kyle, a contemporary of Arthur's, explained that offshore profit margins "are great when it works" but that investors are "making a huge bet on the exploration side" (interview, September 23, 2019). Kyle was a banker with one of the United States' top investment banks before cofounding his own oil and gas PE firm in Houston, Texas. The combination of horizontal drilling and hydraulic fracturing was an "unbelievable success" that could be marketed to institutional investors, Kyle explained:

> You're seeing reservoirs that were once dead, considered dead and obsolete, resurrected. Rock that you wanted to avoid is now "a shale." … It truly changed the game. … In the "shale game," you are going in and you are buying areas of land that we have a very good idea, from a geology standpoint, that the rock has hydrocarbons in it. It is just a matter of how productive that is going to be. (interview, August 25, 2020)

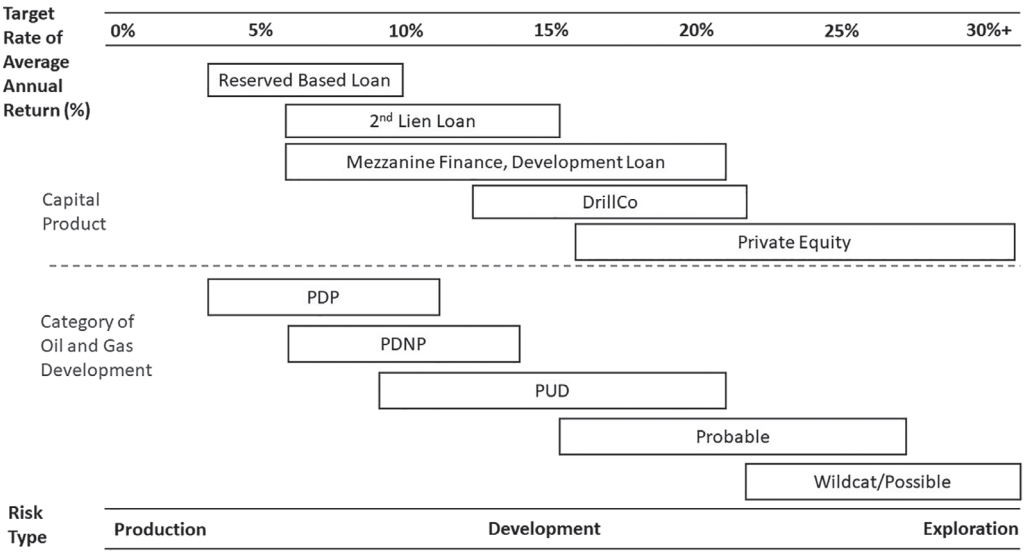

Figure 1 Risk–return matrix example: a reproduction by the author of similar visual diagrams collected during fieldwork. The acronyms represent stages of oil and gas E&P: PDP is "proven developed producing," PDNP is "proven developed not producing," and PUD is "proven but undeveloped." Mezzanine debt is loaned capital that can include a wide range of repayment features for the lender, including interest payments, royalty rights, and equity shares. Development loans are for the drilling of proven oil and gas reserves. Second lien debt is debt collateralized to an asset that is already collateralized with another loan. A Drillco is a kind of joint venture where an investor enters into an agreement with an E&P company to fund the drilling of a specified number of wells in exchange for a share of the value of those wells.

The financial risk PE managers take with investor's money, he said, is betting on how much can be potentially extracted using this "relatively new way of producing oil and gas." Their skill as PE financiers is twofold: to find and bet on E&P prospects that will yield their target rates of profitability and, as Kyle explained, to "convince our investors" that investing in E&P is "a smart risk and reward trade." Figure 1 is an example of the risk–reward diagrams that Kyle and other interlocutors use when consulting potential investors. These depictions are useful for conveying expectations of financial risks and rewards to investors that have little or no experience investing in hydrocarbon E&P. Moreover, they help investors conceptualize oil and gas resources as financial objects to be exploited. In these representations, PE finance is situated on the vanguard of the risk–return spectrum, where target rates of return are higher.

Other forms of finance tend to target "proven" operations in the oil and gas industry by focusing on established businesses with producing, rather than potential, hydrocarbon reserves. Commercial lenders, Kyle explained, have been and continue to be unwilling to lend capital for "exploration plays" not only because if exploration fails, their loans default, but also because they have no financial incentive to do so. If an unconventional prospect turns out to be hugely profitable, lenders will only get their contractual principal and interest. PE investors, meanwhile, stand to benefit from the entirety of the profit-making potential of prospective hydrocarbon reserves. On the vanguard, PE firms and their portfolio companies specialize in proving the "potentiality" of reserves and their future profitability, where profitability is "less a concrete number" and more a geofinancial probability imbued with capitalist hopes and dreams (Miyazaki 2013; Weszkalnys 2015, 617; Wood 2016, 45). Risk, meanwhile, is narrowly defined as financial risk (i.e., loss) associated with uncertainties of E&P.

Derisking shale

For my PE interlocutors, being on the vanguard of the risk–reward spectrum in oil and gas finance pridefully combines the skill and prestige of "high finance," akin to "front-office" investment banking, with the entrepreneurial wildcatter spirit long associated with the US onshore oil industry (High, forthcoming-b; Ho 2009). It involves proving the potentiality of hydrocarbon reserves, a process that interlocutors call "derisking." Speaking with me at his office in early 2019, Arthur told me that his firm excelled at "derisking" (interview, January 23, 2019). We sat at a long blackboard table; one side of the boardroom had a glass wall that looked out into the firm's main lobby and reception area, adorned in a black-and-white modernist decor. Some large, black-and-white maps of the continental United States sprawled on the table, checkered with colorful shapes and dots that highlighted oil and gas formations and wells. As we were talking, he pointed to a colored region on one of the large maps on the table and explained, "We're going to go spend money to derisk it, so that somebody else can come along and say, 'I see what you did here. I can see that these wells work'" (interview, January 23, 2019).

The idea of "derisking" was reiterated frequently by interlocutors and encapsulates the idea of making the potentiality of hydrocarbon reserves known, then "redomaining" these largely untapped reserves as financial objects with future economic value that can be sold (High 2019, 32; Shever 2012, 78). It implies exposing investors to the uncertainties of E&P and can be located in the time between when prospective mineral-acreage rights are purchased (or leased) and when profitable extraction and production can be proven. In this time, "a heterogeneous set of practices" ranging from seismic mapping to drilling test wells to estimating and valuing the size of hydrocarbon-accessible reserves are deployed to prove the existence of geological matter that can be profitably exploited for the purpose of capitalism (Weszkalnys 2015, 617). This process of actively taking financial risks in E&P is broader in definition than the risks associated with buying and selling derivatives contracts or financial arbitrage, because E&P involves a whole set of activities associated with redomaining (or recommodifying) the biophysical world (Weszkalnys 2015). Combining technical expertise with financial expertise to turn unseen hydrocarbon containing rock into future expected profits is the creative "alchemy" in oil and gas finance (Zaloom 2004, 365). Arthur's portfolio E&P companies that are responsible for executing this material set of heterogeneous derisking practices are akin to the Challenge Energy company documented by Wood (2016, 2019). The financial value of these companies and their hydrocarbon assets is dependent on convincingly turning these assets that cannot be seen, touched, or smelled into net present values (NPVs), based on future estimated discounted cash flows, that can be sold (Wood 2016).

Rick explained to me that "derisking" E&P is where the "big" money is, and it is where PE finance forged a name for itself during the shale revolution (interview, March 5, 2019). Rick is a senior executive in the industry who works with PE firms and has decades of experience. He explained that the story of the shale revolution has two major components: a technological component and a financial component. Technology turned financially "worthless" land into something that hydrocarbons could be extracted from, he told me. The financial side of the story is how PE firms like Arthur's saw an opportunity to fund independent oil and gas companies to use this technology to "derisk" unconventional extraction and "redomain" this land (and the hydrocarbon deposits underneath) into new financial assets. He broke the story down into three phases:

> The first stage is what we call "prove it." This is the stage where people are going to drill wells, maybe verticals, maybe horizontals. … All they're trying to do is show that a reservoir is going to cough up some oil or gas in sufficient quantities. … The next stage is what we call the "optimization stage." Now, the cat's out of the bag, and you, and everybody, runs around and it explodes! Now, people are trying wells over here, and wells over there, and twenty miles away, and two hundred miles away … discovering where is it good, where is it bad, and what's the best way to drill and complete these wells. … We have now reached a phase where pretty much every major play has a third stage, called "standardization." There is very little risk left. We basically know how to drill and complete these things. … I just got a whole lot of wells to drill. Ten thousand, twenty [thousand], fifty thousand, one hundred thousand of these wells yet to be invested in. This phase is mostly about trying to get your cost

> down. It's cookie cutter. … It's very different from the cowboy phase … where I take a chance to buy some acreage over here for 750 dollars [per acre] and hope it turns into 20,000 dollars an acre. Now everybody knows that over there actually it didn't work and it's still 500 an acre. This over here has been dynamite, it's 40,000 dollars an acre!

The risk–reward ratios of the "prove it" and "cowboy optimization" phases are massive, and that is why PE firms focus on this part of the oil industry, Rick said. "It's very much a risk–reward ratio."

From 2004 until 2008, a few oil and gas–specific PE firms that were in the "right basins" at the "right time" dominated this subsector of finance. During this period, big oil and gas companies developed "an obsession," as one interlocutor put it, with growing their inventory of drilling prospects "derisked" by PE firms because they did not want to miss out on what many saw as a renaissance in the US oil industry. When the 2008–9 global financial crisis (GFC) happened, oil and gas PE ascended in popularity among institutional investors because interest-bearing investments and other investment vehicles were performing poorly in the wake of the GFC (St. Louis Federal Reserve 2020; USEIA 2020). While the typical time horizon for PE investments ranges from three to seven years, this horizon shifted to three to five years during this phase because demand for these "derisked" prospects meant proven prospects could easily and quickly be sold. These horizons were financially motivated and decoupled from the expected material life of unconventional wells, except for their expected NPV. Jacob, a managing director of oil and gas lending for a large multinational corporation that works with PE firms, explained,

> You had a declining interest rate environment. You had these big pension funds out there looking for ways to hit their actuarial return targets. … It's a recipe for private equity to just be a huge force in terms of an asset class, and the window was wide open in the E&P space, given what was going on with shale. (interview, December 13, 2019)

With few investment vehicles in which to make their target returns, investors channeled billions of dollars into PE firms, hoping to capitalize on what many "prayed" would be the next meteoric rise in oil prices (Haines 2013a, 2013b). As *Oil and Gas Investor* magazine's 2013 special issue on PE, subtitled "Money Well Spent" (Figure 2), exclaimed, "the institutional investor crowd love energy and the kinds of returns it can deliver" (Haines 2013a, 4). By contrast, with just a few PE firms specializing in E&P prior to 2008, 379 PE firms were funding approximately 300 E&P companies in the United States near the peak of the second phase in 2013 (Haines 2013a, 4).[8] Newly established PE firms, like Arthur's and Kyle's, had amassed hundreds of millions of dollars of institutional investments, while well-established PE firms continued to raise multibillion-dollar E&P funds. Blackstone, for example, raised a $4.5 billion energy fund in February 2015, only three years after raising a fund of $2.4 billion (Kumar 2015), and EnCap raised its twentieth fund (Capital Fund XI), worth $7 billion, in 2017 (EnCap 2020).[9] Between 2015 and 2019, US PE firms spent $64 billion, of which $44 billion was spent on unconventional E&P in the United States—fundamentally transforming the US energy landscape and the global Anthropocene in ways that are not yet fully apparent (Flowers 2019; Kumar 2015).

Shifting responsibilities

Although the price of oil fell precipitously in late 2014, oil and gas PE firms continued to fund raise, money continued to pour in from institutional investors, and PE managers forged ahead with derisking. The problem is that in the $40 to low-$50 per barrel price range, which persisted between 2014 and 2019, it was difficult for PE firms and their portfolio companies to meet their profitability targets, interlocutors told me. The other problem was that with so many PE firms competing to prove the potential economic value of unconventional reserves, there were

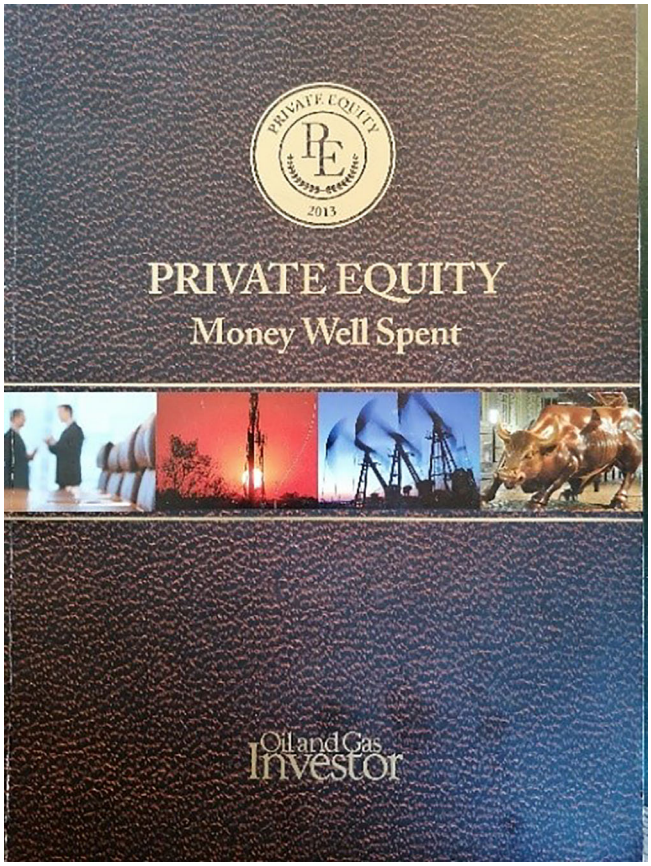

Figure 2 The cover of a special "Private Equity" edition of *Oil and Gas Investor* magazine, November 2013. Reproduced with permission.

fewer and fewer resources to be "derisked." The flurry of PE-fueled E&P activity had "derisked" the most lucrative acreage—exposing where unconventional extraction was profitable and where it was not. By 2019, the big oil companies at the top of the "food chain" that PE firms depend on stopped buying their "derisked" unconventional reserves because, as one interlocutor explained, the big companies "got full up on acreage" (interview, January 22, 2019). The oil and gas PE model that dominated the industry for more than a decade completely broke down. Then, the fall in oil prices in early 2020 pushed the entire US hydrocarbon industry into a full-scale retraction (High and Field 2020; USEIA 2020).

Talking with me in mid-2020, after the downturn and historic plummet in the price of US oil, Kyle told me, "It's not an easy situation. … All of our companies are underwater" (interview, August 25, 2020), by which he meant the financial value of his companies and investors' capital in them had all been wiped out. Now, Kyle was trying to balance his multiple responsibilities—to his employees, to his investors, and to his own capitalist project. He admitted that he had to make some "difficult decisions." He explained,

> If we make them money, then we get money. That's not going to happen on any of our companies today based on where they are at, and what's happened in the industry. It would be very easy, or tempting I should say, … economically rational … for my partner and I to say, "Listen, we're not going to make money. We're out." That's not what we're doing. That's not what we've done. We feel an obligation to our investors to do the best that we can to generate the best returns as we possibly can. That's what we've been focused on and that's what we're continuing to do for our investors.

As Wood (2019, 83) notes, "oil at … the end of profit" involves a slightly different set of moral responsibilities than it does at the beginning of an oil boom. Instead of moral horizons full of promise and potentiality of profit, oil at the end of profit tests individuals' sense of responsibility to persevere in the face of dismal financial outcomes, failed promises, and future uncertainty. Kyle is an example of this; once ignited by a sense of responsibility to use his financial expertise to generate profits, he now saw it as his responsibility, indeed, his moral "obligation," to proceed with E&P to minimize losses for his investors. It has been "very painful," he said, with strain in his voice, followed by a long sigh.

Speaking with me around the same time, Arthur told me that his firm had managed to weather the crisis that had swept across the industry in the last twelve months. A handful of committed investors and some price hedging had given Arthur's firm an edge over some of their competitors. It had not been easy, however; during a meeting with some of his institutional investors to review their fund performance, he told me he nervously watched the price of oil plummet on his phone, eroding the asset valuations his team was in the midst of presenting. He takes his responsibility to balance risk and reward and to maximize his investors' capital seriously; he explained, "I really do think about that. Just the responsibility that comes with that" (interview, January 23, 2019). For him, being a PE financier is not *just* about maximizing investor capital and fulfilling his own capitalist goals—although these are priorities; he saw his work contributing to a greater national and global good. "We are producing hydrocarbons that are able to be used here in America," and fossil fuel production, he told me, reduces "poverty across the world" by creating wealth and making energy more inexpensive. Overall, "I think that what we are doing is good." For me, Arthur's reflections are reminiscent of Miyazaki's (2013) arbitrageurs—optimistically seeking to shape the world through finance even as the world changes around them and undermines their professional practice. His reflections also echoed the sentiments documented by High (2019, 41), whose oil workers regarded fossil fuels as a "force for good" and a cause for moral conviction in a world dependent on hydrocarbons but increasingly anxious about their contribution to climate change.

Since mid-2019, some of my interlocutors have commented that PE was perhaps not "money well spent" after all. While the United States produced more oil and gas than it had for more than half a century, and some people made billions, many investors and companies lost money as the most recent stage of the shale revolution came to a close. Some small- to medium-sized firms have since dissolved, while large PE firms have begun consolidating and reorganizing their portfolio companies, hoping to survive the downturn. The surge of investor capital into financially high-risk, high-reward oil and gas PE created "overdrilling," interlocutors now told me. This activity helped depress US crude oil and gas prices, scuttling investor profits. Acting on their perceived responsibility to aggressively "derisk" unconventional hydrocarbon E&P, PE financiers exhausted the profits that could be earned from these activities. One message that can be gleaned from this is that in the process of fulfilling their responsibilities to derisk oil assets for investors, PE financiers collectively contributed to a classic crisis in overproduction—one that stretched the United States' landlocked oil infrastructure to its limits (Harvey [1982] 2006; High and Field 2020; Labban 2008). Some non-PE interlocutors I know, in part, blamed PE financiers for ushering in the "bust" in the US oil and gas sector—even though, for more than a decade, these financiers were the risk-taking stars of the industry who helped revitalize US onshore production, to the applause of investors.

While this has ended, the surge of capital from PE has ensured that hydrocarbon consumption in the United States will extend well into the future by contributing to low hydrocarbon prices and widespread availability of fossil fuels, even as the industry experiences a contraction. Far from contributing to a "wrong turn," as Reuter (2021, 176) suggests, Arthur, Kyle, and others I know take solace in contributing to American and global petrocapitalism by providing its "lifeblood" (Huber 2013). They could not have done this, however, without the financial backing of institutional investors. PE, as such, may be understood not only as a conduit for capital but also as a social conduit of responsibility—a way for investors to harness the financial benefits of hydrocarbon E&P, while outsourcing the blame for any potential losses and adverse social and environmental outcomes (Ortiz 2013). As Souleles (2019,

187–88) contends, PE financiers form a powerful yet underresearched "interstitial" conduit for money within a larger financial system to which we are all connected.

Conclusion

The accounts of Arthur, Kyle, and others provide an occasion to reflect on how financiers are empowered with the responsibility to define and take risks on our collective behalf through institutional investors. They also provide an opportunity to reflect on how capital from institutional investors shapes our energy worlds. While a new phase of the US shale revolution may be upon us, unconventional hydrocarbon extraction and the PE finance that fueled it are unlikely simply to disappear. There is no turning back the clock on the transformative effect that PE has had on US energy production, the communities where extraction occurs, the lives it has affected, or the landscapes it has transformed.

Unconventional extraction unleashed a wave of new energy possibilities that cannot be unlearned or unimagined. Interlocutors I know in Houston's PE community attest that it is their responsibility to seize financial opportunities in the hydrocarbon sector for a kind of greater good—a kind of capitalistic energy ethics (High and Smith 2019). The directions of our energy presents and futures, I have shown, have as much to do with technological innovation as they do with how these innovations are financed and with the forward-looking moral ambitions of financiers to take financial risks. One PE interlocutor I know, who is a managing director at a large reputable firm, told me that his firm is now looking for financial opportunities in renewable energy sources, although he admitted that his firm's inquiry into renewables is exploratory at the present time. Oil and gas PE thrives on matching investment risks with high investment returns. If the capitalistic conditions are right, the next energy "revolution" may only be a technological innovation and a price cycle away, and interlocutors I know see it as their responsibility to exploit it.

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Notes

1 Institutional investors are organizations with aggregated pools of capital, such as pension funds, hospital trusts, university endowments, and insurance companies.

2 "E&P" refers to finding, drilling, and producing hydrocarbons.

3 Gaseous hydrocarbons tend to be less monetarily valuable than crude oil.

4 I am a member of two industry associations, which I joined in 2019 while conducting fieldwork.

5 Loans given to E&P companies were typically for less than twelve months and based on the net worth of the borrower, including the value of oil in storage and in transit (Clark 2016).

6 Kyle told me that he relies on people with twenty to thirty years of experiential knowledge in a particular location (interview, January 22, 2019).

7 According to Clark (2016), a few generalist PE firms became involved in the US hydrocarbon sector in the mid-twentieth century, but it was not their sole focus.

8 Fifty-two of these ninety PE firms collectively fund-raised $68.7 billion between 2003 and 2013 (Haines 2013a).

9 EnCap's first upstream fund-raised $20 million in 1988.

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