Intersections of Illicit Trafficking and Counterfeit Parts Workshop
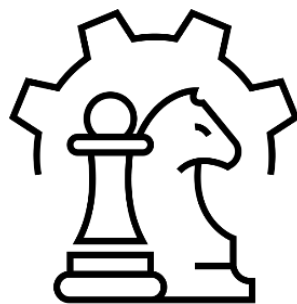# October 28, 2021

University of Maryland

Intersections of Illicit Trafficking and Counterfeit Parts Workshop

The project that sponsored this workshop focuses on the disruption of the supply chains for counterfeit hardware used in critical systems. "Critical systems," in the context of this project are defined as systems associated with human safety (e.g. transportation, medical), the delivery of critical services (infrastructure, energy generation), important humanitarian and military missions, and global economic stability. These systems are costly to procure, are generally expected to have a long service life, and as a result, they must be supported for long periods of time.

However, counterfeit parts are only a single thread of a larger illicit trafficking tapestry. While the world's largest firms have cracked down on illicit and illegal labor practices, illicit and illegal labor remains a key part of innumerable supply chains. Narcotics production is a hazardous criminal enterprise, but increased professionalization and the availability of quality parts and chemical precursors from China have allowed narcotrafficking cartels to manufacture massive quantities of fentanyl. Weapons traffickers and criminal entities now use additive manufacturing for weapons development and modification. Trafficking of wildlife, agricultural products, and animal parts present various serious concerns including the introduction of invasive species to the spread, and novel development, of viruses.

Often, these differing types of criminal behavior are siloed, but as transnational criminal entities continue to replicate neoliberal business practices, they are agglomerating into polycrime entities. These polycrime entities bridge different lines of the trafficking business. Humans are trafficked for forced or illegal labor. People have been trafficked and forced to serve as caretakers of illegal cannabis plants. Mexican drug cartels have purchased 3D printers and hired engineers to develop weapons modifications, uparmor vehicles, and developed manufacturing techniques that increase the potency of various narcotics.

This workshop sought to bring together social scientists, engineers, law enforcement, policymakers, and industry to push us out of our comfort zones to build connections and identify gaps. Individual sessions focused on modalities of trafficking: arms trafficking and construction, wildlife trafficking, labor trafficking, and narcotics manufacturing and trafficking.

Workshop Details
The virtual Workshop was held on October 28, 2021, via ZoomGov. The workshop included the following panels:

Welcome and Scope of Problem
- o *Peter Sandborn, Professor, University of Maryland*

Illegal and Illicit Trafficking
- o *Samuel D. Henkin, Senior Researcher, START, University of Maryland*
- o *Keegan Hamilton, Reporter, VICE News*

Keynote
- o *Ulrika Bonnier, Director of Programs, Transnational Alliance to Combat Illicit Trade (TRACIT)*

Additive Manufacturing of Weapons
- o *Mike Egnoto, ENSCO*
- o *Rhyner Washburn, Cyber Threat Researcher, START, University of Maryland*

Network Modeling Overview
- o *Hirbod Akhavantaheri, CALCE, University of Maryland*

Connecting Social Aspects and Engineering
- o *Steve Sin, Unconventional Weapons & Technology (UWT) Director, START, University of Maryland*
- o *Kayse Maass, Assistant Professor, Northeastern University*
- o *Meredith Gore, Associate Professor, University of Maryland*

The workshop had 69 "unique" participants. The workshop was recorded to assist in the production of this report (the recording was destroyed after the preparation).

Organization of this Document
This document provides an overall workshop summary followed by summaries of the individual panels. This document follows the Chatham House Rule with redaction of individual names and organizational identifications.

Workshop Summary and Outlook
Marcus Boyd (START, University of Maryland)

The trafficking of goods and persons is not new. Illicit trade networks first began as an attempt to avoid taxation along trade routes. Over the centuries, trafficking became a specific type of criminal career. This in turn led to the professionalization of trafficking. As with any career, traffickers would often specialize in a specific type of trafficking and traffickers would respond to market demand. We still see this today. For example, in places where personal weapons are difficult to obtain, small arms traffickers fill the gap. We see this in Mexico where there is only a single legal gun store, but the majority of households own guns according to Mexican government data.

The global demand for illicit and illegal drugs and narcotics is met by organized narcotraffickers who distribute precursor and finished products using a global supply chain. Human traffickers exist in virtually every nation and the demand from populations residing in largely peripheral countries to reach core economic powerhouses continues despite significant deterrents. The trafficking of wildlife, in terms of whole animals or animal parts for trophies or medicinal value plagues many nations and is a dire threat to endangered and threatened species. With the above examples, it is easy to pretend that the problem of trafficking is extensive, but limited to the margins of society. In this way it is easy to "other" those affected or involved in trafficking and those who seek out trafficked goods. But the last major form of trafficking is the trade in counterfeit goods. This specific form of trafficking is insidious precisely because it is so difficult to identify counterfeit goods. The trade in counterfeit goods accounts for a substantial portion of global GDP and it is likely that most people unknowingly own, or have owned a counterfeit good. Counterfeit goods are readily accessible in the marketplace and slide seamlessly into online marketplaces where, to the eye of untrained consumers the purse, potentiometer, auto part, or piece of clothing is legitimate.

Transnational organized criminals are responsible for many types of trafficking. It takes substantial monetary, human capital, and organizational support to successfully run a transnational criminal enterprise. Some involved will do so unknowingly. It is unlikely that the person stamping sheet metal for an airplane part knows whether or not corners were cut in the metallurgy process. Others, of course, knowingly participate and serve in functions similar to any legitimate business entity. The globalized business environment that preferences fast international shipping and coordinated international supply chains aids significantly in the efficiency of various forms of trafficking. And because of this, it is likely that the bespoke single-item traffickers of the past are merging into polycrime and polytrafficking entities. Once the entity has developed the illicit supply chain and proved its stability, depending on their risk tolerance, they can begin to traffic other items and goods as well. In this way, some traffickers are becoming material agnostic.

Overall Findings

The leaders of trafficking organizations are focused on profit. Transnational criminal organizations are successful because they are a mix of illicit businesses and quasi-states. Leaders of these organizations often have the autocratic power of a dictator, including the power to execute or physically punish "employees" for poor behavior/results.

Rank and file members are less motivated by greed/profit. The average member of a transnational criminal organization may have few other practical occupational options and, of those options, participating in organized crime provides the most financial security for themselves and their families.

Corruption, at all levels, is a major factor in the success of criminal enterprises. There are numerous "chokepoints" that could hinder trafficking, but these often are not successful because of widespread corruption. Criminal entities bribe government officials at all levels, including at border ports of entry. This eases the flow of trafficked goods and hampers enforcement.

Additive and subtractive manufactured weapons and parts are of limited use to bad actors. The plentiful availability of cheap professionally manufactured weapons proliferates the global marketplace.

The code (and other design information) for additive and subtractive manufactured weapons and weapons parts are readily available on the open and dark web. While organized criminal entities may be disinclined to invest heavily in these types of weapons, individuals (of good and bad intent) can efficiently produce weapons with relatively little investment. This is most likely to occur in places where access to weapons is limited or where individuals want to test the boundaries of local, state, or national law.

Understanding and successfully combatting polytrafficking entities requires interdisciplinary communication and connectivity. Researchers in different disciplines focus on divergent aspects of trafficking or types of trafficking. To fully understand trafficking, these researchers need to build relationships to examine the problem holistically. Similarly, government entities and officials are focused on aspects of trafficking but have limited connectivity with one another.

Increasingly, social media serves as an open marketplace for trafficked and illicit goods. Vendors openly operate on social media and offer goods. This significantly increases the efficiency of reaching consumers and, in turn, allows consumers to more easily find providers of these goods.

Summary of the Illicit and Illegal Trafficking Panel
Peter Sandborn (UMD Engineering)

The context of the majority of the discussion in this panel was drug trafficking, however, many of the discussion points have general applicability to other illicit trafficking areas. The general areas of discussion from this panel are articulated below.

- Reporting on drug trafficking:
  - Public fascination with topics that exist on the margins of society beyond the control of governments drives reporting.
  - The people involved need to talk about what they are doing (in some cases justify themselves to the world, i.e., humanize themselves); some folks want to brag or show off who they are and what they have done.
  - Understanding how the world works leads to better (more effective) policy. And you can't understand how to disrupt it until you understand how it really works.
  - A story has to have three elements to inform solutions: what, so what, now what.

- Motivations of traffickers:
  - Profit (greed)
  - But it's more complicated than just greed (you have to look at the human stories)
    - Understand the extreme living conditions and poor opportunities for improving those conditions

- CJNG (drug Cartel) experience:
  - Communities may be evaluating the "lesser of two evils" – are there worse situations than having a Cartel dominate their region? Paramilitary groups trying to defend the population against a Cartel may be worse. However, a comment was made that there is no such thing as a good Cartel. In some cases, the Cartels try to win the hearts and minds of the population.
  - Control is very territorial (local port control, transportation networks for goods and people).
  - Many of the processes they use are amazingly low tech.
  - Fentanyl has destabilized many traditional illicit drug production regions (e.g., it hurts the market for opium poppy farming, etc.). Fentanyl causes problems in the Cartel's own backyard. Cartels have outlawed the selling of Fentanyl in their own regions.
  - All of this is important to understanding how to disrupt these networks (i.e., to disrupt it, you have to understand how it works).

- Overlap discussion:
  - Opaque relationships between trafficking groups and law enforcement – why does corruption exist and how is it perpetuated? How are these relationships made and how are they broken?
  - Hyper-local, family-based, generational relationships. One needs to understand that the Federal power in Mexico is very limited.
  - Criminal organizations (e.g., Cartels) are not monolithic, top-down – they are federations of separate players that work together when it suits them. The organization/management of Cartels is often over simplified.

- Depending only on law enforcement's data may skew solutions toward solutions that are comprised of simply increasing law enforcement solutions (which may not be the best solution).
- Cartels consider US law enforcement their biggest fear (extradition to the US and imprisonment in the US cuts them off from their network and family).
- Cartels have had supply-chain issues too (same as for legal enterprises), however, the Cartels are very agile.
- Cartels have to take actions (set policies) to keep their networks from switching to other Cartels.
- Off ramp to legitimacy – already the case, Cartels are already entrenched in the legal economy in Mexico and other places.
- Policy that makes a difference:
    - Mexico – communities shunning reliance on State control (making it more trouble than its worth for Cartels).
    - US – need more non-law enforcement policies (reduce demand).

Summary of the Additive Manufacturing of Weapons Panel
William Lucyshyn (UMD Public Policy)

The purpose of this panel was to review the networks that distribute the digital data and physical parts that are used to additively manufacture (AM) weapons. The panel structured the discussion around how these networks work, how the participants are motivated, and where some of the key activities take place.

- How
  - Producing weapons for personal use is part of American culture and unregulated in most places.
  - Additive manufacturing is fascinating technology, and you can do quite a bit with it when it comes to producing weapons.
    - You can also buy an incompletely manufactured weapon (80% complete) and then make it functional using parts manufactured at home.
  - Also, you can manufacture more than weapons. You can produce specialized jigs, weapon accessories, as well as ammunition.
    - Although manufacturing ammunition is possible (making AM projectiles is easy, casings are possible, primers are difficult), it is not very popular since ammunition is readily available for purchase.
    - However, one can use AM to produce caseless ammunition to achieve weight savings and achieve higher rates of fire.
  - Many of the designs are simple, taking their inspiration from the Allied airdropped Liberator .45 ACP caliber pistol airdropped by Allied forces to resistance forces in occupied territories in World War II. It was assembled from 23 parts without serial numbers.
  - File sharing of more sophisticated designs, however, is a big part of this.
    - There are many easily accessible, online repositories of weapon CAD files.
    - These often use alternative media, and sometimes shared using steganography. This is a technique where you can embed computer code, in this case the 3D printing code for the weapon, into images and videos.
  - Potential members to these AM weapon community networks are recruited on social media.
    - Codes are used to avoid detection by monitoring algorithms, e.g., using A.F. for Arsenal Freedom (a community code word) or AR_15 vice AR-15.
    - Once a contact is made the participants move to secure communication, e.g., Signal, a private messenger app for secure communications.

- The sites can be very sophisticated.
  - Everything can be done in your own home if you have the right types of equipment.
  - Sites can provide full documentation. So, if you're a reader, you can download endless reams of manuals and guides to develop every single aspect to produce the weapon that you want.
  - There are also catalogs, that provide a pricing point of what equipment you need.
  - The sites even provide a self-help desk service, where you can get a service ticket, e.g., we're having an issue with this type of product.

- There are several motivations for individuals that participate in the AM of weapons and their supporting networks.

- Individuals can make or repair old or restricted firearms; these can be hard, or impossible to obtain. For example, certain models of Glock pistols are restricted in California.
- There are some individuals that are firm believers in the 2nd Amendment to the US Constitution, and view AM of weapons as an exercise of that right.
- Others have an absolutist stance on freedom of speech, and they believe that the transfer of this type of 3d digital data is an exercise in free speech.
- Some individuals do it just to make a point.
- Hobbyists enjoy the technical challenge.
- However, criminal still find it easier to buy conventionally manufactured weapons, since there are plenty available on the grey and black markets.

- Where
  - Many designs come from overseas. There are a lot more CAD files being developed and shared in some countries, e.g., Russia.
  - Some countries control specific components. For example, Germany controls the gun barrels, however Germany doesn't control receivers (the part of a firearm that integrates other components, and, in the U.S., it is the controlled part). This can be purchased to build ghost guns elsewhere.
  - Smuggling weapons/parts, particularly when they are not assembled is not hard.
  - Detailed instructions for how to order, pay, etc. for these overseas components are available online.

Summary of the Connective Social Aspects and Engineering Panel
Marcus Boyd (START, University of Maryland)

This panel brought together experts in the social science and engineering aspects of how trafficking networks overlap. The participants relaying structural and definitional challenges as well as social factors and the importance of transdisciplinary teams to combat trafficking.

- Structures (Governments)
    - Modeling nodes and edges of the network
    - Prevent access to material
    - Identify manufacturing signals
    - Goal: Disrupt/dismantle

- Agents (Individuals/Firms)
    - Modeling movement and behavior
    - Acquiring material
    - Obscure manufacturing signals
    - Goal: Profit/cost/opportunity

- Interdiction – differing definitions
    - Arrest? Capture of part/material before it reaches market? Disruption as interdiction

- Forms of Human Trafficking
    - Labor trafficking appears in all labor sectors
    - Marginalized populations are the most at risk

- Social Facts (Complex Systems)
    - Variety of social facts (homelessness, migration, gender, race, etc.) interact with trafficking?

- Engaged Research Across Transdisciplinary Teams
    - How do we increase connections across fields?

- Similarities in illicit supply networks (ISNs) structures
    - Cocaine, rhino horns, illegal plant trade, illegal sand mining
    - Design of network: *Source, transit, demand*
        - Hierarchical pyramid of agent involvement

- Models of Trafficking *Dynamics*
    - Require nuance depending on type and form
    - Humans $\neq$ objects; possess agency

- Growth of Virtual Connections

- Social Media as a marketplace for illicit/illegal goods