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The interpretive flexibility of oil and gas pipelines: Case studies from Southeast Asia and the Caspian Sea

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ABSTRACT

Based on research interviews and field research, this article explores the "interpretive flexibility" of two large pipelines: the $4.6 billion Baku-Tbilisi-Ceyhan (BTC) oil pipeline exporting petroleum from the Caspian Sea near Azerbaijan and then traversing parts of Georgia and Turkey; and parts of the $14.2 billion Trans-ASEAN Gas Pipeline (TAGP) Network connecting the gas reserves of Indonesia, Myanmar, and Thailand with each other and Singapore. Each pipeline is the product of differing interpretations and ideologies, meaning they have "interpretive flexibility" because their meaning is under constant interpretation. The article depicts four differing interpretive frames for each pipeline, revealing the views of the Association of Southeast Asian Nations, government of Thailand, government of Myanmar, and state-owned energy Malaysian energy company Petronas for the TAGP, and the World Bank Group, British Petroleum, European Union, and the government of Azerbaijan for the BTC. The article finds that pipelines not only mark the physical landscape and distribute energy fuels, they also transfer what were once customary public resources into private hands, concentrate political power, facilitate human rights abuses and possible acts of genocide, become intertwined in national discourses of revitalization and strength, and validate distinct approaches to economic and social development.

1. Introduction

Examples abound of technologies and processes possessing different meanings for different actors. Telephones were not originally meant for enjoyment and early vendors even berated consumers for "frivolous" and "unnecessary" social calls, believing that idle conversation and gossip eroded the phone as a rational business tool [8]. Ordinary household refrigerators have been used not only to store and preserve food and beverages but also to house hibernating snakes and other animals, hide illegal drugs and valuables, and signal a healthy lifestyle to potential romantic partners [10]. Automobiles represent symbols of freedom and sexual desire for some, excess resource use and waste for others [33]. Some Americans perceived the Space Shuttle *Challenger* as a technological marvel and a symbol of the country's commitment to science and innovation while others viewed it as a poorly designed vehicle with a hazardous propulsion system, the ultimate product of blatant Congressional pork barreling, bureaucratic duplicity, inexcusable corporate deception, and public ignorance [26]. Commercial airlines were turned into weapons on September 11, 2001; captured Iraqi jet fighters were used in the Gulf War of 1991 to blow out oil-rig fires with their exhaust; an alarm clock can represent a political statement when worn by a musician, evoke laughter in television skits and songs, trigger a bomb, or merely wake us out of our slumber [24].

Indeed, the previously discussed instances show that humans are constantly modifying and reconfiguring technologies and what they mean. Compared to telecommunication devices, new electric appliances, automobiles, spacecraft, and weapons, oil and natural gas pipelines may seem banal. They are a fixed, unmovable, clunky mode of transporting and distributing hydrocarbons and fuel. To oil and gas companies, the solution to energy problems is to build more of them to increase sales revenues and profit.

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To some social groups and nongovernmental organizations, the solution is to build less of them to minimize environmental degradation and preserve community integrity. Many of us shake our head and move on to study more interesting forms of technology and infrastructure.

But what if pipelines are not so bland? Based on research interviews and field research in Southeast Asia and the Caspian Sea, this article explores the "interpretive flexibility" of two large pipelines: the $4.6 billion Baku-Tbilisi-Ceyhan (BTC) oil pipeline exporting petroleum from the Caspian Sea near Azerbaijan and then traversing parts of Georgia and Turkey, and parts of the $14.2 billion Trans-ASEAN Gas Pipeline (TAGP) Network connecting the gas reserves of Indonesia, Myanmar, and Thailand with each other and Singapore. The article argues that each pipeline possesses "interpretive flexibility" because its meaning is perpetually negotiated by those social groups connected to it. The article explores four differing interpretive frames for each pipeline (or eight in total), depicting the views of the Association of Southeast Asian Nations, government of Thailand, government of Myanmar, and state-owned energy Malaysian energy company Petronas for the TAGP, and the World Bank Group, British Petroleum, European Union, and the government of Azerbaijan for the BTC. The article shows that pipelines, apart from merely distributing fuel, can fulfill broad visions of national progress and modernity, consolidate patterns of capital accumulation and wealth, facilitate grave human rights abuses, and validate unique approaches to social development and economic growth.

2. Research and theoretical methods

To investigate the "interpretive flexibility" of oil and gas pipelines, the author first selected two prominent pipeline networks and then relied predominately on original data collected through research interviews and site visits along with the insights from the field of science and technology studies (STS).

Why pipelines, readers may ask? Notwithstanding the intense focus STS scholars such as Thomas Hughes [14,15], Gabrielle Hecht [38], Richard Hirsh [11,12], Langdon Winner [37], David Nye [22,23], Johan Schot [29], and others have given sources of energy supply such as centralized power plants and electricity grids, pipelines are a prevalent form of energy delivery. Oil and gas pipelines have become such a permanent fixture of the energy landscape in the U.S. that the country boasts more than 2.2 million miles of them [35]. Natural gas currently accounts for roughly 21% of global energy supply [18], and oil and petroleum liquids account for 34% [34]. Analysts expect natural gas use worldwide to grow even further in the coming years, from 100 trillion cubic feet in 2004 to 163 trillion cubic feet in 2030—a growth rate second only to coal in terms of energy fuels [34]. Thus, pipelines and the fuels they support are important, albeit often invisible and undervalued, parts of the energy landscape and will likely grow in importance over time.

The author selected two pipelines for analysis: the Baku-Tbilisi-Ceyhan (BTC) oil pipeline exporting petroleum from the Caspian Sea near Azerbaijan and then traversing parts of Georgia and Turkey, and parts of the Trans-ASEAN Gas Pipeline (TAGP) Network connecting the gas reserves of Indonesia, Myanmar, and Thailand with each other and Singapore. The author selected these pipelines because they are among the largest in the world, are recent, involve multiple stakeholders, and cross international borders, aspects summarized in Table 1. The BTC, for instance, required $4.6 billion of investment involving a 1760 km pipeline route that crisscrosses 17,700 parcels of land and a collective population of more than one million people living within its corridor. Operating according to a master plan envisioned by the Association of Southeast Asian Nations (ASEAN), the TAGP is even more expansive and includes a network of ten cross-border pipelines worth $14.2 billion in investment transporting 3095 million cubic feet of natural gas per day along 3952 km of pipe in 2008 [30–32].

The author relied on 128 research interviews at 51 institutions conducted over the course of two years to collect primary data relating to how different actors view each pipeline system. Participants were selected to represent upper management positions in their respective institutions, and institutions were selected to include a sample of different stakeholders involved in oil and natural

Table 1
Summary details for the BTC pipeline and TAGP network.

Pipeline	Fuel	Length (km)	Location	Volume	Cost (USD)	Majority shareholder/Operators	Major Financiers	Status
Baku-Tbilisi-Ceyhan (BTC)	Oil	1760	Azerbaijan, Georgia, and Turkey	1 million barrel of oil per day	$4.6 billion	British Petroleum, Chevron, State Oil Company of the Azerbaijan Republic, Inpex, Statoil Hydro	International Finance Corporation, European Bank for Reconstruction and Development, export credit agencies of seven countries, and a syndicate of 15 commercial banks	Completed and operational
Trans-ASEAN Gas Pipeline (TAGP)*	Natural Gas	3952	Indonesia, Malaysia, Singapore, and Thailand	3.1 billion cubic feet	$14.2 billion	Petronas, Pertamina, TotalElf, Chevron, PTT, Premier Oil, Myanmar Oil and Gas Enterprise, Nippon Oil, and SembGas	Asian Development Bank, Japanese Bank for International Cooperation, consortium of private banks	About half completed

*As of 2009.