



Geopolitical Disruptions #2: Identifying the Feedback Loops

Posted by [jeffvail](#) on September 8, 2008 - 10:30am

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Tags: [corruption](#), [export land model](#), [feedback loops](#), [geopolitical feedback loops](#), [geopolitics](#), [nationalism](#), [original](#), [resource ownership](#), [roi](#), [targeting](#) [list all tags]

This post, the second in a series on Geopolitical Feedback Loops ([see part 1 here](#)), will outline the various geopolitical feedback loops that operate to disrupt oil and resource production. I've tried to link most of these feedback loops around a common theme of ownership dispute, illustrated below. There are several examples for each feedback loop, but in the interest of time I've just listed them and linked to further information--each could be a post in its own right.

Oil & Resources Ownership Disputes

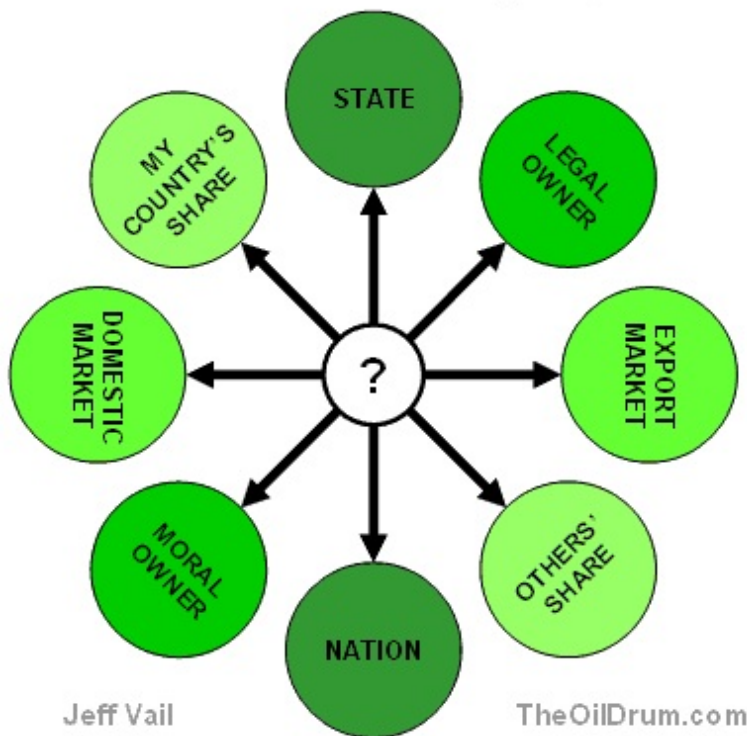


Figure 1: Does the state own oil reserves or the nation? When the two are contiguous it makes little difference, but as they become increasingly dissimilar the dispute drives conflict. While I haven't divided the feedback loops explicitly along ownership lines, this graphic may help conceptualize these processes as a single system.

GFL1: "Nation"/State Conflict

Explanation: *Who owns the oil, the state or its constituent nation(s)?* Throughout the 20th Century, the international order was defined by the Nation-State system that developed out of the Peace of Westphalia. As Philip Bobbitt explained in his seminal work, [The Shield of Achilles](#),

the constitutional basis of the modern Nation-State is that the State provides for its constituent Nation. For this system to work, there must be close overlap between the State and the Nation.

This, of course, has always been a fiction to some degree as States have generally cobbled together numerous national and affinity groups with less than total exclusivity and attempted to mold a "national character" out of them that is contiguous with the boundaries of the State. Today, for a variety of reasons, this order is rapidly falling apart. As a result, nations and states are increasingly in conflict over self-determination and, critically, resource control.

When a Nation (or any other non-state group such as a religion, issue group, or affinity group--I am using the broad term "Nation" here only for simplicity) has a dispute with a controlling state over control or use of a resource such as oil, gas, etc., the importance and motivation to escalate to violence in pursuit of resource control is, at least partially, a function of the value of the resource in dispute. Because these conflicts have the tendency to increase the scarcity, and therefore value, of the resource, this type of conflict forms a positive feedback loop. In addition to this positive feedback nature, this process also expands in scope as it intensifies: resource ownership that was minimally relevant a few decades ago (e.g the Arctic, or Canada's tar sands) is now becoming an important source of conflict (this tendency towards scope-expansion also runs through many of the feedback loops identified below).

In the interest of brevity, for a more in-depth look at the fundamentals behind this feedback loop see my paper [The New Map](#). I list this feedback loop first because I think it may be the least understood, and has the potential to mushroom into one of the largest sources of supply disruption within a decade or two. It serves as the foundation of the concept of resource ownership disputes illustrated in the headline graphic. As with all the opposing pairs illustrated above, when the two overlap perfectly (e.g. "nation" and "state" or "legal owner" and "moral owner") there is no problem, but as these opposing notions begin to diverge the foundation for sustained conflict is created.

Examples (Oil & Gas): [Nigeria \(Ijaw/Igbo/etc.\)](#), [Iraq \(Kurd, Shia, Sunni\)](#), [Canada \(First Nations\)](#), [Iran \(Awhaz, Baloch\)](#), [Angola \(Cabinda\)](#), [Mexico \(Zapatistas/EPR\)](#), [Saudi Arabia \(Islamists\)](#), [Yemen \(al-Qa'ida, tribes\)](#), [Sudan/Chad \(SLA, Darfur\)](#), [Ethiopia \(Ogaden\)](#), [UK \(Scotland\)](#). Other resources: [Morocco \(Sahrawi Rebels - Rock Phosphate\)](#), [Indonesia \(Irian Jaya - various metals\)](#), [Democratic Republic of Congo \(LRA - diamonds & other minerals\)](#), [Israel/Palestine \(aquifers & surface water\)](#), [American West \(surface water compacts\)](#).

GFL2: Production Conservation

Explanation: *Who has moral ownership of oil and other resources, today's population, or posterity?* Among oil exporting countries, the realization that oil supplies (and quite possibly overall energy supplies) will soon peak and begin to decline forces them to weigh maximizing production (and, generally, also revenue) today against maximizing revenue over the long term by consciously producing at less than maximum capacity. There are numerous political, economic, and social considerations involved here, but in general this is a positive feedback loop because reducing production now increases scarcity and price today, which in turn increases revenue from the remaining production and makes it more politically viable today for the same nation, and other nations, to reduce production today in order to maximize long-term revenue. If Saudi Arabia can make \$800 million exporting 8 million barrels of \$100 oil per day, and a billion dollars exporting 7 million barrels of \$150 oil each day, it isn't a very difficult political choice to both make more money now AND save more oil for future generations.

Example: [Saudi Arabia](#), [United States](#)

GFL3: The "New Mercantilism"

Explanation: Before the era of globalization and "free trade," the dominant global economic paradigm was mercantilism--the belief that the size of the global wealth pie was effectively fixed, and the only way to increase one's share was to take some away from someone else. In an environment where it is increasingly clear that production of energy and many other resources are severely constrained, mercantilism is making a comeback. Under a mercantilist paradigm, if China decides that it needs 10 million barrels of oil per day to improve the standard of living of its population, it needs to take the additional 2.5 million barrels per day from someone else. This is done by developing long term relationships with exporting countries facilitating long-term bilateral supply contracts, by fixing infrastructure (such as pipelines) to deliver oil to one consumer over another, etc. Mercantilism raises this question: *if "my" share is to grow, whose share will I take?*

Mercantilism becomes a positive feedback loop for at least two reasons: first, because one country engaging in mercantilist practices pressures others to follow suit to protect their share of the pie or lose out; second, because mercantilism is a less optimal allocation of energy resources than market allocation, effectively removing oil from the open export marketplace, thereby increasing the price on that market and further pressuring countries (and firms, and individuals) to resort to mercantilism to lock in their share of the energy pie. Additionally, as the energy pie shrinks, these forces will increasingly intensify.

Example: [United States](#), [EU](#), [China](#) (and [here](#)), [Russia](#), and [India](#)

GFL4: Privateering

Explanation: *Does the "legal" ownership of the rich few or the self-defined "moral" ownership of the impoverished masses (or justification as such by greedy criminals) control?* High oil prices increases the incentive to bunker oil, to extort oil producers, and to otherwise leverage violence or the threat of violence against oil producers for personal gain. This forms a positive feedback loop for two reasons. First, privateering physically shuts in some oil production, as it may take an example attack to demonstrate capability, and kidnappings often remove critical personnel from a project resulting in delays or production shut downs. Second, whether producers pay off privateers or pay security to protect themselves from privateers, privateers impose a significant cost on production operations. In both cases the result is greater scarcity and higher prices, both of which create more motivation for new or expanded privateering operations.

Example: [Nigeria](#) seems to be the only clear cut example of the privateering feedback loop currently in place with regard to oil. Arguably it is also in place in [Colombia](#) and possibly [Ecuador](#) where the militias that attack oil infrastructure are often as motivated by profit and extortion as they are by ideology. Privateering is also commonplace in the broader resources sector (e.g. organized copper theft rings).

GFL5: Resource Insecurity Driving Military Adventurism

Explanation: *Why is the oil we "need" under their sand?* As the price of energy and resources increase, many nations realize that their dependence on once cheap imports is a strategic Achilles heel. As this problem grows worse, they are increasingly willing to embark on military adventurism to secure their energy and resource needs. This can manifest itself in strategic partnerships where importing nations sell arms to energy exporters, or it can go to the extreme of invading a resource rich country to improve future control of resource flows. Either way, these

actions increase resource insecurity, may increase scarcity (such as the lengthy drop in production following the US invasion of Iraq), and form a positive feedback loop as they increase the motivation for other resource-insecure countries to take drastic steps to improve their own strategic situation.

Example: [Iraq \(US\)](#), [Iran \(US?\)](#), [Venezuela \(US?\)](#), Arctic ([Russia](#), [US](#), [Canada](#), [Denmark](#), [Norway](#)), [Georgia \(Russia, US, EU\)](#), [Chad \(Sudan\)](#), [China/Japan](#), [Spratly Islands \(China, Vietnam, Philippines\)](#).

GFL6: Corrupt Governance

Explanation: *If someone else can get rich of this oil, why not me?* High oil and resource prices increase the incentive for everything from low-level graft and corruption to a military coup with the intent of expropriating as much personal wealth as possible from the country's resources. Corruption and rotating dictatorships reduce oil production for several reasons: they present a less efficient and more costly business environment, they undermine property rights protections that often facilitate resource production, and they are likely to spawn armed conflicts, civil wars, etc. that are likely to destroy infrastructure or shut in production capacity. This, in turn, increases the scarcity and value of the oil in dispute and forms a positive feedback loop.

Example: [Mauritania](#), [Nigeria](#), [Sudan](#), and Equatorial Guinea.

GFL7: Targeting by ROI

Explanation: I've listed this feedback loop second to last as it doesn't really fit within the "ownership dispute" framework of the above feedback loops. Scarce energy, and more expensive energy, increase the return on investment for an attack on energy infrastructure. An attack that effectively shuts in 100,000 barrels of oil per day has roughly double the financial impact when oil costs \$100/barrel compared to when oil costs \$50/barrel. Therefore, when targets are being selected (whether by state actors such as Russia targeting the Georgian port of Poti or rebels in Mexico, etc.), higher energy costs make energy targets more rewarding, and more likely to be selected. When energy infrastructure is successfully attacked, it increases the scarcity of oil, increases the price of oil, and makes this a positive feedback loop by further increasing the attractiveness of energy infrastructure targets.

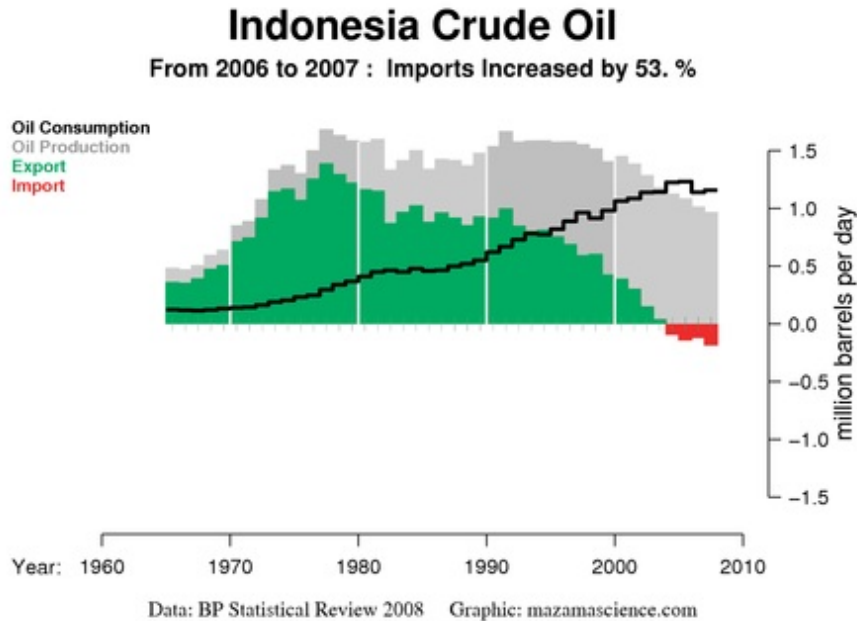
Example: [Iraq](#), [Nigeria](#), [Mexico](#), [Saudi Arabia](#), [Philippines](#), [Thailand](#), [Turkey](#)

GFL8: Export Land Model (ELM)

Explanation: Rising oil prices increase revenues for oil exporting countries. These rising revenues generally drive consumption in exporting countries (e.g. more wealth means more people can drive larger cars, more food security means rising populations, etc.), which in turn reduces exports. In some circumstances (generally where the exporter is a major player such as Saudi Arabia or Russia) declining exports may increase price enough to keep net export revenues rising--in these situations this forms a positive feedback loop. In other cases, where rising consumption results in lower overall export revenues, a negative feedback loop is created. Westexas, Khebab, and others have already done [outstanding work](#) on [this topic](#)--I have included this feedback loop at the end of this list not because it is least important (it is probably most important, at least in the near term), but because it has been most exhaustively covered previously.

Example: Real world examples of ELM in action include Indonesia, Egypt, Malaysia, and Mexico.

In the near future, its impact in major exporting states like Saudi Arabia and Russia may be most significant. Here is a graphic of this process in action in Indonesia:



Thoughts on Quantifying Feedback Loops

I had initially hoped to include quantities of oil shut in by each of these feedback loops broken down by country or area. The data simply isn't available to do that, especially to separate out exactly how much of oil shut in can be attributed to a discrete feedback mechanism. There are, however, two areas where I will discuss quantities briefly. The first is an overview of the amount of oil shut in at two notable hot spots. The second, and much more impressive, is Simon Tegg's work graphically displaying the correlation between quantifiable social factors and nations' net oil exports.

Quantifiable Disruptions in Nigeria & Iraq

The [EIA estimates](#) that, as of April 2007, Nigeria had 587,000 barrels per day of production shut in by violence--primarily the Nation/State, Privateering, Corruption, and Targeting/ROI feedback loops. However, the EIA also estimates that Nigeria has 3.2 million barrels per day of production capacity. A [single attack](#) has shut in as much as 345,000 barrels per day for a brief period, and the amount shut in at any given time is highly variable. Recently, Nigerian production has been [hovering just below 2 million barrels per day](#), and has even [dropped briefly below 1 million barrels per day](#), suggesting the actual shut-in figure is far higher.

In Iraq, oil production is [just now nearing pre-war production levels of 2.6+ mbpd](#). While some officials claim Iraq could surpass 3 mbpd in 2008, critical political compromises splitting resource ownership between the federal governments and Iraq's three main ethnic/sectarian groups have not been reached. The oil shut in since the invasion (and the oil that future violence may shut in) can be attributed to various feedback loops: military adventurism driven by resource insecurity, nation/state violence, corruption, and targeting/ROI.

Visualizing Feedback Loops

Below is an excellent graphic display of several social factors and net oil exports, created by Simon Tegg (thank you!) using data from the Failed State Index compiled by the [Fund for Peace](#) and [Foreign Policy](#) magazine. If the embedded display doesn't work for you, or you want to see the



While the data set, starting only in 2005, doesn't provide an obvious illustration of geopolitical feedback loops in action, it demonstrates the potential to quantify these forces and display them effectively.

Conclusion

Here, I've listed the examples that I can think of for each feedback loop. If readers have additions, changes, etc., please add these in the comments. The links are not intended to be definitive sources of information about each feedback loop in action, but rather a jumping-off point for research and discussion.

The next and final post in this series will discuss the interrelationships between these feedback loops and prospects for solving, or at least mitigating, their impact.



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