



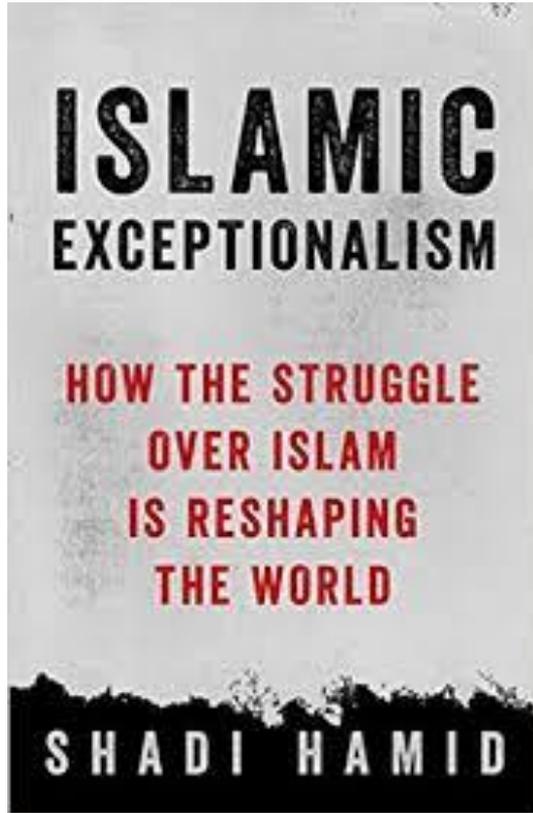
# THE USE OF EXPERT JUDGEMENT IN TERRORISM RISK ASSESSMENT

Dr. Gordon Woo

4th July 2017

*'Where is the wisdom  
we have lost in knowledge?  
Where is the knowledge  
we have lost in information?'*

T.S. Eliot



*'The scholarship is extremely shoddy. in spite of its exhaustive footnotes. Anyone who knows this material immediately recognizes Hamid's book as dissimulation - lying by omission.'*

*Hamid's dissimulations are being overtaken by the events in Würzburg, Nice, Paris, Istanbul, Brussels, not to mention the horrors in the Middle East.*

*The Islam he chooses to discuss is revealing itself. He and his footnotes will be swept aside.'*



The attack on Charlie Hebdo on January 7, 2015 was the most significant terrorist attack on French soil in more than forty years.

*‘On veut bien être méchant, mais on ne veut point être ridicule.’*

*Tartuffe,  
Molière*

# Mathematics in Political Science

*'In order to preserve in political science the freedom of spirit to which we have become accustomed in mathematics, I have been careful not to ridicule human behaviour, neither to deplore nor to condemn, but to understand.'*

Quoted in 'The Rise of Radical Islam'  
By Gilles Kepel

Baruch Spinoza



# Pascal's Wager

*You must be renouncing reason  
if you hoard your life  
rather than risk it for an infinite gain...*

Blaise Pascal 1670



Everyone has to die; why not die a martyr?



## ***The Martyr's Bargain***

*'Allah hath purchased of the believers their persons and their goods; for theirs in return is the garden of Paradise.'*

*They fight in His cause, and slay and are slain.'*

*Qur'an (9:111)*

# THREAT SHIFTING

Terrorist threat transforms according to evolving security.

*‘Now an army may be likened to water, for just as water avoids heights, and hastens to the lowlands, so an army avoids strength and strikes weakness.’*

Sun Tzu

The Art of War

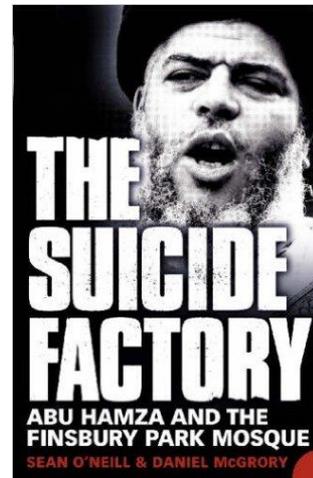


# Improvising and adapting terrorist weapons

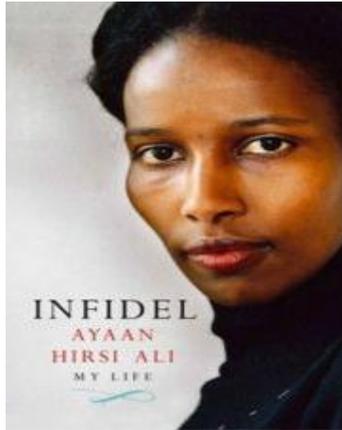


*'You can't do it by nuclear weapon, you do it by the kitchen knife, no other solution.'*

*'You cannot do it by chemical weapons, you have to do it by mice poison.'*



# Target substitution in Amsterdam



Ayaan Hirsi Ali,  
ex-Muslim,  
was under  
police protection

*'There shall be no mercy for the unjust,  
only the sword raised at them.'*



On November 2, 2004, Mohammed Bouyeri, a Moroccan-Dutch Jihadi, assassinated Theo van Gogh, the maker of the film 'submission', who was an unprotected soft target.

# Terrorism is the language of being noticed

*Today we were  
unlucky, but  
remember we  
only have to be  
lucky once.*

*You will have to  
be lucky always.*

12 October 1984

**Grand Hotel  
Brighton**

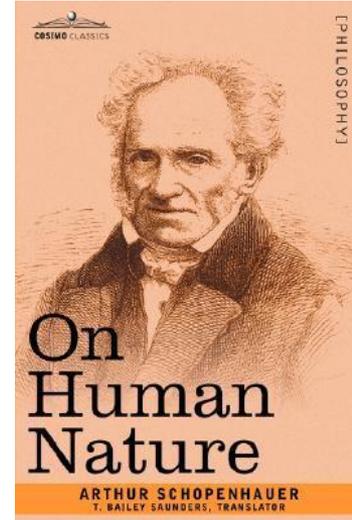


# Game theory aspects of conflict

- Substitution of targets in response to target hardening.
- The larger the loss to western society, the larger is the gain to ISIS.



Manchester  
Arena



*Jedoch ist,  
Neid zu  
empfinden,  
menschlich,  
Schadenfreude  
zu genießen,  
teuflich.*

# Maximizing attack leverage



Photo by  
Det. Greg Serendipio  
NYC Police Aviation Unit



22 March 2017



22 May 2017



3 June 2017

Leverage = impact / cost

# **A suicide bomber can only die once**

Multi-attribute utility function for terrorist target decision analysis:

- [a] Ease of execution
- [b] Alignment with objectives
- [c] Impact

# Attributes of a terrorist attack

In considering the utility of each potential suicide bombing target, the following attributes are relevant:

- the number of resulting deaths;
- the number of serious injuries;
- the extent of property damage;
- the business interruption to the target;
- the overall economic loss;
- the degree of societal trauma and fear;
- the scale of media publicity.



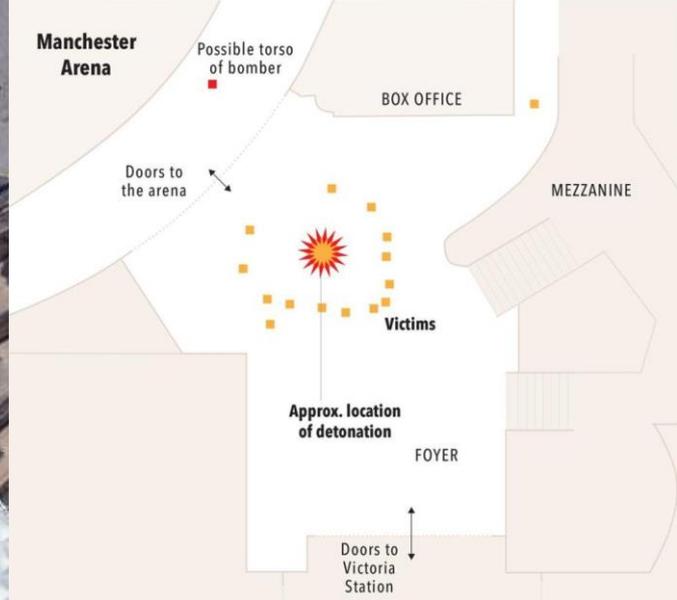
Half of Jihad  
is media

# Alternative Manchester crowded places

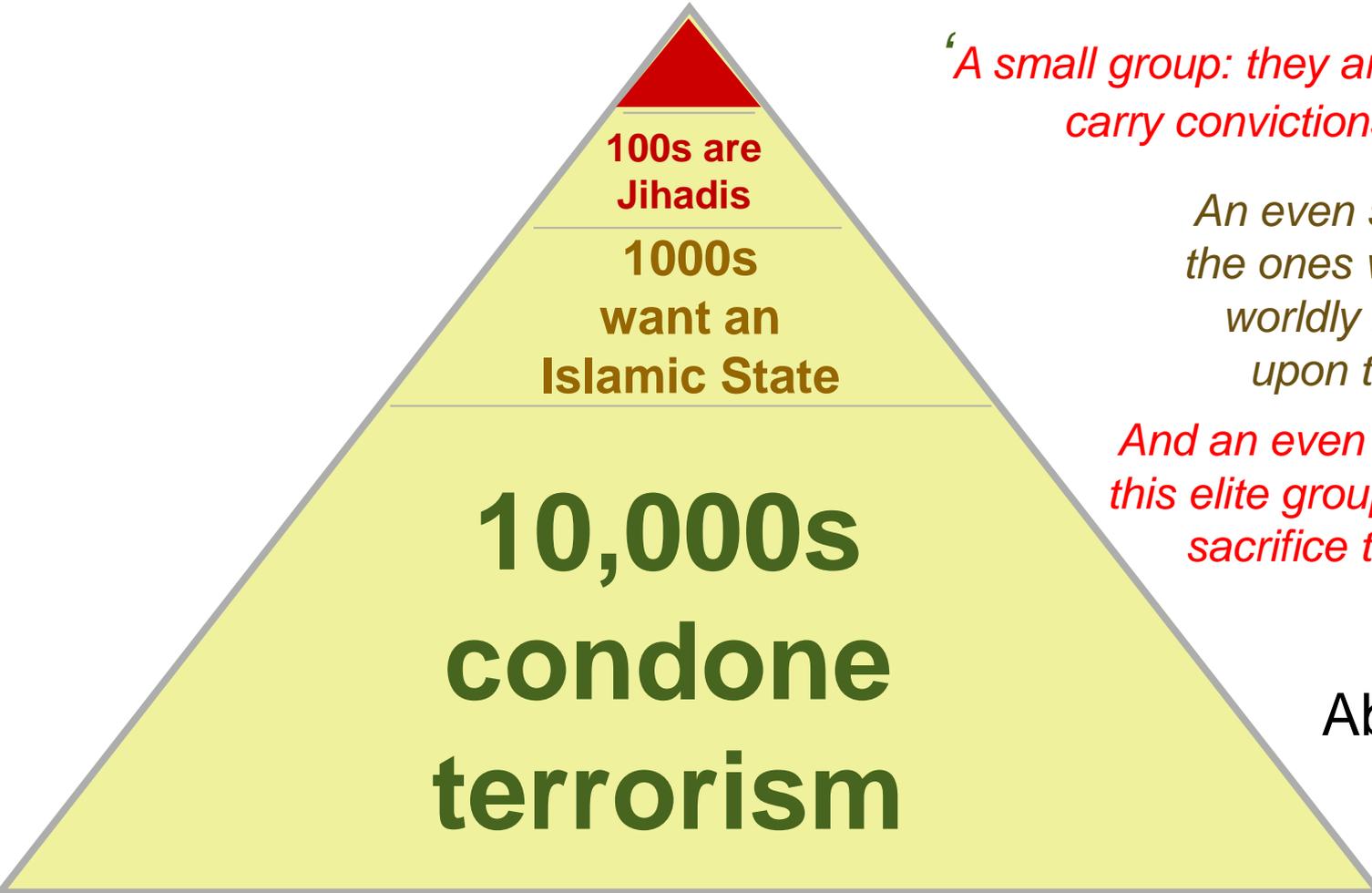


# Alternative performers at the Manchester Arena





# ' The Cream of the Cream of the Cream '



*'A small group: they are the ones who carry convictions for this religion.'*

*An even smaller group are the ones who flee from this worldly life in order to act upon these convictions.*

*And an even smaller group from this elite group are the ones who sacrifice their souls and their blood.'*

**Abdullah Azzam**

Martyrs:  
The Building Blocks  
of Nations

# Networks of radicalization

Khalid Masood lived in Luton between 2009 and 2011.



Anjem Choudary

Active Luton branch of Al Muhajiroun

Khuram Butt



Taimour Abdulwahab, an Iraqi-Swedish citizen, studied in Luton. He died in a car bomb attack in Stockholm on 11 December 2010.

# Terrorism is a control process

**“...mass surveillance is essential to deny terrorists the freedom to attack at will....”** – *Andrew Parker, Director-General of MI5*



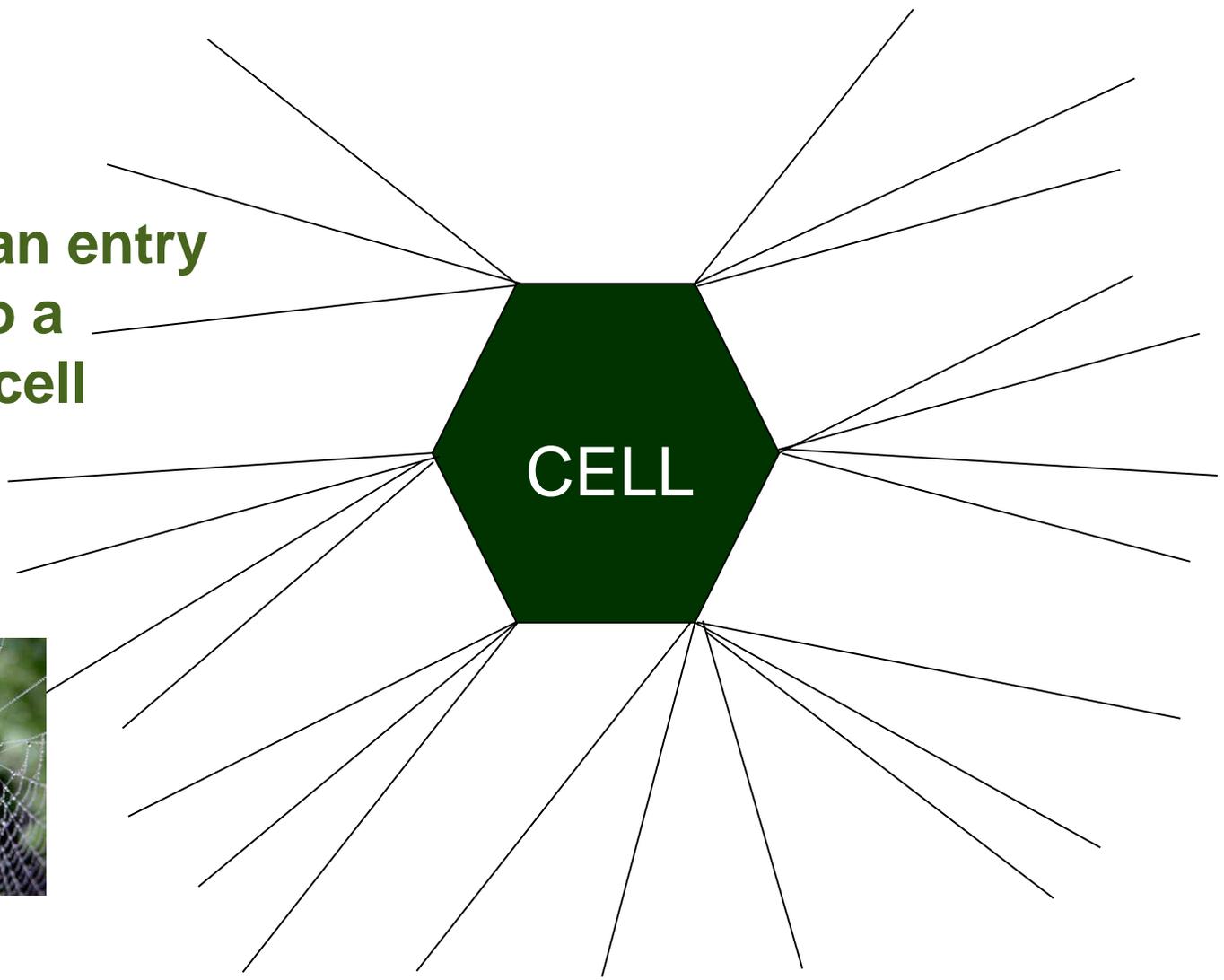
Edward Snowden: 2013

# Contact chaining



Aggregated webs of known terrorists close in on any operatives planning new attacks

**Gaining an entry  
point into a  
terrorist cell**



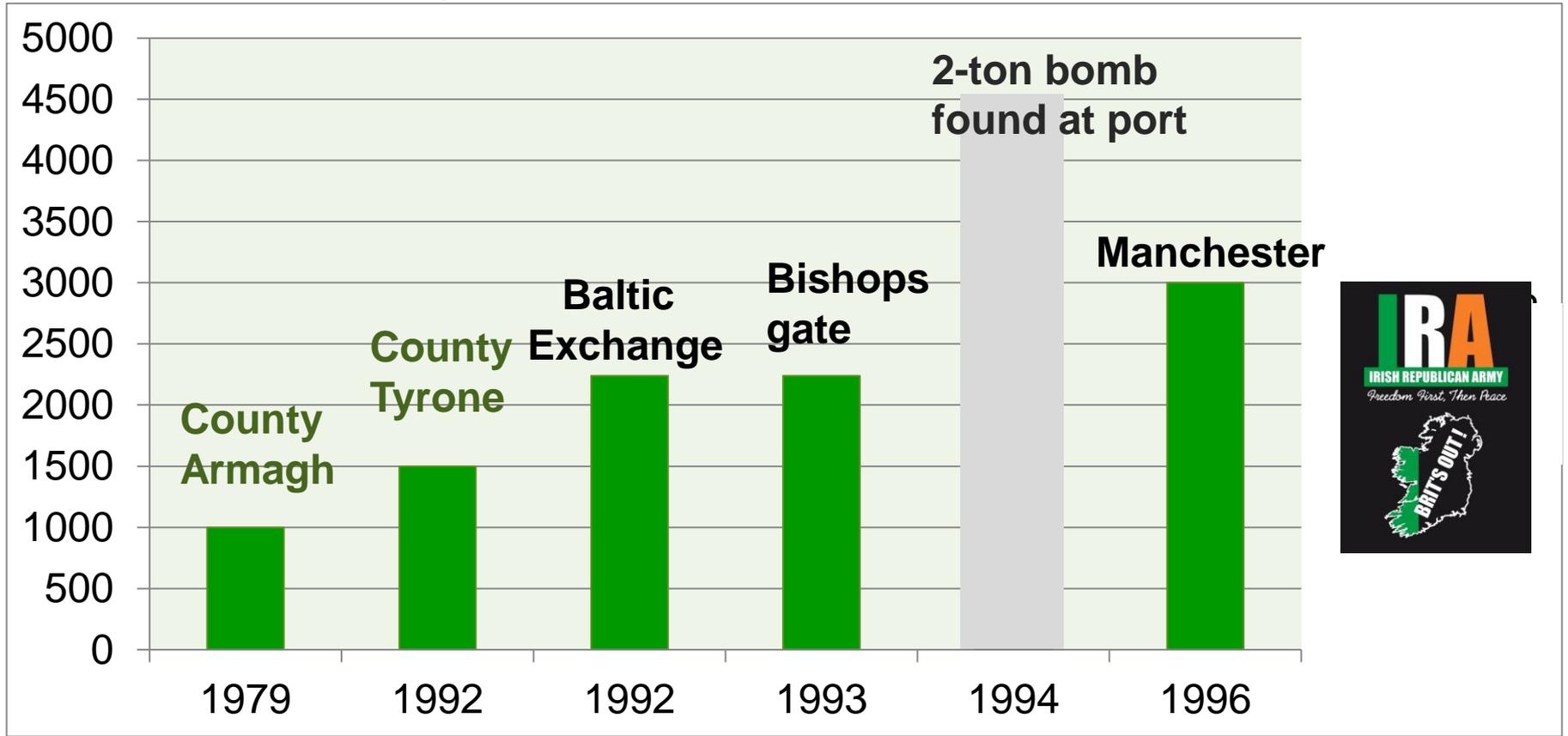
# Too many terrorists spoil the plot

Cell Size	1	2	3	4	5	6	7	8	9	10
Plot Interdiction Probability	0.26	0.46	0.60	0.70	0.78	0.84	0.88	0.91	0.93	0.95

*'For a large operation against the US, pick a number of brothers not to exceed ten...'*

*Osama bin Laden  
Abottabad Pakistan*

# Weapon development is progressive: illustrated by the evolution of IRA vehicle bombs



# Attack severity judgements

How many kilograms of explosive will be detonated in the next UK terrorist bombing?



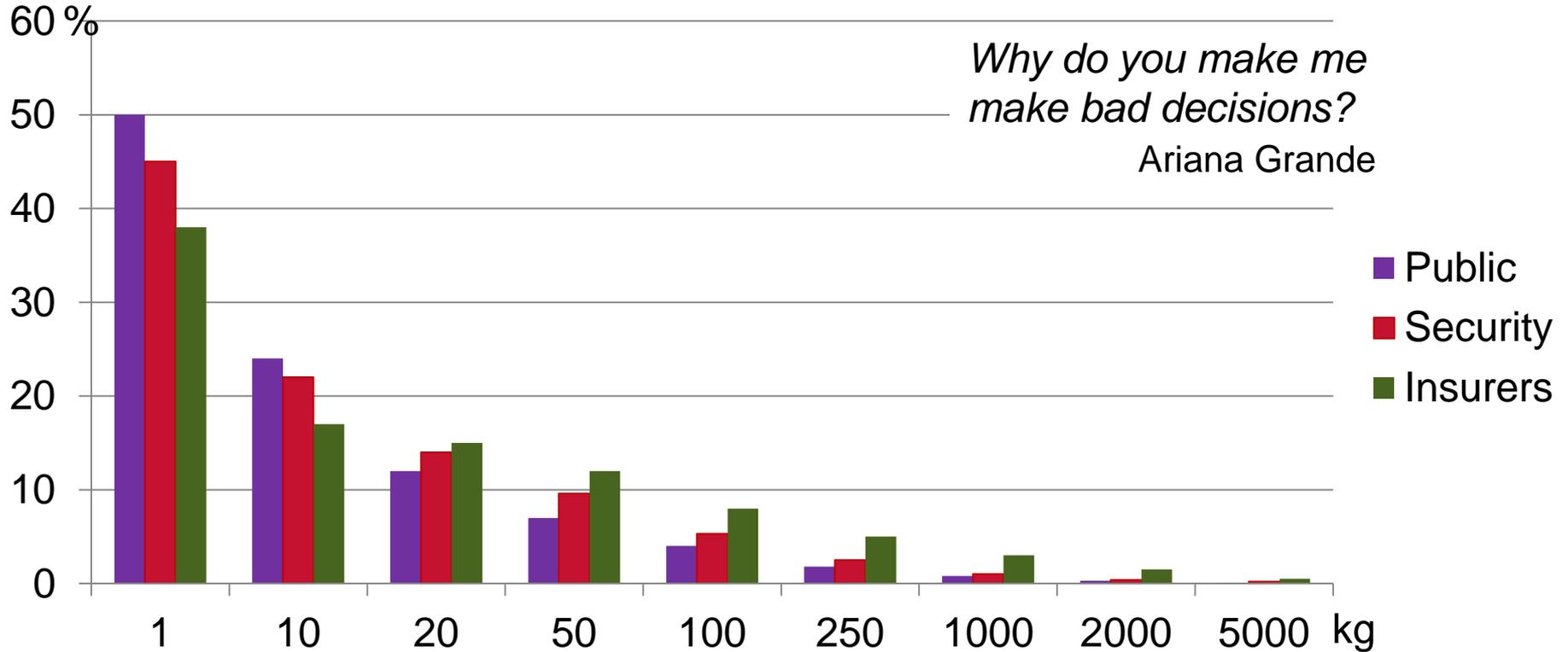
Manchester, 15 June 1996

If there is a sarin gas attack in UK, how many kilograms of sarin would be deployed?



Tokyo, 20 March 1995

# Group perception of IED threat



# Terrorist attack outcomes

The following parameters might also be elicited:

- the number of resulting deaths
- the number of serious injuries
- the extent of property damage
- the duration of business interruption
- the overall economic loss

# State-sponsored terrorism

