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Will Iran Give Up Twenty Percent Enrichment?

Since February, Iran has been enriching uranium to concentrations of 20 percent U-235. This is a troubling development because a stockpile of 130 kg or so of 20 percent enriched uranium would reduce by more than half Iran's time to a bomb.¹ This possibility understandably worries the major powers and escalates tensions. Continuing 20 percent enrichment calls into question all approaches to a resolution of the Iranian nuclear issue. A key unknown is whether Tehran will stop the higher enrichment and, if so, under what circumstances.

The Obama administration says it has a two track approach to Iran: to offer engagement and cooperation, while simultaneously threatening punishment (for example sanctions) for continuing non-cooperation. The main item on the administration's engagement agenda has been a proposed deal to refuel the Tehran Research Reactor (TRR), which is used primarily to produce medical isotopes. Iran had sent a request to the International Atomic Energy Agency (IAEA) to purchase fuel for the reactor. Although buying fuel rods could have remained unrelated to Tehran's enrichment efforts, in October 2009, France, Russia, and the US responded with a fuel swap proposal: If Iran immediately shipped 1200 kg of low enriched uranium (LEU) to Turkey for safekeeping, it would receive TRR fuel elements sometime later. Iran agreed to the swap in principle, but insisted that a simultaneous exchange take place on Iranian soil in one or multiple packages. Differences over the timing of the swap lead to a deadlock. Iran, expressing impatience, began enriching its own uranium to 20 percent in February, claiming it was for domestic production of fuel for the reactor.

In May, after a 7-month stalemate, Iran reversed its position and agreed to the original U.S. terms for the deal to ship out material to Turkey. As a result of Brazilian and Turkish diplomacy, Iran and the two countries signed a joint declaration² outlining the concession. But Iran did not clearly state that it would stop its new 20 percent enrichment if the fuel swap went through.

The US government argued that sanctions should not be delayed in response to Iran's acceptance of the fuel swap, in part, because it claimed³ that Iran was adamantly refusing to cease higher enrichment. On

¹ Starting from 20 percent enriched uranium reduces by half or more, depending on the concentration U-235 in the waste, the time to produce a significant quantity of 90 percent uranium when compared to using Iran's existing stockpiles of 3.5 percent uranium as feed.

² Federative Republic of Brazil, Islamic Republic of Iran and Republic of Turkey. *Joint Declaration by Iran, Turkey and Brazil*. Tehran, 17 May 2010. Web. 21 July 2010. <<http://www.fas.org/nuke/guide/iran/joint-decl.pdf>>.

³ U.S. Department of State. *Daily Press Briefing*. 18 May 2010. Web. 21 July 2010. <<http://www.state.gov/r/pa/prs/dpb/2010/05/141972.htm>>.

June 9, the United Nations Security Council passed a fourth round of sanctions⁴ against Iran, targeting conventional weapons and its ballistic missile and nuclear programs followed by even tougher national sanctions imposed by the US⁵ and the European Union.⁶ Some officials in Iran responded to sanctions, in part, with even more adamant and bellicose declarations that 20 percent enrichment would not under any circumstances stop, perhaps making true the US assertion.

The situation is complex and nuanced. Iran's attitudes toward, and signals about, 20 percent enrichment have gone through at least three distinct phases, discussed below. While some uncertainty always remains when discussing Iran's future behavior, a close analysis suggests that Iran most likely would have given up its twenty percent enrichment if the fuel deal went through, although Iran will never cede its claim to a *right* to enrich. Iran would portray forgoing enrichment, not so much as a concession or acceptance of Security Council demands, but as a gesture of goodwill. After sanctions, we believe Iran will most likely not give up higher-level enrichment soon, but engagement in general and the fuel swap in particular may still be worth pursuing.

1 TWENTY PERCENT ENRICHMENT AS BRINKMANSHIP (7 FEB TO 17 MAY 2010)

In a recent article in the *Bulletin of the Atomic Scientists*⁷, we argued that for technical and strategic reasons Iran's decision to enrich to 20 percent could be seen primarily as political posturing. We concluded that Tehran was not yet serious about enrichment to higher concentrations or manufacturing TRR fuel domestically. Our main arguments are summarized below.

Iran has the technical knowledge and infrastructure to eventually produce fuel for the TRR and Tehran probably has enough time to do so before the reactor runs out of fuel. Of course, manufacturing its own fuel will be expensive and not without risk and those are the primary reasons why Tehran has been interested in buying fuel from abroad.

A technical assessment of Iran's current 20-percent enrichment set up (a single 164-cascade at the pilot plant) shows that it is likely not the best option for fuel production, but neither is it a leap towards weapons capability. Although a stockpile of 20-percent uranium would reduce by more than half Iran's time to a bomb's worth of material, the current set up would take more than 8 years to produce 130 kg of 20-percent uranium, which would then need to be further enriched to the 90-percent needed for a weapon.

Iran could have fairly easily increased production of 20-percent uranium by using all of the then-23 cascades (24 cascades as of late May) operating at the main enrichment plant at Natanz. After notifying the IAEA, it could do so legally under the NPT (although not under UN Security Council resolutions, which Iran does not recognize) and quickly, since the cascade used to enrich from natural uranium (0.7% U-235) to low enriched uranium or LEU (3.5% U-235) happens, just by coincidence, to enrich LEU to 20 percent levels. A 23-fold increase in production would likely make more economic and

⁴ United Nations. Security Council. *Resolution 1929 (2010)*. S/RES/1929 (2010), 9 June 2010. Web. 21 July 2010. <[http://daccess-ods.un.org/access.nsf/Get?Open&DS=S/RES/1929%20\(2010\)&Lang=E&Area=UNDOC](http://daccess-ods.un.org/access.nsf/Get?Open&DS=S/RES/1929%20(2010)&Lang=E&Area=UNDOC)>.

⁵ 111th Congress of the United States of America. *Comprehensive Iran Sanctions, Accountability, and Divestment Act of 2010*. 2010. H.R.2194. Web. 21 July 2010. <http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:h2194enr.txt.pdf>.

⁶ European Council. General Secretariat of the Council. *Annex II: Declaration on Iran*. EUCO 13/10. 17 July 2010. Web. 21 July 2010. <http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/115346.pdf>.

⁷ Oelrich, Ivan, and Ivanka Barzashka. "Deconstructing the Meaning of Iran's 20 Percent Uranium Enrichment." *Bulletin of the Atomic Scientists* 19 May 2010. Web. 15 July 2010. <<http://www.thebulletin.org/web-edition/features/deconstructing-the-meaning-of-irans-20-percent-uranium-enrichment>>.

technical sense because the fuel would be most efficiently produced in batches but it would also be a significant increase in weapon potential. But Tehran did not increase capacity.

In addition, if enrichment to higher concentrations were strategically important, Iran would not only want a stockpile quicker, but would move 20-percent enrichment to a location better protected than the above-ground pilot plant.

There were other indications that Tehran had not yet heavily invested in domestic production of TRR fuel. Iran did not start setting up production lines at its fuel fabrication plant. Iranian officials have continuously expressed interest in purchasing fuel from abroad, despite the move to its own enrichment to the higher concentrations. They had even said enrichment to 20-percent would stop once TRR fuel is received.

We concluded that, at that stage, 20 percent enrichment was likely a display of brinksmanship to expedite a favorable outcome to the fuel deal. Iran's enrichment to higher concentrations should be taken seriously since Tehran has an ostensible excuse and the potential to ramp up 20-percent production capacity, significantly reducing its time to a bomb. But we argued that, if Tehran's move to 20-percent enrichment was meant primarily as political posturing, it was probably not an irreversible development.

2 TWENTY PERCENT ENRICHMENT AS A BARGAINING CHIP (17 MAY TO 9 JUNE 2010)

By agreeing on May 17 to ship out material to Turkey, Tehran reversed its original position that a fuel swap was acceptable only on Iranian territory. So, if enrichment to higher levels had been a lever to coerce the US, France, and Russia to accept Iran's terms of the proposal, that function was gone. Moreover, Iran's ostensible reason to enrich to higher concentrations was to provide fuel for its medical isotope reactor and, if Tehran obtained fuel from abroad, then its own rationale for enriching to 20-percent would no longer be valid. But enrichment to higher degrees was, surprisingly, not mentioned in the Tehran Declaration.⁸ Iranian officials certainly must have understood that not addressing the issue would threaten the deal because, for the US, France and Russia, the confidence-building aspect of the accord was of utmost importance. Moreover, after the document was signed with Brazil and Turkey, the Western press and the U.S. government claimed that Iran was insisting that 20 percent enrichment would continue, regardless of an agreement on fuel supply. In this section, we will explain this apparent paradox.

2.1. Lost in Translation: A Closer Look at Tehran's Statements

Iran's determination to continue with 20-percent enrichment even after a fuel deal is signed has been widely cited by Western government officials⁹ and the media as the major hindrance to engagement. The same day the Tehran Declaration was signed, Ali Akbar Salehi, the head of Iran's Atomic Energy Organization, was quoted by Reuters saying that "[t]here is no relation between the swap deal and our enrichment activities ... We will continue our 20 percent uranium enrichment work."¹⁰ Even before Iran had accepted the main terms of the US-backed offer, the State Department claimed that, according

⁸ The Tehran Declaration is also referred to in some citations as the Joint Declaration or Joint Agreement.

⁹ Westall, Sylvia. "Text: Powers Dismiss Iran Fuel Offer before U.N. Vote | Reuters." Ed. Kevin Liffey. *Reuters*. 09 June 2010. Web. 21 July 2010. <<http://www.reuters.com/article/idUSTRE6582W120100609>>.

¹⁰ Hafezi, Parisa. "Iran Says Will Continue 20 Percent Enrichment." *Reuters*. 17 May 2010. Web. 21 July 2010. <<http://www.reuters.com/article/idUSHAF74478220100517>>.

to Iran's Foreign Minister Mottaki, the Islamic Republic had resolved to continue 20-percent enrichment "notwithstanding any potential agreement on the Tehran research reactor."¹¹

However, a closer look at statements of Iranian officials shows that Tehran had been quite ambiguous on the 20-percent issue. Ramin Mehmanparast, Iran's Foreign Ministry spokesman, was quoted by the *Washington Post*, citing the official news agency IRNA: "Of course, enrichment of uranium to 20 percent will continue inside Iran." But the original IRNA translation was slightly different, "of course, Iran will continue 20 percent enrichment *in the duration* [emphasis added]."¹² From the excerpt, it is not clear whether Mehmanparast meant that enrichment to higher concentrations would continue while negotiations are taking place, until the fuel rods are received, or even for the entire duration of the TRR's operation, for example. The Russian government news agency ITAR-TASS offered a slightly different take on the same quote: "'Certainly, our country will continue the enrichment (of uranium) to 20%,' the Iranian high-ranking diplomat said. [...] However, the Iranian top officials noted that if a nuclear fuel agreement were reached Iran would stop uranium enrichment."¹³

To complicate matters even further, Mehranparast seemed to avoid the Iranian Labor News Agency's (ILNA) questions on May 18 regarding continuing enrichment if the fuel swap takes place, saying that "the joint statement agreed on the nuclear exchange and its our right to receive nuclear fuel for Tehran reactor" and "the nuclear exchange means that we received our requested fuel."¹⁴ Public statements of Iranian officials offer no conclusive evidence that Iran was, in fact, determined to continue 20-percent enrichment after fuel was supplied.

2.2. Earlier Assurances

Any signs, however ambivalent, that 20 percent enrichment would continue even if fuel for the TRR were received are in apparent contradiction to very unambiguous statements in February from several high-ranking Iranian officials that enrichment to these higher levels will cease once fuel rods are supplied. Ali Akbar Salehi, Iran's Atomic Energy Organization head, stated that "[i]f they [the US, France and Russia] come forward and supply the fuel, then we will stop the 20-percent enrichment."¹⁵ According to the *Agence France Presse*, on February 17 Ahmadinejad "indicated Tehran could suspend higher grade enrichment if world powers supplied it the required fuel for the reactor."¹⁶ On February 19, Mohammad-Reza Bahrani, deputy speaker of the Majlis, said: "If they (West) accept to swap the (20 percent uranium) fuel simultaneously in Tehran, we will stop the production of 20 percent fuel."¹⁷ Similarly, Ali Larijani, Iran's parliamentary speaker was quoted by a Japanese News Agency: "We do not have to produce (the 20 percent enriched uranium) on our own if it is supplied."¹⁸ These statements suggest that there was political consensus that enrichment to 20 percent was a transient development.

2.3. Explaining the Contradiction

To answer the question of whether, after the Tehran Declaration was signed on May 17, Iran was determined to continue with 20-percent enrichment irrespective of delivery of TRR fuel, one must

¹¹ U.S. Department of State. *Daily Press Briefing*. 13 May 2010. Web. 21 July 2010. <<http://www.state.gov/r/pa/prs/dpb/2010/05/141816.htm>>.

¹² "Mehmanparast: Iran to Ship Fuel to Turkey in a Month If Vienna Group Is Ready." *IRNA*. 17 May 2010. Web. 21 July 2010. <<http://www.irna.ir/View/FullStory/?NewsId=1120336&IdLanguage=3>>.

¹³ "Iran to Continue Uranium Enrichment to 20% - FM." *ITAR-TASS* [Moscow] 17 May 2010. *World News Connection*. Web. 19 May 2010.

¹⁴ "Mehmanparast, Iran Optimist over Implementation of Nuclear Agreement." *Iranian Labour News Agency*. 18 May 2010. Web. 21 July 2010. <<http://www.ilna.ir/fullstory.aspx?ID=124370>>.

¹⁵ "Nuclear Swap Still on the Table: Salehi." *PressTV*. 10 Feb. 2010. Web. 21 July 2010.

<<http://www.presstv.ir/detail.aspx?id=118302§ionid=351020104>>.

¹⁶ "Iran Refuses to Stop Enrichment in Return for Isotopes." *Agence France Presse*. 17 Feb. 2010. Web. 21 July 2010.

<http://www.google.com/hostednews/afp/article/ALeqM5jje2IgWRvg_UcnZ5NnU6XKud_6AQ>.

¹⁷ "Iran Will Stop Enrichment If West Supplies Nuclear Fuel." *Iranian Labour News Agency*. 19 Feb. 2010. Web. 21 July 2010.

<<http://www.ilna.ir/fullstory.aspx?ID=108784>>.

¹⁸ "Iran May Increase Amount of Production of 20% Enriched Uranium." *Kyodo News Service* 25 Feb. 2010. *LexisNexis*. Web. 19 May 2010.

explain the blatant contradiction with earlier promises that enrichment to these levels would stop. On the other hand, Iran might have indeed been ready to renege on previous public promises and was determined to continue 20-percent enrichment even after reactor fuel was received. In that case, there are two scenarios that could explain the contradiction with earlier statements: either Tehran's original calculus changed or the fuel deal was, from the start, a ploy to justify enrichment to higher levels. Alternately, it is possible that Iranian policy on the question of higher enrichment had not changed since February and Tehran was in fact willing to stop production of 20 percent uranium.

If Iran indeed reversed its position, then important new circumstances must have emerged between the end of February (when Iranian officials still claimed that higher level enrichment would stop) and mid-May (when statements appeared in the press that this may not be the case). A sudden change of a previously firmly established position is not without precedent. Indeed, the Tehran Declaration itself was a drastic change in policy. On May 17, Iran most likely agreed to the Western terms as a last attempt to stave the imminent threat of sanctions (and took advantage of the small technical difference between the two proposals¹⁹). Especially in that context, it is unclear why Tehran would change its already accommodating position on 20-percent enrichment.

If Iran had no intentions of suspending 20-percent enrichment with or without receiving TRR fuel, this can unequivocally be interpreted as an intention toward weapons capability. Such plans would be clear if Tehran continues to enrich to higher levels even after fuel is supplied, renege on earlier promises. However, even if the goal is to advance toward a bomb, Tehran would be better off at this stage maintaining ambiguity rather than revealing ill intent. Preserving the justification of domestic fuel production by not signing onto a deal for foreign fuel supply would continue to provide justification for higher-level enrichment. For example, if continuing 20-percent enrichment were the goal, Iran could have used the first available opportunity to proceed with its own TRR fuel production. Tehran could have said that the fuel swap was off the table as soon as the US and its allies started the sanctions campaign in January 2010, after Obama's deadline for engagement had passed. Operating under a claim that the TRR was running out of fuel,²⁰ the Islamic Republic could have quickly proceeded with large-scale enrichment to 20-percent. Had Iran used its entire enrichment capacity at Natanz, it would have, by July of this year, likely accumulated enough 20-percent enriched uranium to fuel the TRR for 20 years or enough for a bomb's worth of highly enriched uranium (HEU), after further enrichment.

Instead, Iranian officials insisted that they were still interested in a fuel deal and even made apparent concessions to facilitate an accord. According to the IAEA report of May 31, Iran was not making advances towards manufacture of its own TRR fuel. As of the last IAEA report, Iran continued 20-percent enrichment in only a single cascade²¹ at the pilot plant. There has been no indication of the set up of infrastructure required to manufacture fuel for the TRR. Although Iran notified the IAEA that structural modifications to its conversion plant "will be started in the near future" in preparation for nuclear fuel manufacture,²² Tehran has not taken actual steps in setting up the production lines for 20-percent-enriched uranium oxide. There is, as well, no sign of modifications to the fuel fabrication facility. These data are consistent with the two extreme interpretations of Iran's motivations: First, Tehran might have made no preparation for fuel manufacture because the 20 percent enrichment was

¹⁹ We have argued that that the difference between the October US proposal and the Iranian counterproposal was small in an FAS issue brief: Barzashka, Ivanka, and Ivan Oelrich. *The Twenty Percent Solution: Breaking the Iranian Stalemate*. Issue brief. Federation of American Scientists. Web. 15 July 2010. <http://www.fas.org/programs/ssp/_docs/Twenty_Percent_Solution_FINAL-1.pdf>.

²⁰ We have argued in an article in the *Bulletin of Atomic Scientists* that Iran is likely not going to run out of fuel soon: Oelrich, Ivan, and Ivanka Barzashka. "Deconstructing the Meaning of Iran's 20 Percent Uranium Enrichment." *Bulletin of the Atomic Scientists* 19 May 2010. Web. 15 July 2010. <<http://www.thebulletin.org/web-edition/features/deconstructing-the-meaning-of-irans-20-percent-uranium-enrichment>>.

²¹ A second cascade used to recycle the waste had been installed but was not yet operational, awaiting enhanced safeguards.

²² International Atomic Energy Agency. Board of Governors. *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran*. GOV/2010/28. Web. 31 May 2010. <<http://www.iaea.org/Publications/Documents/Board/2010/gov2010-28.pdf>>.

never intended for fuel, it was, instead, symbolic political pressure all along. Second, the entire episode might have been orchestrated to provide a pretense for the next step toward bomb production but that seems implausibly complex and depends too much on predicting actions of outside actors. We judge that, overall, maintaining nuclear weapon ambiguity is so important that, if Iran wanted to continue enrichment for more than a year for a bomb, it would have made the corresponding investments in fuel fabrication to maintain the cover of fueling the TRR. Therefore, the lack of fuel fabrication effort supports the political leverage theory more than the bomb theory.

It is possible, indeed, we believe most likely, that the two sets of statements of Iranian officials on the 20 percent issue are consistent and there is no contradiction: Iran has not reneged and would have stopped 20 percent enrichment if fuel were received. Statements from May are ambiguous and may refer to the absence of a legal *obligation* to suspend 20 percent enrichment rather than actual intent to continue the process indefinitely. Suspension of enrichment of any kind was not a part of the original IAEA-brokered fuel deal from October. Moreover, the US and its allies were not explicit on how Iran's decision to start its own enrichment to higher concentrations would affect the terms of the current proposal. It is possible that Tehran was responding to the draft deal at hand, but would "magnanimously" suspend enrichment to higher levels if fuel were actually received.

2.4. Purpose of Twenty Percent Enrichment after the Tehran Declaration

It is clear that Iran was going to continue production of LEU with or without the deal, which was meant to address the very narrow technical issue of refueling the country's medical isotope reactor. Iran agreed to ship out a portion of its low enriched uranium as partial payment for the fuel rods, but curbing enrichment activity was never an explicit part of the original IAEA-brokered October proposal put forth by France, Russia, and the US. So, if Iran is broadly asked whether it will "continue enrichment" once a deal is implemented, the response will definitely be "yes." Moreover, Tehran never conceded the *obligation* to stop 20-percent enrichment, which it sees as its unquestionable right as an NPT-signatory.

The connection between the fuel swap and 20 percent enrichment was not clearly spelled out even after the enrichment started. In the original US, French, and Russian proposal, there was, of course, no explicit requirement that Iran not enrich to higher levels if it got fuel, because 20 percent was not a reality at the time. Until very recently, the relationship between the TRR deal and Iran's 20-percent enrichment was not directly addressed by the US and its allies. Initially, Iran's 20-percent enrichment efforts were publicly snubbed.²³ On February 11, the White House dismissed Ahmadinejad's announcement of enrichment to higher levels as likely "based on politics, not physics," claiming that Tehran did not "have the capability to enrich to the degree to which they [said] they [were] enriching."²⁴

Early skepticism was overcome after IAEA inspectors confirmed Tehran's enrichment to higher levels on February 11.²⁵ Just a day later, France, Russia and the United States wrote a letter to the IAEA, criticizing Iran's move to 20-percent enrichment as "wholly unjustified, contrary to UN Security Council resolutions" and "a further step toward a capability to produce highly enriched uranium."²⁶

²³ In fact, the primary motivation behind our recent *Bulletin* article was that higher level enrichment was not being taken seriously enough.

²⁴ The White House. Office of the Press Secretary. *Briefing by White House Press Secretary Robert Gibbs and CEA Chair Christina Romer, 2/11/10*. 11 Feb. 2010. Web. 21 July 2010. <<http://www.whitehouse.gov/the-press-office/briefing-white-house-press-secretary-robert-gibbs-and-cea-chair-christina-romer-211>>.

²⁵ International Atomic Energy Agency. Board of Governors. *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran*. GOV/2010/10. 18 Feb. 2010. Web. 21 July 2010. <<http://www.iaea.org/Publications/Documents/Board/2010/gov2010-10.pdf>>.

²⁶ Mangin, Florence, Alexander Zmeyerovskiy, and Glyn Davies. Letter to Yukiya Amano, Director General, International Atomic Energy Agency. 12 Feb. 2010. *New York Times*. Web. 21 July 2010. <<http://graphics8.nytimes.com/packages/pdf/world/2009/IAEA-Letter.pdf>>.

Yet, while 20 percent enrichment was clearly a troubling development, the relationship between the proposed TRR deal and enrichment was not clarified.

Washington and its allies never stated that their original proposal was invalid. In fact, on February 23, in response to Iran's letter to the IAEA documenting its counterproposal that the fuel swap take place on Iranian soil, the State Department said, "We think that the arrangement that we put on the table in Geneva is the right one. [...] We have not closed the door to further engagement, but you actually have to have a willing partner to engage."²⁷ In late April, US officials still maintained that Washington is "still interested in pursuing the offer if Iran is interested," but mentioned that the offer would need to be updated.²⁸ There was no explanation of what an update would contain, neither was the initial October proposal ever withdrawn.

A possible reason for the lack of clarification is that Washington did not believe that Tehran would acquiesce to the terms of the October proposal. In fact, just a couple of days before the Tehran Declaration among Iran, Brazil, and Turkey, the State Department said, "We obviously continue to welcome any efforts that – any steps they [Brazil and Turkey] can take to try to convince Iran to change course. We ourselves are skeptical that Iran is going to change course."²⁹

It was weeks after Iran agreed to the once-controversial idea of shipping nuclear material to Turkey that the US, France, and Russia explicitly stated that the "cessation of such enrichment and the removal of the 19.75 percent uranium already produced (at the same time as the removal of the 1,200 kg of 3.5 percent LEU) should be an integral part of any TRR refueling arrangement."³⁰ Therefore, the Tehran Declaration of May 17 could have been simply a response to the terms of the US, French, and Russian proposal already at hand and Iranian statements on the 20 percent issue likely referred to the lack of legal obligation to suspend enrichment activities and were aimed at upholding what the Islamic Republic sees as its enrichment rights.

While Iran's acceptance of the once-controversial terms to ship nuclear material to Turkey is encouraging, still remaining ambiguous about 20 percent enrichment seems counterproductive and raises questions about Tehran's intentions. Indeed, if agreement to the other side's terms automatically means that a deal would take place, then Tehran's own rationale for higher level enrichment would no longer stand. But agreeing that LEU be held in escrow does not necessarily mean that a deal would be struck in the end, as became evident by the events that followed. One of Tehran's main concerns with the fuel swap was the lack of credible assurances that the deal would go through as planned. In this respect, the credible threat of continuing enrichment could be seen as valuable insurance that the TRR fuel is actually delivered.

In sum, Iran's 20-percent enrichment after the Tehran Declaration most likely continued to be both insurance and a tool of political pressure to ensure that fuel rods were in fact delivered. Iran's earlier statements were clear: continuing 20 percent enrichment was temporary until the fuel swap was settled. A closer look at some of the later statements that 20 percent enrichment may continue, notwithstanding a fuel deal, shows that they are ambiguous and likely based on Iran's view of its enrichment rights and contractual obligations. The lack of any Iranian effort to initiate TRR fuel manufacturing suggests that providing its own fuel was not Iran's first choice. Some might argue that, if manufacturing fuel was not Iran's goal, then the enrichment could only have been the next step toward a bomb. Iran has always maintained, of course, that its nuclear efforts are for purely peaceful uses. Even if that is all merely a

²⁷ U.S. Department of State. *Daily Press Briefing*. 23 Feb. 2010. Web. 21 July 2010. <<http://www.state.gov/r/pa/prs/dpb/2010/02/137167.htm>>.

²⁸ U.S. Department of State. *Daily Press Briefing*. 19 Apr. 2010. Web. 21 July 2010. <<http://www.state.gov/r/pa/prs/dpb/2010/04/140466.htm>>.

²⁹ U.S. Department of State. *Daily Press Briefing*. 13 May 2010. Web. 21 July 2010. <<http://www.state.gov/r/pa/prs/dpb/2010/05/141816.htm>>.

³⁰ Westall, Sylvia. "Text: Powers Dismiss Iran Fuel Offer before U.N. Vote | Reuters." Ed. Kevin Liffey. *Reuters*. 09 June 2010. Web. 21 July 2010. <<http://www.reuters.com/article/idUSTRE6582W120100609>>.

charade and their primary, even sole, motive is developing a nuclear bomb, they have always gone to great lengths to maintain a plausible cover story about civilian application. We see no indication that Iran would have changed this approach; it would have put just as great stock in maintaining a plausible cover story as before. Therefore, lack of preparations for manufacturing fuel actually argues against enrichment for a weapon. While other possibilities cannot be completely excluded, enrichment as political leverage is by far the most consistent explanation.

3 TWENTY PERCENT ENRICHMENT AND THE NEW DUAL TRACK (9 JUNE 2010 TO PRESENT)

Iran had hoped that its concession would be enough to expedite the deal, open the engagement track, and derail sanctions.³¹ However, their move was not enough to overcome the political momentum towards new coercive measures. As a result of a US-led effort, the UN Security Council passed a sanctions resolution on June 9. To enhance the effectiveness of those measures, the US and European Union adopted their own set of even tougher economic sanctions, which blacklist Iranian companies and individuals, ban technical cooperation, technology sales to Iran and freeze Western investments in Iran's industries.³²

Despite sanctions, the fuel deal is still being considered by the US and its allies. The Obama administration is still pursuing a dual-track approach, involving both pressure and engagement. US officials say they are determined to address Iran on both tracks. In fact, after the adoption of the sanctions resolution, the P5+1 foreign ministers were explicit that they are "prepared to continue dialogue and interaction with Iran in the context of implementing the understandings reached during the Geneva meeting of 1 October 2009."³³

3.1. Rhetoric of Defiance

Iranian officials had threatened that the fuel deal would be off the table if sanctions were passed. On March 4, Soltanieh said that the deal would not "stay [on the table] forever" and that "any development which might disturb the climate of cooperation" would cause Tehran to withdraw.³⁴ Similar sentiments were later repeated on by Mohammad Reza Bahonar, Majlis deputy speaker, who said that, if a resolution against Iran were passed, Tehran's commitments to the fuel swap "will no longer be considered."³⁵ After the Tehran Declaration was signed, Ahmadinejad warned that, unless Obama uses this opportunity for a deal, "Iranians are unlikely to give him another chance."³⁶

Once UN sanctions were passed on June 9, the rhetoric of defiance increased sharply. On June 13, Ahmadinejad warned that sanctions would "backfire"³⁷ and several days later said that countries that

³¹ "Iran 'expecting Positive Answer on Fuel Swap Deal'" *Agence France Presse*. 28 May 2010. Web. 21 July 2010.

<<http://www.google.com/hostednews/afp/article/ALeqM5jd8ztImQIBoTIBfnDPc9LDc2nwwQ>>.

³² Solomon, Jay. "U.S. Sanctions Iran Individuals, Firms." *The Wall Street Journal*. 17 June 2010. Web. 21 July 2010.

<http://online.wsj.com/article/SB10001424052748704198004575310981885208358.html?mod=fox_austrianian>.

³³ U.S. Department of State. Office of the Spokesman. *Statement by Foreign Ministers of P5+1 on the Adoption of UNSCR 1929 on Iran*. 9 June 2010. Web. 21 July 2010. <<http://www.state.gov/r/pa/prs/ps/2010/06/142897.htm>>.

³⁴ "Iran Threatens to Withdraw Nuclear Offer." *Agence France Presse*. 4 Mar. 2010. Web. 21 July 2010.

<<http://www.google.com/hostednews/afp/article/ALeqM5iek963WivqCckLkVMsN-fuUnSM4A>>.

³⁵ "Iran to Snub Fuel-swap Deal If Sanctions Imposed." *The DAWN Media Group*. 20 May 2010. Web. 21 July 2010.

<<http://www.dawn.com/wps/wcm/connect/dawn-content-library/dawn/news/world/06-iran-to-snob-fuel-swap-deal-if-sanctions-imposed-rs-04>>.

³⁶ "West Advised to 'take Iran Offer for Talks'" *Press TV*. 26 May 2010. Web. 21 July 2010.

<<http://www.presstv.ir/detail.aspx?id=127856§ionid=351020104>>.

³⁷ "Iran's President: UNSC Sanctions Backfire." *Fars News Agency*. 13 June 2010. Web. 21 July 2010.

<<http://www.thefreelibrary.com/Iran's+President:+UNSC+Sanctions+Backfire.-a0228856416>>.

adopt the measures “will face severe retaliation”.³⁸ The Majlis has also been very active in voicing opposition to the new measures. Larijani, who vowed that Iran would “resist their nuclear plots even stronger than before.”³⁹ This was echoed by Esmail Kosari, deputy head of the Majlis’ National Security and Foreign Policy Commission, told Iranian media that the UN resolution is an opportunity through “special measures” to make the “US repent its deeds.”⁴⁰

3.2. Nullifying Coercion

Clearly, domestic politics in Tehran call for retaliatory measures. Iranian officials have warned Security Council member states that there would be consequences for voting in favor of the resolution and even criticized Lebanon for abstaining. Despite proposals from some hard-line MPs, Larijani said his country would not withdraw from the NPT or the IAEA, arguing that Iran “must provide the grounds for implementing the rules by strengthening them instead.”⁴¹

Despite the vindictive rhetoric, Tehran has so far chosen to nullify coercive measures largely by reaffirming current nuclear policies. Soltanieh, Iran’s envoy to the IAEA, confirmed that Iran would continue cooperation with the agency, but that cooperation “will not exceed [Iran’s] original obligations under the NPT” and uranium enrichment will continue at Natanz. This is in line with the Nuclear Achievement Protection Bill that the Majlis passed on July 18, which promotes Iranian nuclear independence. The law calls for reciprocal inspection of foreign ships⁴², limiting IAEA inspectors to what is required by the NPT and also continuing 20 percent enrichment and manufacture of fuel for the TRR. It de facto rules out suspension of enrichment, cooperation with IAEA inspectors in answering questions about the alleged studies on nuclear weapons development, which Iran believes fall outside the jurisdiction of the agency, and allowing access to additional nuclear facilities under the Additional Protocol, or precisely the actions required of Iran by the UN resolution. This means that, at least for the short-term, Iran will continue business as usual, in an effort to render coercive measures useless.

3.3. A Dangerous Dual Track

Although Tehran has responded to international pressure by reaffirming current nuclear activities, there are indications that it will pursue new reactionary policies. Iranian officials have been critical of the U.S. carrot-and-stick approach, which resulted in another round of international sanctions, despite Tehran’s ostensible concession on the TRR fuel deal. Now Iran is planning to pursue a dual track of its own: keeping engagement options open, while continuing with nuclear expansion.

Despite the tough talk after sanctions, Iran did not retract its proposal for a fuel swap, as it had threatened earlier, and maintained that engagement is still possible. On June 12, Salehi said that “Tehran is still ready for dialogue with the P5+1, provided that they modify their preconditions.”⁴³ Several days later, Ahmadinejad said that the Tehran Declaration is “still alive and can play a role in

³⁸ “Iran Promises Retaliation to Sanctions.” *Tehran Times*. 17 June 2010. Web. 21 July 2010.

<http://www.tehrantimes.com/index_View.asp?code=221508>.

³⁹ “Speaker Says Iran Will Confront US Nuclear Plots Stronger than Before.” *IRNA* [Tehran] 13 June 2010. *World News Connection*. Web. 17 June 2010.

⁴⁰ “Senior MP Views UNSC Resolution against Iran as Opportunity.” *Fars News Agency* [Tehran] 12 June 2010. *World News Connection*. Web. 17 June 2010.

⁴¹ “Iran Will Not Withdraw from NPT.” *Press TV*. 17 June 2010. Web. 22 July 2010.

<<http://www.presstv.ir/detail.aspx?id=130868§ionid=351020101>>.

⁴² In response to the punitive measures set forth in the UNSC resolution 1929.

⁴³ “Iran ‘ready for Dialogue with P5+1’” *Press TV*. 12 June 2010. Web. 22 July 2010. <<http://www.presstv.ir/detail.aspx?id=130120§ionid=351020104>>.

international relations even if the arrogant [Western] powers are upset and angry.”⁴⁴ This was later repeated by Larijani who said that the proposals in the Tehran Declaration “are still on the table.”⁴⁵

Why is Iran still interested in the TRR deal, despite earlier promises that the fuel exchange would no longer be possible if sanctions are passed? Purchasing fuel for the medical isotope reactor has become symbolic of engagement with the West. In this respect, keeping the deal alive, at least in theory, means leaving engagement options on the table. This avoids further escalation of the issue. Despite calls for retaliation, engagement is still politically viable for the Iranian government, since negotiations on refueling the TRR will be based on the Tehran Declaration,⁴⁶ a product of Turkish and Brazilian diplomatic efforts. As members of the UN Security Council, Brazil and Turkey voted against the UN sanctions resolution because of the Declaration. If Tehran now says the fuel deal is off the table, it risks losing much-needed nuclear allies. In an effort to maintain the relationship, it has also called on the two countries to be part of the fuel swap talks.

At the same time, Iran is continuing nuclear expansion. It continues to enrich to 20 percent in the pilot plant at Natanz. Salehi claims that Iran has acquired the technical know-how to produce the fuel elements for the TRR. Although it is not clear whether Iran has started setting up production lines at the Fuel Manufacture Plant, the Iranian atomic energy agency head claims that domestically produced fuel will be available by September 2011. The picture was further complicated by the announcement of intentions to build 4 new medical isotope reactors, starting with a 20 MW reactor, which would be operational in the next five years.

Nuclear expansion is consistent with Tehran’s past behavior in responding to international sanctions, namely, boosting nuclear capabilities to defy and nullify coercive measures. But a push for own fuel manufacture could mean that Iranians are less optimistic about being able to purchase fuel from abroad. Yet, insisting that a fuel deal is still worth pursuing undermines options to continue or even expand 20-percent enrichment activities.

3.4. Will Iran Continue Twenty Percent Enrichment?

Before sanctions were passed, Iran was using 20 percent enrichment as a tool of political pressure to expedite a fuel deal. Officials claimed that enrichment would cease if fuel is supplied, but a fuel deal would be off the table if sanctions were adopted. If Iran’s new retaliatory dual track approach resembles its American counterpart, then Tehran will pursue nuclear expansion and engagement simultaneously. This means that Iranians may make the argument that a successful deal would not necessarily entail stopping 20-percent enrichment and, conversely, that ramping up 20 percent production does not indicate that the door to engagement is closed.

While claiming a desire to carry through on the fuel swap, Iran is still ambiguous about cessation of 20-percent enrichment, even if fuel is received. Tehran understands that a firm position on continuing 20 percent enrichment will likely derail negotiations, so signs of flexibility or ambiguity on the issue are preferable. On June 16, Larijani called on the government to “continue producing 20 per cent enriched uranium and to not halt enrichment at all since some countries [...] have failed to provide nuclear fuel for the Tehran Research Reactor.”⁴⁷ Similarly, on June 11, Soltanieh was steadfast that Iran would “not, even for a second, suspend [its] enrichment activities” and further clarified that this included 20-percent

⁴⁴ “Iran Slams Possible EU Sanctions as ‘illogical’” *Al Arabiya News Channel*. 15 June 2010. Web. 22 July 2010. <<http://www.alarabiya.net/articles/2010/06/15/111385.html>>.

⁴⁵ “Tehran Nuclear Deal Still on Table.” *Mehr News Agency* [Tehran] 19 June 2010. *World News Connection*. Web. 21 June 2010.

⁴⁶ “Ahmadinejad: Iran Ready for Fuel Swap Based on Tehran Declaration.” *Islamic Republic News Agency*. 28 June 2010. Web. 22 July 2010. <<http://www.irna.ir/En/View/Fullstory/Tools/PrintVersion/?NewsId=1200942&idLanguage=3>>.

⁴⁷ “Larijani Insists on Continued 20% Uranium Enrichment.” *Mehr News Agency* [Tehran] 16 June 2010.

enrichment as well. In seeming contradiction, he said that “Iran would only consider halting nuclear enrichment to a purity of 20 percent if it first received fuel for a medical reactor from major powers.”⁴⁸ This contradiction and those between February and May can be explained by Iran’s willingness to suspend 20-percent enrichment if fuel is received but its insistence on the *right* to enrich and the absence of a legal obligation to halt enrichment efforts.

With the passing of sanctions, there has been an effort to decouple higher level enrichment and foreign fuel supply. Although Iranian officials are not ruling out the possibility for suspension of higher-degree enrichment, they emphasize that this will be dictated by their own needs. According to Foreign Minister Mottaki, “producing 20 percent of enriched uranium is not something that countries do continuously. We have this capacity to produce today. When we need it, we produce it and when we don’t need it, we don’t produce it.”⁴⁹ This statement makes a case for maintaining higher-level enrichment capabilities indefinitely, even if such enrichment is temporarily suspended.

New developments show that Tehran could be planning on maintaining 20 percent enrichment capabilities indefinitely. Plans to construct new medical isotope reactors could provide Iran with an excuse to continue 20-percent enrichment and increase capacity even if fuel for the TRR is acquired from abroad. With only the TRR in the picture, if Iran continued enrichment after fuel were received, that would have been a clear litmus test of their intentions. Unfortunately, the test becomes inconclusive if more medical isotope reactors are constructed. If Iran is pessimistic that it will receive fuel from abroad, more enrichment plants also make domestic fuel production more economically viable.

The Nuclear Achievement Protection Law, passed by the Majlis on July 18, is a significant push in the same direction. The new measure bolsters Iranian nuclear independence by asking the government to continue 20 percent enrichment and manufacture its own reactor fuel. According to Iranian media, this would compel the government to make investments in civilian nuclear technology.⁵⁰

Sanctions have changed Iran’s original calculus. The threat of sanctions was a big incentive for Tehran to halt enrichment to higher degrees and go through with the deal. With more sanctions or an air strike unlikely in the short-term, this incentive has significantly diminished. Moreover, by passing the tough new measures, the US tacitly acknowledged that the engagement option was not working. The Obama administration judged enrichment to higher degrees as either an irreversible development or a price worth paying. Whatever the case, the Iran’s enrichment to 20 percent has begun blending into the larger enrichment issue, which provides room for Tehran to continue with its new advances.

There are indications that Iran would continue 20 percent enrichment even if a fuel deal were agreed as part of *quid pro quo* for sanctions. Continuing enrichment is the West’s “punishment” for sanctioning Iran. We assess, therefore, that Iran is far less likely to give up 20 percent enrichment now than before sanctions. This, of course, would make a fuel deal almost certainly unacceptable to the US and others. The good news is that Iran is still enriching to higher degrees at a slow pace, using only one cascade. Since Iran is still willing to consider a fuel swap, the possibility still exists that an exchange could include all accumulated 20 percent material, which would prolong a breakout scenario. The option that cessation of higher level enrichment can be negotiated still remains, although Tehran will likely retain the option of resuming enrichment and will definitely not give up its self-declared *right* to enrich to any level it wants.

⁴⁸ Dahl, Fredrick, and Sylvia Westall. "Iran Refuses to Halt Any Nuclear Enrichment - Envoy." *Reuters*. 11 June 2010. Web. 22 July 2010. <<http://in.reuters.com/assets/print?aid=INDAH12759620100611>>.

⁴⁹ Deshmukh, Jay. "Dialogue over Nuclear Fuel Swap to Continue: Iran." *Agence France Presse*. 29 June 2010. Web. 22 July 2010. <<http://www.google.com/hostednews/afp/article/ALeqM5j7fXRvONWGDDwYmOxlip5nYvZMUQ>>.

⁵⁰ "Iran's Parliament Approves Bill on Safeguarding N. Achievements." *Fars News Agency* 16 June 2010. *World News Connection*. Web. 16 July 2010.

4 SUMMARY AND CONCLUSION

Iran's initial move to enrich to 20 percent was most likely brinksmanship to apply pressure toward getting a desired outcome during a political standoff. It is conceivable that the events surrounding the fuel swap were all a carefully orchestrated subterfuge to provide a plausible cover for the next step toward bomb material, but if this were the case, we believe Iran would have boosted enrichment sooner and not offered repeatedly to give it up. It is unlikely that Iran was serious about producing its own fuel at that stage since it took no other action consistent with domestic fuel production.

If Iran was using 20-percent enrichment as a form of political pressure to force the West to accept its terms for a swap, then that motivation went away when Iran accepted the West's condition to send uranium to Turkey before receiving the reactor fuel. But if the agreement was truly meant as a breakthrough, it is puzzling why, according to Western governments and media, Tehran was determined to continue higher-level enrichment irrespective of a deal.

A closer reading of public statements by Iranian officials on the issue suggests that Iran was not resolved to maintain production of 20-percent uranium, but did not see a legal or contractual obligation to stop enrichment. Although we cannot completely exclude the possibility that the fuel deal was meant as an advance towards nuclear weapons capability, we judge this option to be unlikely. Iran could have used the stalemate with the fuel deal and US move towards sanctions to quickly increase 20-percent enrichment capacity and pursue domestic fuel production. This would have quickly reduced its time to a bomb and provided it with plausible deniability. Instead, it insisted on pursuing a deal, which would have taken away its justification for higher-level enrichment. We believe that, at that stage, continuing enrichment was still most likely a form of political pressure, a slowly ticking clock on reaching final agreement on a fuel swap and ensuring the actual delivery of fuel. We believe that, had the U.S. accepted the fuel swap after the Tehran Declaration was announced, suspension of 20 percent enrichment could have been folded into a larger deal.

The Tehran Declaration, by which Iran accepted the West's terms on the fuel swap, was most likely a last minute concession intended to avert sanctions. In that regard, it obviously failed and Tehran has since been promising retaliation against major powers. One form of punishment seems to be to do precisely those things that most worry the international community, such as 20 percent enrichment.

After the sanctions vote, Tehran has declared its own "dual track" approach: to continue nuclear expansion while holding out the possibility of reengagement. There are now indications that Tehran could pursue a fuel deal while simultaneously continuing higher-level enrichment, irrespective of whether a fuel swap goes through. There has been a clear effort to decouple higher enrichment capability from a fuel deal with plans for four new medical isotope reactor and domestic legislation to pursue fuel fabrication. Developing these capabilities is clearly meant to defy the West, but is also an expression of distrust in foreign fuel suppliers. Under these circumstances, cessation of 20 percent production is still possible but far less likely. Indeed, if Iran now links 20 percent enrichment to sanctions and will not give up the capability even with a fuel swap, then the deal becomes unacceptable to the West. Twenty percent enrichment may have become the connection between sanctions and a fuel deal that will hinder any future engagement.

One slightly positive note is that Iran has taken no move to increase the rate of production of 20 percent material, so they can go on for several months without great additional danger. There is some time to explore resolutions to the impasse.

5 RECOMMENDATIONS

In spite of the sanctions vote and Iran's ambiguous statements on 20-percent enrichment, the fuel swap is still worth pursuing. Of course, the situation is not the same today as when the swap was proposed last October. The swap would still get about one bomb's worth of LEU out of the country. While this would now leave Iran with more than a bomb's worth of LEU and that was not true last October, it would have been true by today with or without the swap. That is, making the swap today or last October does not change what today's situation would have been.

More importantly, however, Iran was not enriching to 20-percent last October. While Iran says it intends to continue to enrich to 20-percent in response to sanctions, that is, as the "punishment" part of its own dual track strategy, a fuel swap will almost certainly be unacceptable to the outside powers if it does not include all accumulated 20 percent material and Iran's enriched stockpile will eventually become much more dangerous and worrisome. But Iran is now producing only about a kilogram and a half of 20-percent per month so there is some time to work out a meaningful deal.

At this point, there seems no chance that Iran will publically agree to give up 20 percent enrichment as an additional price for the fuel deal. Iran has tied 20 percent enrichment to the sanctions, not the fuel swap, and the sanctions are not going away soon. And Iran almost certainly will continue to insist that it has the *right* to enrich uranium to 20-percent or even higher. But the West should still proceed. There is substantial evidence that Iran may, in fact, stop the higher enrichment, either when a deal is agreed or when the fuel is finally delivered. Iran might be willing to give informal assurances to Turkey along these lines. Or the US, France, and Russia could agree to the swap and state unilaterally that the fuel is being prepared but, before it is delivered, the 20 percent inventory has to be secured somehow. Iran could even officially reject this statement and still proceed because Turkey has agreed to return the fuel in escrow if the deal falls through. Once the manufacture of the fuel elements begins, Iran will be able to see these concrete actions, its own justification for enrichment becomes invalid, and it could quietly stop the enrichment. There would still the question of the disposition of the accumulated inventory of 20 percent material. It could be included in the swap, even at the last minute, perhaps by displacing an equivalent amount of LEU.

We believe that the advantages of the swap outweigh the risk, indeed, the likelihood, that the enrichment will continue for a few months more. The fuel swap gets LEU out of the country but, in addition, offers a way to test Iran's intentions. Selling Iran the fuel would undermine its own justification for domestic enrichment. Not selling Iran the fuel would undermine Iran's legitimate NPT rights to peaceful nuclear technology and strengthen Tehran's arguments for a domestic enrichment program. No one has questioned Tehran's basic right to purchase fuel for the TRR – the sale of LEU to Iran is allowed under Security Council resolutions and, indeed, Russia has a contract to supply the Bushehr power reactor with fuel over the next 10 years. Moreover, because the fuel is going to a reactor used primarily to produce medical isotope to treat cancer patients, cutting off the fuel would create a propaganda bonanza for Iran that would be difficult to counter. Even though there is some chance that Iran will continue 20 percent enrichment regardless, we believe proceeding with the swap is worthwhile, in part as a test of intentions.

The U.S. has criticized the language of the Tehran Declaration among Iran, Brazil, and Turkey because it repeats claims about the fundamental legitimacy of Iran's program. But the Tehran Declaration is not the fuel contract; neither Turkey nor Brazil are going to be suppliers. The actual fuel contract will not include such language. Eventually negotiating some fuel swap in some form is not an automatic endorsement of the declarations of the Joint Agreement.

Finally, the swap offers one of the few remaining vehicles for engagement. If the major powers want to get Iran to move, they must press on one side with sanctions but they must simultaneously leave open a face-saving exit on the opposite side. The P5+1 have to decide whether exploring the swap deal, and going ahead with it if possible, is worthwhile. The risks are limited. In fact, we believe the greatest danger is that Iran will use discussion of the deal to divert international attention from questions that are, frankly, more important, such as allegations of a nuclear weapons program. The swap has the same advantages it had when first proposed—getting a ton of LEU out of the country—and now may be the only way to get Iran to stop the 20-percent enrichment. If Iran persists with the higher enrichment despite fuel assurances, it will have revealed much about its intentions, reducing ambiguity, and solidifying the resolve of the outside world. Even if the deal falls through in the end, reducing ambiguity has considerable value by itself.

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