

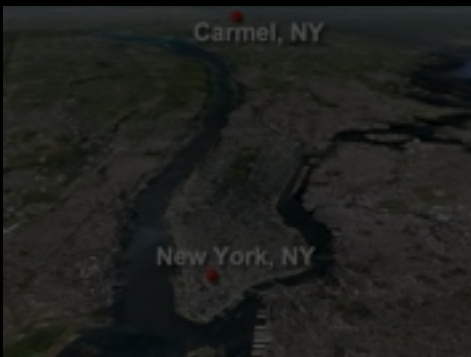
The Terrorist Choice: Nuclear, Biological, or Cyber Weapons

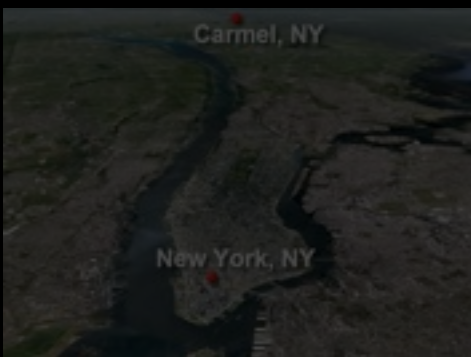
William G. Rhodes III
Senior Manager, Sandia National Laboratories
Albuquerque, NM

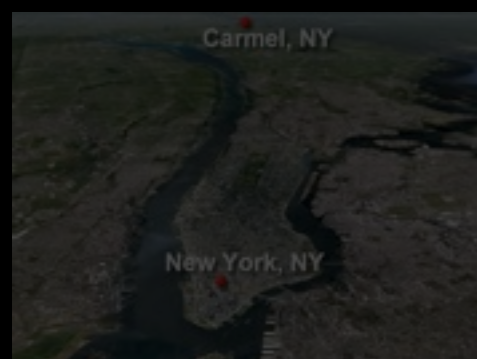
“Hello”

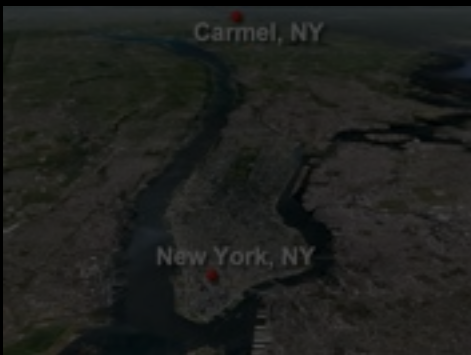


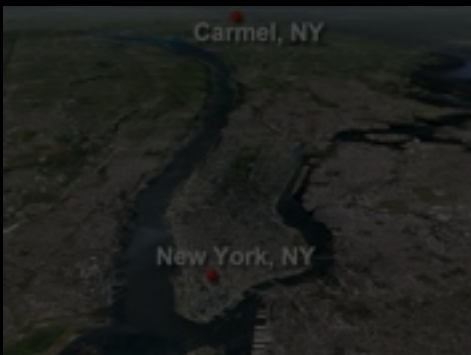












TERRORISM

“Taking an innocent stranger and treating him as an enemy who you hurt or kill in order to create fear.”

FBI: 100% Chance of WMD Attack

3
IDEAS

1
Risk Matrix

2
Ideas of Terrorist Success

3
Black Swan Events

$$\text{Risk} = \text{Threat} \times \text{Consequence}$$

Motivation

Materials & Tools

Management

Human Capital & Skills

Planning & Execution

OPSEC

Economic

Health Effects

Psychological Effects

Infrastructure

$$\text{Risk} = \text{Threat} \times \text{Consequence}$$

Motivation

Materials & Tools

Management

Human Capital & Skills

Planning & Execution

OPSEC

Economic

Health Effects

Psychological Effects

Infrastructure

Ideas of Terrorist Success



Operation Hemorrhage

Range of Possibilities



Terrorists are Failure Adverse



Black Swan Events



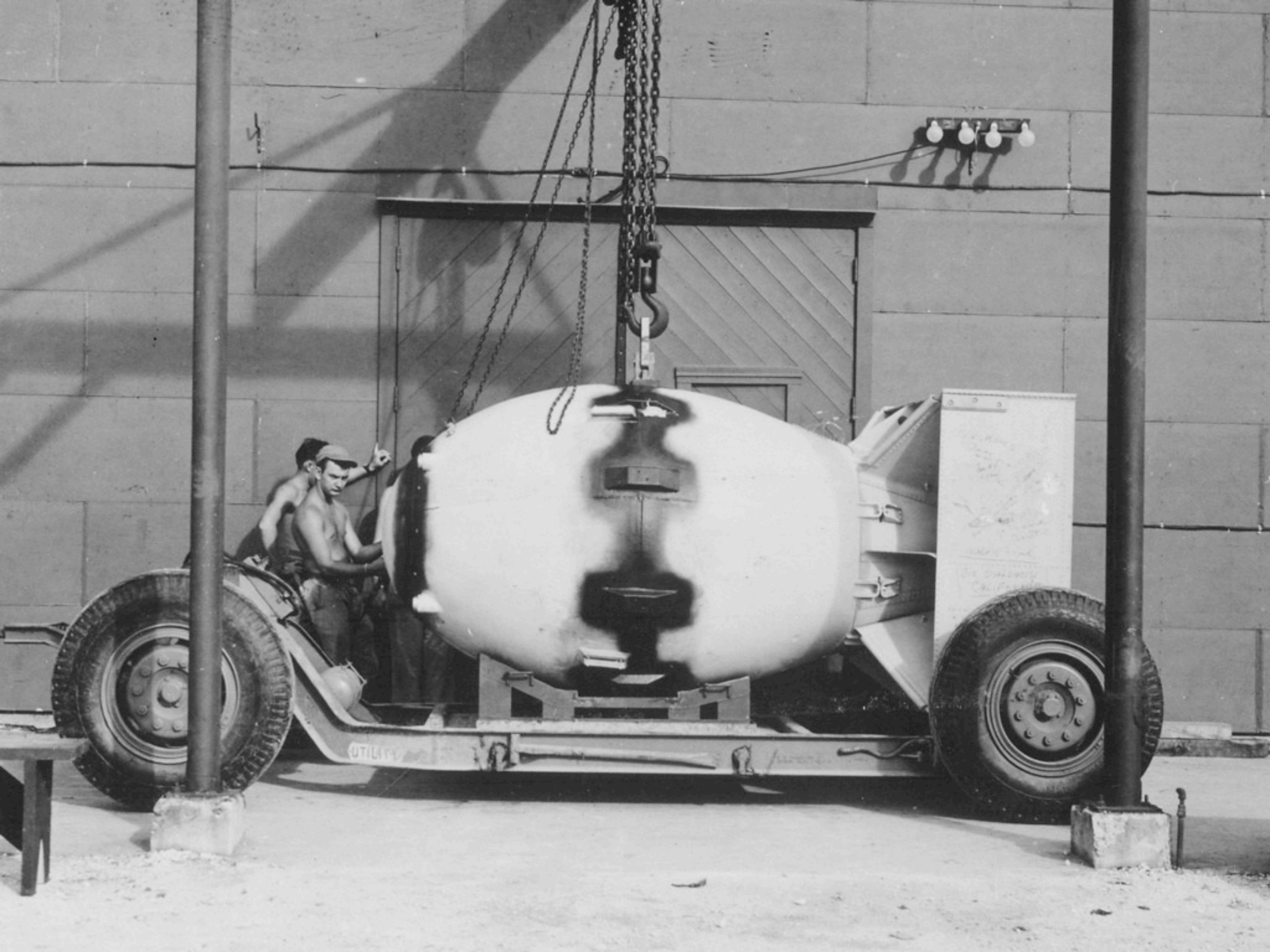
Unpredictable

Large Consequences

Retrospective Explainability

Nuclear Weapons





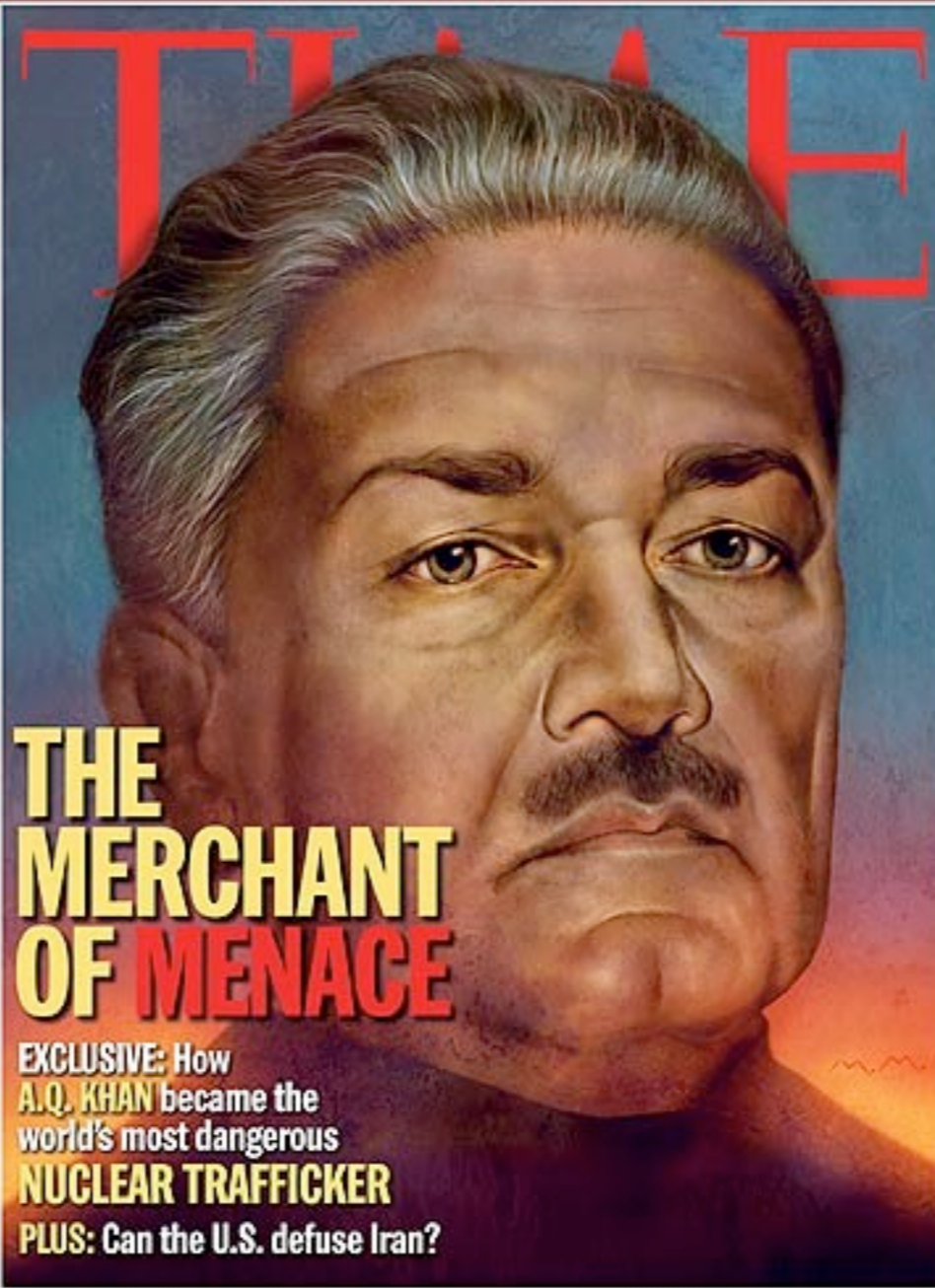
Materials + Knowledge





FEBRUARY 14, 2005

www.time.com AOL Keyword: TIME



TIME Magazine cover, "Merchant of Menace", Feb. 14, 2005



Urs Tinner, World Radio Switzerland



Marco Tinner, Associated Press

94

Pu

Plutonium
(239)



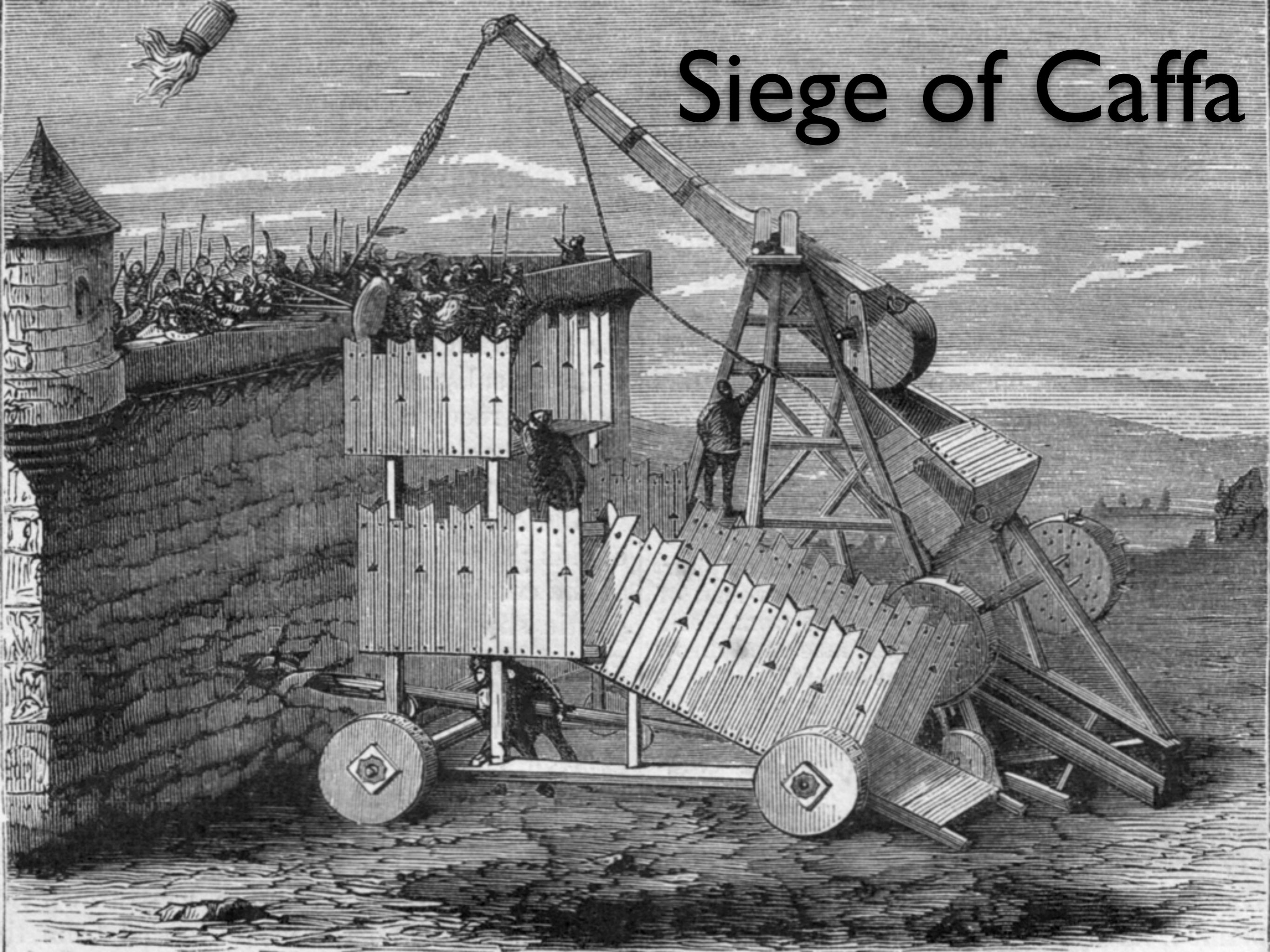


Final thoughts on

Nuclear Weapons

Biological Weapons

Siege of Caffa



Spread of Bubonic Plague in Europe







NOVA Science Now, History of Bio Warfare

The background of the slide is a microscopic image of Bacillus anthracis. It shows numerous long, rod-shaped vegetative cells and many small, oval-shaped spores. Some spores are seen in chains, while others are isolated. The overall color palette is a mix of green, blue, and red, with the red being most prominent in the center where the title is located.

ANTHRAX





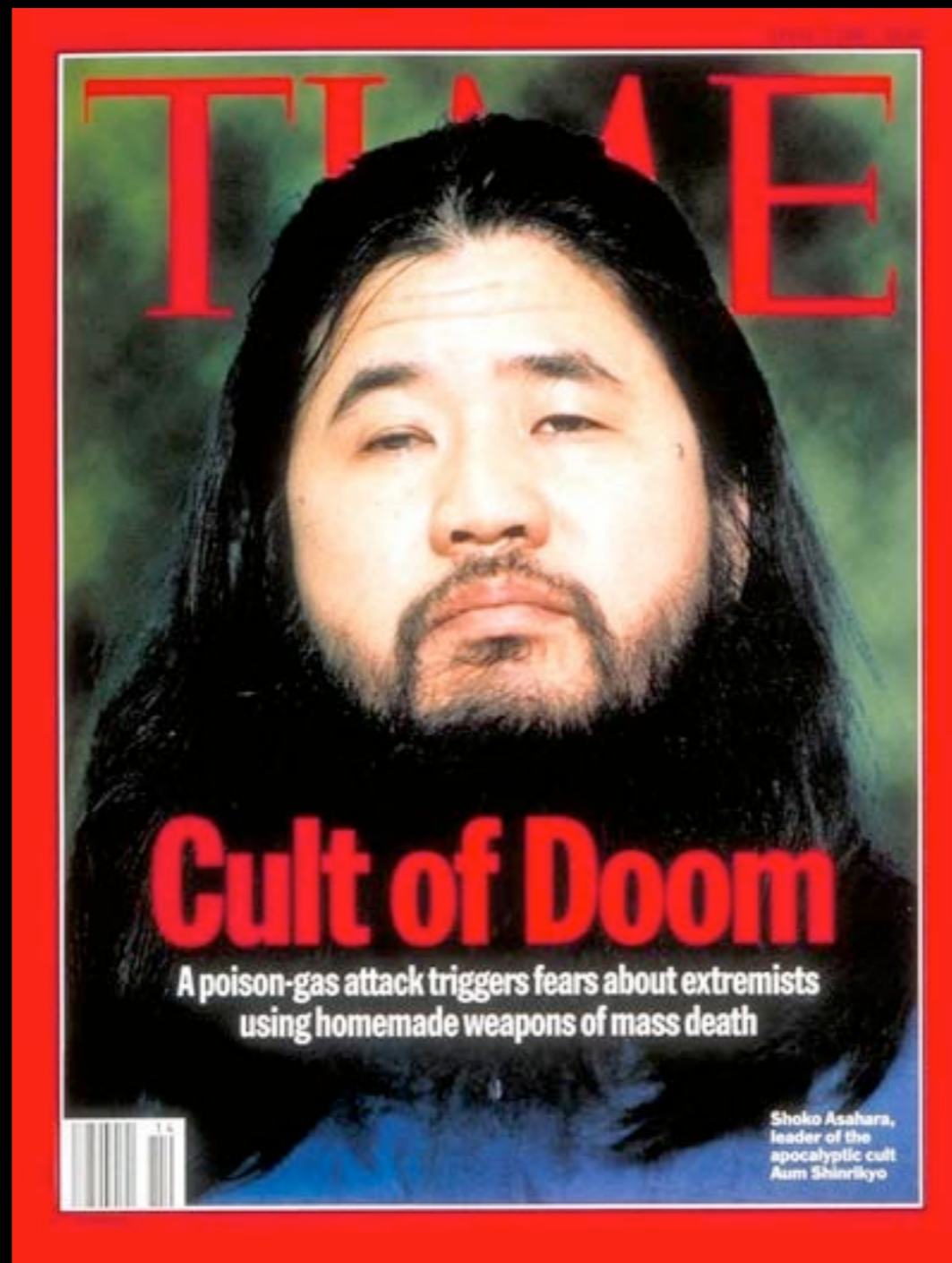
NOVA Science Now, History of Bio Warfare

Terrorist Use of Biological Agents



The Dalles, Oregon





TIME Magazine cover, "Cult of Doom", Apr. 3, 1995

Materials + Knowledge

WORLD AT RISK

THE REPORT OF THE COMMISSION
ON THE PREVENTION OF
WEAPONS OF MASS DESTRUCTION
PROLIFERATION AND TERRORISM

BOB GRAHAM, Chairman
JIM TALENT, Vice-Chairman

Graham Allison • Robin Cleveland • Steve Rademaker
Tim Roemer • Wendy Sherman • Henry Sokolski • Rich Verma

AUTHORIZED EDITION

Bacteria

Toxins

Rickettsia

Viruses

Final thoughts on

Bio Weapons

Cyber Weapons



We rely on our
cyber infrastructure
for so much!



Why are Cyber Threats Different?

A large, stylized red handprint is centered on a black background. The handprint is composed of thick, textured red strokes. Within the palm and fingers, there are intricate, glowing red circuit board patterns. The edges of the handprint are irregular and splattered, giving it a sense of being a physical print or a digital footprint.

Stuxnet

Final thoughts on
Cyber Attacks

*“Prediction is very difficult,
especially about the future.”*


3 CHOICES

1
Considerations

2
Tactical Extremeness

3
Strategic Use

Revenge

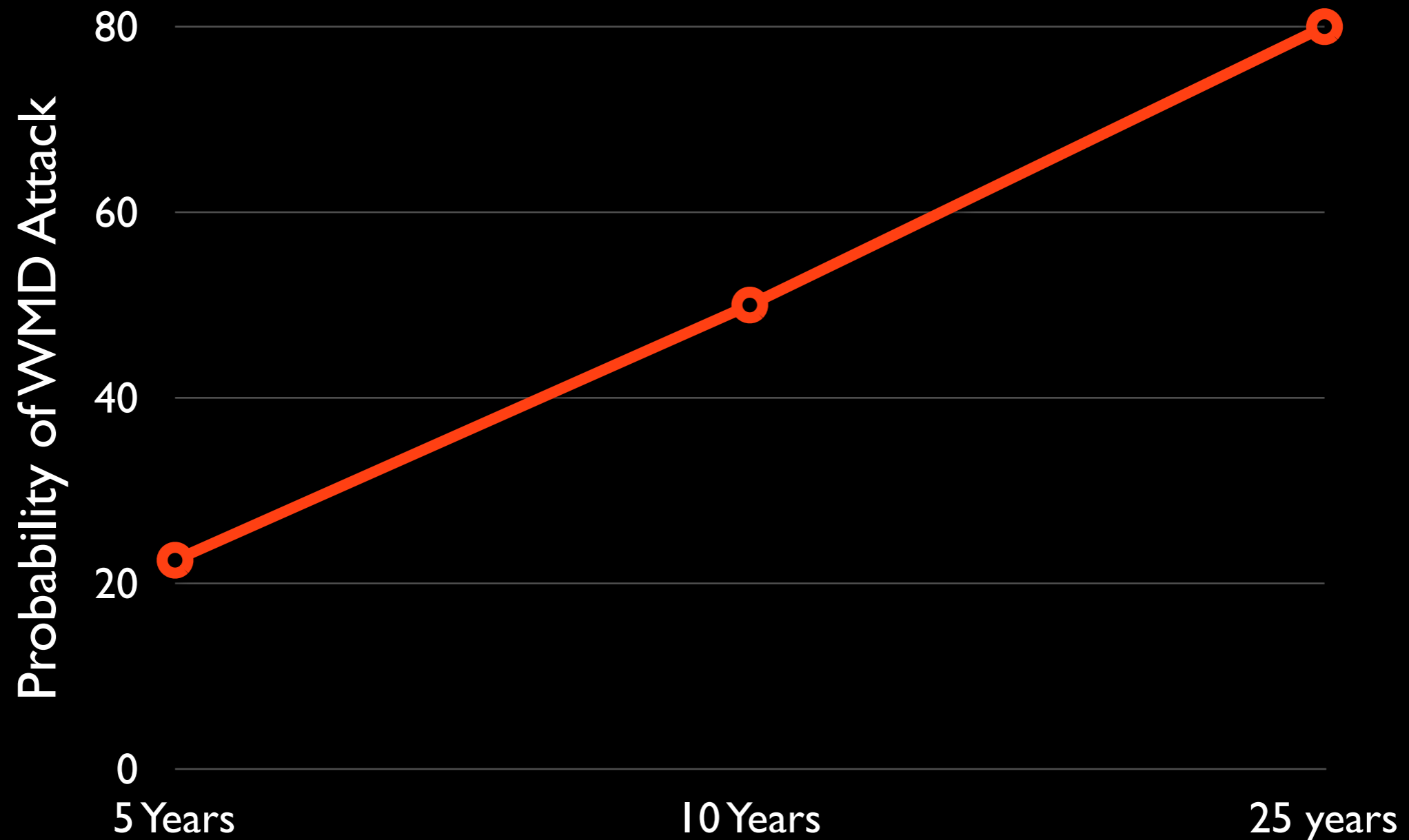
A black swan is the central focus of the image, its dark feathers contrasting with the lighter background. The swan's tail is prominently displayed, showing a striking pattern of red and white stripes. The swan is positioned in the lower half of the frame, with its head and neck extending towards the upper left. The background is filled with dark, silhouetted leaves and branches, creating a sense of a natural, perhaps aquatic, environment. The overall lighting is soft, highlighting the texture of the swan's feathers and the vibrant colors of its tail.

Consider Again Black Swan Events

Delphi Survey

Rank	Weapon Type	Average Rank
1	Chemical Weapon	1.3
2	Radiological Weapon	2
3	Biological Weapon	2.7
4	Nuclear Weapon	4

Delphi Survey Results



Final Thoughts

TERRORISM

“Taking an innocent stranger and treating him as an enemy who you hurt or kill in order to create fear.”

TERRORISM

Anti.dote

"Taking an innocent stranger and treating him as a friend whom you welcome into your home to create a friendship."

“Thank You”