Radboud University's
Situating Palestine Lecture Series:

The Realities of Israel's Algorithmic War: Conflict Studies and Legal Perspectives

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Realities of Algorithmic Warfare Research Programme

Roadmap

- Introduction

1. Conflict Studies Persective
   - What is this a case of?
   - Changing character of warfare
   - Civilian Harm

2. Legal Perspective
   - AI Decision-Support Systems: The need for speed
   - Automation Bias
   - Regulation

1. What is this a case of?

2. Do I have expertise to provide analysis?

My aim today?

A case of:

AI driven aerial bombardments in entrapped urban areas that are causing large scale reverberating civilian harm effects.

Part 1: Aerial Bombardments in Entrapped Urban Areas

Raqqa 2017

Mosul 2016-2017

Battle for Mosul

Months: 8 months

Bombs, missiles and rockets: 29.000

Per week: +-1000

+70% city destroyed and 9.000 civilians killed

Battle for Raqqa

Months: 5 months

Bombs, missiles and rockets: 21.000

Per week: +-1000

+ 70% city destroyed, 1700 civilians killed

Part 1: Aerial Bombardments in Entrapped Urban Areas

First month Operation Iron Sword

Bombs: 24.000

Per week: 6000

Civilian casualties: 8.500

Speed and scale of aerial bombardments unprecedented?

Smoke rises after Israeli airstrikes in several location in the Gaza Strip, October 9, 2023. (Atia Mohammed/Flash90)

By Yuval Abraham | November 30, 2023

Part 2: AI Driven Aerial Bombardments in Entrapped Urban Areas

*"The Israeli army's expanded authorization for bombing non-military targets, the loosening of constraints regarding expected civilian casualties, and the **use of an artificial intelligence system to generate more potential targets** than ever before, appear to have contributed to the destructive nature of the initial stages of Israel's current war on the Gaza Strip"*

(Abraham, 2023)

Part 2: AI Driven Aerial Bombardments in Entrapped Urban Areas

The widespread use of a system called **"Habsora" ("The Gospel"),** which is largely built on **artificial intelligence** and can "generate" targets almost automatically at a rate that far exceeds what was previously possible.

Habsora, explained one of the sources, **processes enormous amounts of data** that "tens of thousands of intelligence officers could not process," and recommends bombing sites in real time.

From the moment this machine was activated, **it generated 100 new targets every day.** You see, in the past there were times in **Gaza when we would create 50 targets per year**. And here the machine produced 100 targets in one day."

A human eye "will go over the targets before each attack, but it need not spend a lot of time on them.'
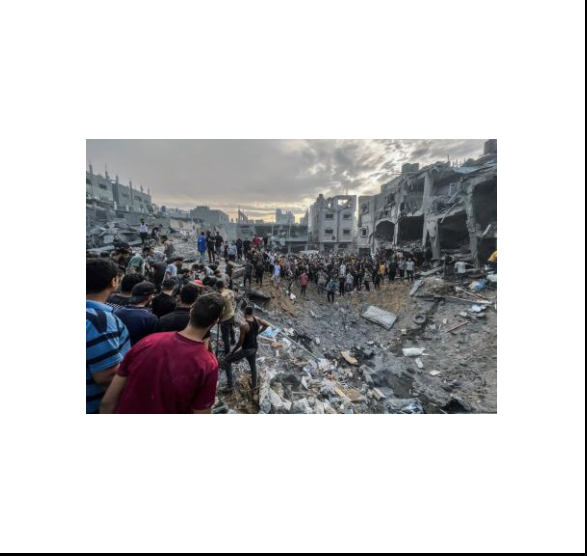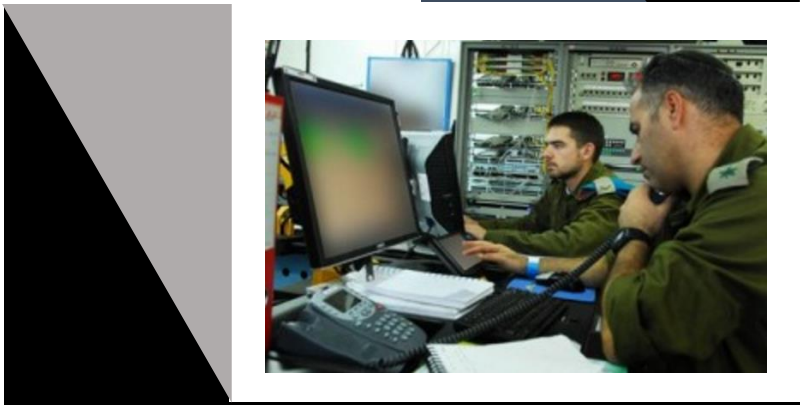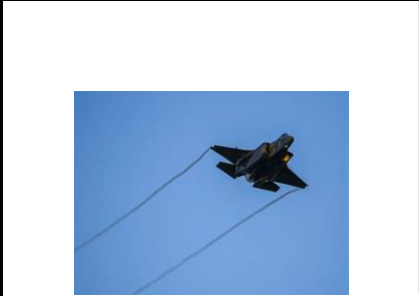
Assembled nature of the kill chain

Levels of Remoteness

Remote knowing

Remote decision making

Remote targeting
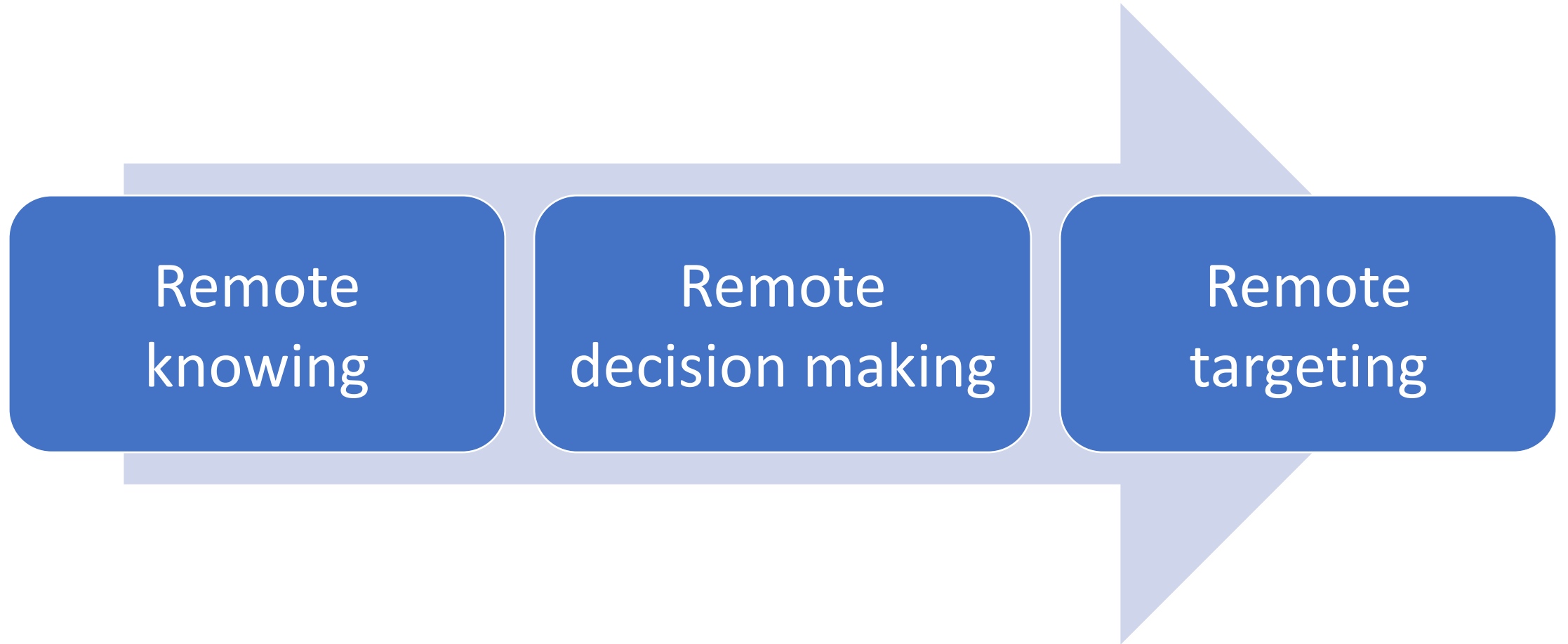
Part 3: AI Driven Aerial Bombardments in Entrapped Urban Areas that are causing reverberating civilian harm effects

"While it is very difficult to access Gaza to study the forms of civilian harm that are occurring, unfortunately the patterns of harm we will see unfold are predictable when explosive weapons are used in populated areas. Worldwide when explosive weapons are used in populated areas, 9 out of 10 casualties are civilians. With this operational tempo, combined with the high population density in Gaza the direct and indirect harm for civilians is predictable, and unacceptable"

(Roos de Boer, 2023, EWIPA specialist, Pax for Peace)

Over 28.000 civilians killed

—

Body counts in and of themselves, have the tendency to reinforce a very clean and sterile image of war, erasing the horrifying effects of violence while presenting its victims as mere objects – things that can be counted rather than human beings with specific devastating stories to tell.

(Gregory 2021, 203)

Definition of Civilian Harm

Direct effects: the immediate and (usually) physical impact directly from the armed conflict. This includes civilian deaths, physical injuries, immediate damage to civilian infrastructure, and most forms of psychological trauma.

Reverberating effects: those effects that are not necessarily caused directly by the attack, but are nonetheless a product thereof. This includes displacement, health concerns related to the disruption of essential services like water provision, loss of livelihood, and so on.

(Gould et al. 2022)

Civilian Harm

28,663* Fatalities **68,395*** Injuries **~1.7 million**** internally displaced (75% of Gaza) **0 hours** Full electricity blackout

*Source: MoH Gaza ***Source: UNRWA*

12.6-Km-long Egyptian fence
OPEN* People/goods to/from Egypt
Goods via Israel OPEN*
Khan Younis — ISRAEL
Rafah — Sufa
Kerem Shalom
EGYPT
Crossing / Permanently Closed Crossing
Closed since 2008 (except Mar-Apr 2011)
* For aid to enter, patients to exit, and aid workers to cross; subject to screening
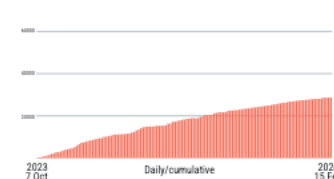5 Km

REPORTED CASUALTIES (Cumulative) as of 15 February 2024
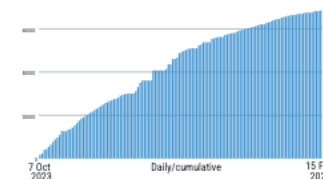
Palestinians*

28,663 Reported fatalities — in addition to ~1,000 fatalities in Israel, including people involved in the 7 October attack

68,395 Reported injuries

2023 7 Oct — Daily/cumulative — 2024 15 Feb

7 Oct 2023 — Daily/cumulative — 15 Feb 2024

*Source: MoH Gaza

Israelis**

Israel

Over **1,200***** Reported fatalities

1,162 identified fatalities, including at least 33 children

~5,400 Reported injuries

Gaza****

**231** Reported fatalities **1,352** Reported injuries

134 hostages remain in Gaza

** According to Israeli media citing official sources
*** The reported estimate refers to fatalities on 7 October and the immediate aftermath and includes foreign nationals.
**** The reported Israel casualties are soldiers killed or injured since the start of the ground operation.

REPORTED DAMAGE*

70,000+ Destroyed housing units
290,000+ Partially damaged housing units
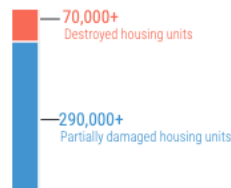
- Over **60%** of housing units.
- **392** education facilities.
- **11** bakeries.
- **123** ambulances.
- At least **3** churches and **184** mosques.

BASIC SERVICES AND LIVELIHOODS

FOOD SECURITY*
- **2.2 million** people at imminent risk of famine.
- **378,000** people at Phase 5 (catastrophic levels) Phase 5 refers to extreme lack of food, starvation, and exhaustion of coping capacities.
- **939,000** people at Phase 4 (emergency levels).
  *Source: IPC, 21 December

WATER AND SANITATION
- **One** out of the three water pipelines coming from Israel is operational.
- **No Access** to clean water in the northern governorates. Fuel shortage impacts: 60 water wells, 2 desalination plants, sewage stations and pumps, wastewater treatment.

HEALTH
- **11** hospitals partially functioning (5 in north of wadi Gaza and 6 in south of wadi Gaza), 3 hospitals functioning at minimal capacity; 22 hospitals not functioning.
- **17%** of Primary Healthcare Centres are currently functional.
- **12** Emergency Medical Teams (EMTs) and 3 field hospitals are currently operational.
- **>200,000** cases of acute respiratory infections recorded.

EDUCATION
- **625K** (100%) Students with no access to education.
- **>4,660** students and 239 educational staff have been killed (MoE).
- **~92%** of all school buildings used as shelters and/or have sustained damage.

HUMANITARIAN OPERATION
- **158** UN staff killed: UNRWA: **156**; WHO: **1**; UNDP: **1**
- At least **340** health workers killed.
- **46** Civil Defence killed while on duty.
- **124** journalists and media workers killed.

MOVEMENT AND ACCESS
- Between 1 January and 12 February 2024, **51%** of aid missions planned for the north of Wadi Gaza and **25%** of those planned for the areas requiring coordination south of Wadi Gaza were denied access by the Israeli military.
- **>1,200** medical cases evacuated through Rafah and **>8,000** cases in need of medical evacuation.
- The Rafah crossing with Egypt and the Kerem Shalom crossing with Israel are open for the entry of approved goods.
- The Rafah crossing is also open for the movement of some wounded and sick people from Gaza to Egypt, and aid workers into and out of Gaza.
- Access to the sea and to areas near Israel's perimeter fence is prohibited.

INCOMING

Direct, reverberating and compounding civilian harm effects

- https://www.rtlnieuws.nl/nieuws/video/video/5412765/journalist-ameera-harouda-gazastad-oorlog-israel-palestina-hamas

- https://nos.nl/collectie/13959/video/2505962-dit-varende-ziekenhuis-helpt-gewonde-gazanen

- https://edition.cnn.com/2023/12/13/politics/intelligence-assessment-dumb-bombs-israel-gaza/index.html

Conclusion

- Will AI driven systems lead to more speed, accuracy, and security?

- Or make all citizens worldwide a target of mass state surveillance? And some subjects of unpresented levels of civilian harm?

- Make the lines of responsibility and accountability in 21st century warfare more diffuse?

- RAW: trace the assembled lines of responsibility from manufacturer to civilian harm in algorithmic warfare.

Speed and Scale

"AI-enabled targeting systems, fixed as they are to the twin goals of speed and scale, will forever make difficult the exercise of morally and legally restrained violence."

Schwarz and Renic, 2023
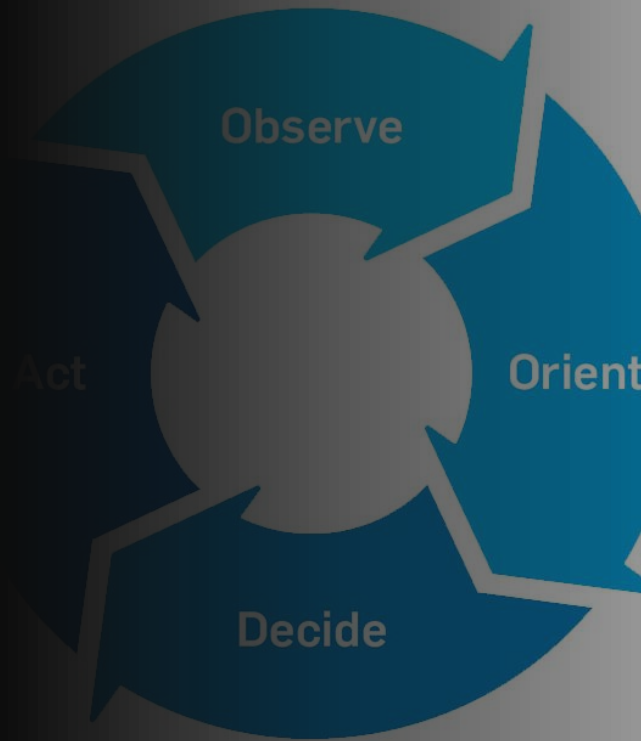
Implications of Increasing Autonomy on the Battlefield

"The animating impulse behind AWS is to allow the 'operator' to remain further remote from the field of operation by transiting most of the operator tasks to the system itself." (Ohlin, 2017)

Will this just exacerbate risks and calculations introduced by remote warfare?

"Such developments cause one to wonder whether notions of remote attack will take us to a point at which there is a degree of dissociation between armed forces personnel and the hostilities for which they are responsible." (Boothby, 2014)

Would AWS v AWS even be "warfare" as we currently understand it?

A.I. Brings the Robot Wingman to Aerial Combat

An Air Force program shows how the Pentagon is starting to embrace the potential of a rapidly emerging technology, with far-reaching implications for war-fighting tactics, military culture and the defense industry.

Autonomy on the Ukrainian Battlefield: Saker Scout

Ukrainian developers have confirmed that their drones are <u>now carrying out autonomous strikes</u> on Russian forces without a human operator.

Aim: enable an extremely fast reconnaissance-decision making-strike process (also known as the 'kill chain') in a way that is not possible when humans are involved.

NATO members commit to supply Ukraine with million drones

EUROPEAN PRAVDA, UKRAINSKA PRAVDA — THURSDAY, 15 FEBRUARY 2024, 18:09

7048

How cheap drones are transforming warfare in Ukraine

First Person View drones have achieved near mythical status on the front lines

"One participant in the programme noted that AI-enabled drones would be deployed in large fleets that would communicate with each other to target Russian positions, with no human operator needed to control each one."

yahoo!news Search the web News Finance

UK and allies seek to arm Ukraine with AI-enabled swarm drones – Bloomberg

Ukrainska Pravda

Sat, February 17, 2024 at 1:50 PM GMT+1 · 1 min read

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AI-Enabled Decision Support Systems

DSS: *"tools that use AI techniques to analyse data, provide actionable recommendations, and "assist decision-makers situated at different levels in the chain of command to solve semistructured and unstructured decision tasks"*
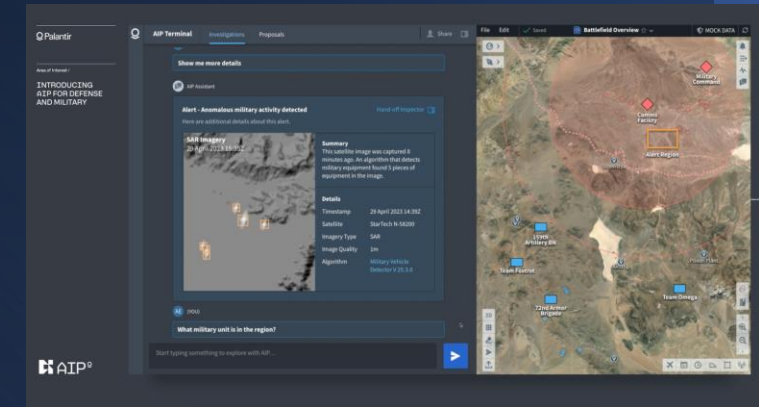
-Klonowska, 2022

Examples:

- Project Maven (Algorithmic Warfare Cross-Functional Team), US DoD
- Palantir's AI Platform for Defense

Controversies:

- Lack of transparency, accountability
- Speed and scale + complexity
- Automation bias
- Programming bias/error rates
- Unregulation (!)

'A mass assassination factory': Inside Israel's calculated bombing of Gaza

Permissive airstrikes on non-military targets and the use of an artificial intelligence system have enabled the Israeli army to carry out its deadliest war on Gaza, a +972 and Local Call investigation reveals.

Smoke rises after Israeli airstrikes in several location in the Gaza Strip, October 9, 2023. (Atia Mohammed/Flash90)

f   By Yuval Abraham | November 30, 2023

The Gospel and IDF Military Action: A Perfect Storm for Civilians Living in Gaza
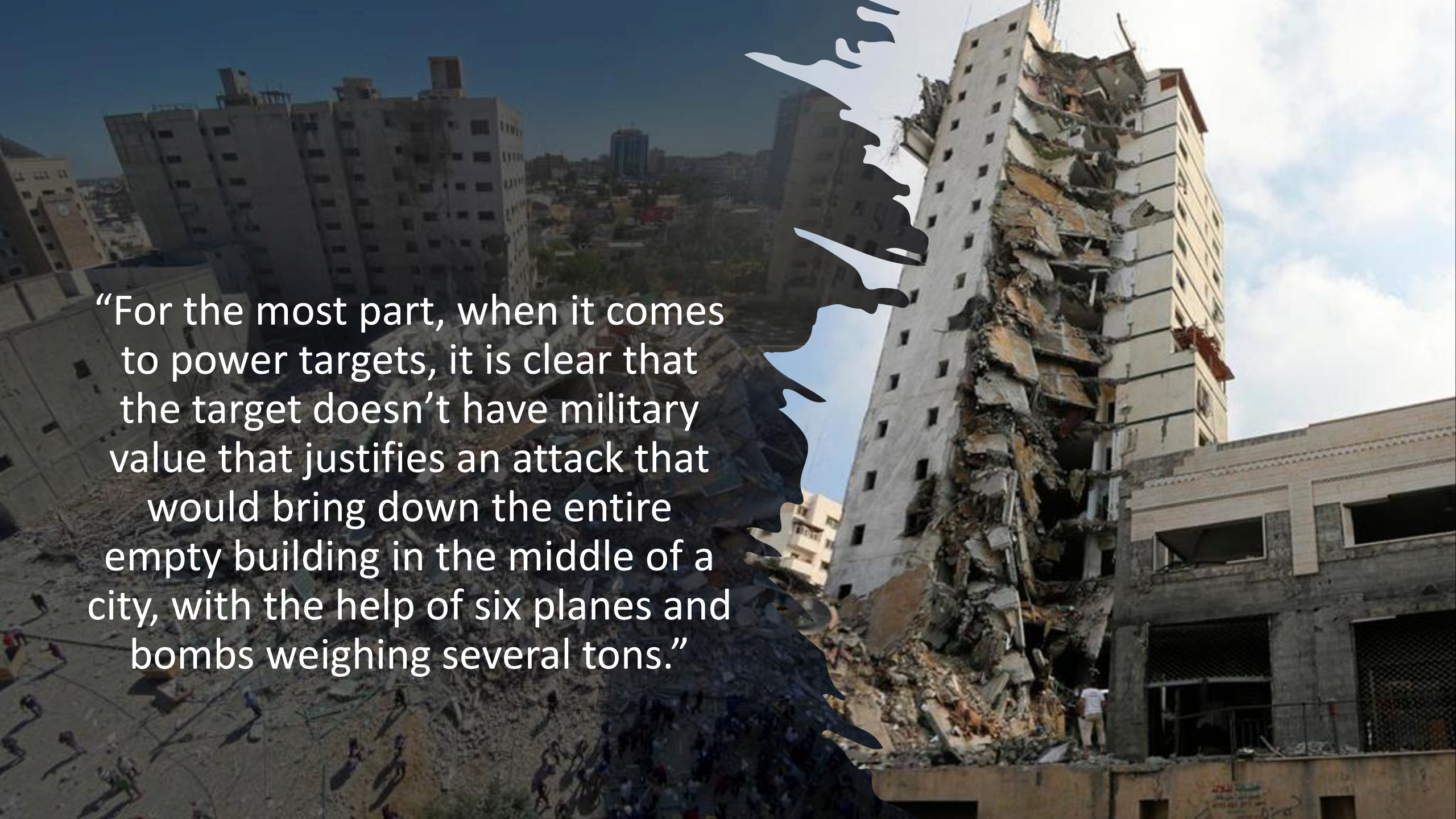
- Gospel: AI DSS
  - Data processing
  - Intel analysis
  - Target generation: speed and scale

- Hundreds of targets a day versus 50 per year

- Reported loosening of civilian harm constraints

- Bombing non-military targets ("power targets") with the "intent to shock citizens of Gaza"
  - Private residences
  - High-rise blocks
  - Infrastructure
  - Public buildings

Reports of "cases in which [IDF] shells based on a wide cellular pinpointing of where the target is, killing civilians. This is often done to save time, instead of doing a little more work to get a more accurate pinpointing"
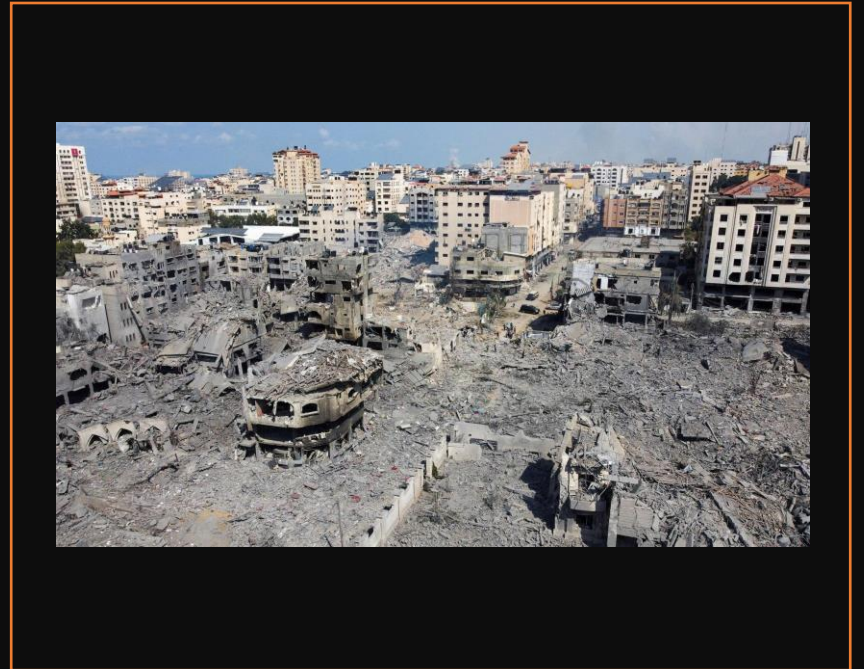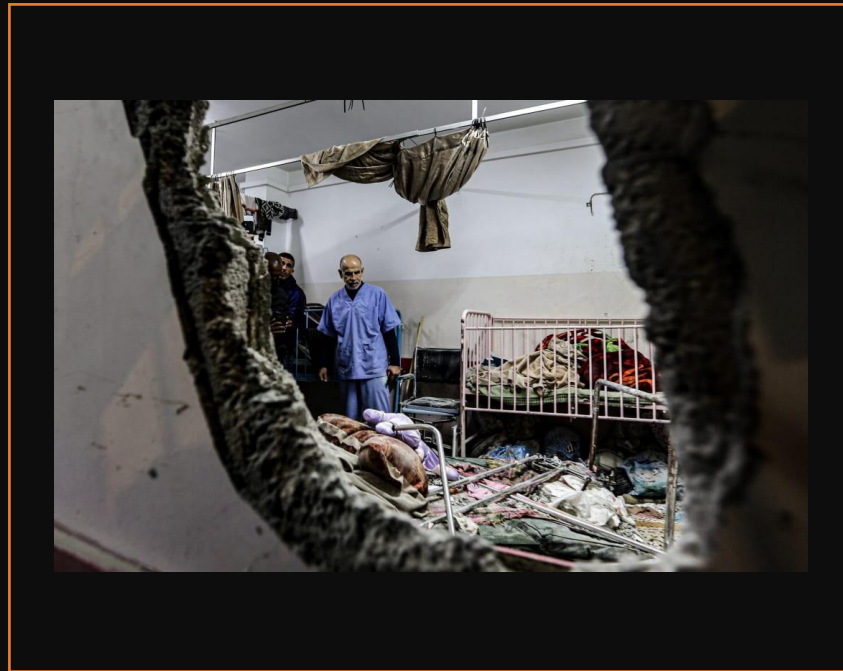
"The numbers increased from dozens of civilian deaths [permitted] as collateral damage as part of an attack on a senior official in previous operations, to hundreds of civilian deaths as collateral damage."

"For the most part, when it comes to power targets, it is clear that the target doesn't have military value that justifies an attack that would bring down the entire empty building in the middle of a city, with the help of six planes and bombs weighing several tons."

Conclusion—More Questions than Answers

- Rapidly developing, complex area of law, one that is nuanced and complicated and deserves a comprehensive approach on regulation (which takes time)—will we be able to do it?

- How do we deal with thorny issues around: transparency, accountability, automation and programming bias (error rates) and how do we regulate currently unregulated algorithmic warfare?

- Will countries meaningfully center protection of civilians in military doctrine?

- Will unfettered speed and scale win the day or will we decide collectively that concerns about humanity should prevail?

- Only time will tell…and the clock is ticking.