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Aviation security

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TO ATTRACT international attention some terrorist groups use civil aviation as a target for violent attacks to spread their message. The response to these violent incidents is the implementation of a series of security measures. Aviation security has been present long before the catastrophic incidents of 9/11. The unexpected use of hijacked planes as lethal projectiles compelled aviation institutions to employ radical security changes. As time goes by, the efficiency of security systems is constantly being evaluated and upgraded to help avoid the repetition of past incidents and anticipate future attempted attacks. However, it is very difficult to indicate whether these systems are pre-empting threats and saving lives, or whether they are economically feasible. More often than not, the general public ignores the serenity and comfort obtained when security measures run efficiently, but they immediately become aware of the occasional failures of such systems when these occur.

The rationality of the terrorist actor is still a subject of discussion among academics. Silke (2003), Horgan (2005) and Taylor (1998) are amongst the forensic psychologists who maintain that there is a rationale behind the problematic behaviour and the criminal trajectories engaged in by extremist actors. Building on this argument, McDermott and Zimbardo (2007, p.368) stress how terrorists are anything but insane as '[s]uccessful terrorist action requires patience, problem-solving skills, and the ability to work efficiently in groups.' Researchers have explored a range of motivations associated with violent extremism, for instance, vengeance (Silke, 2003) or social and environmental factors (Taylor &

Horgan, 2006). Nonetheless, since the number of known terrorist actors is very small it is difficult to point profile them with accuracy. From a criminological perspective, using the concept of the 'reasoning offender', Clarke and Newman (2006) take the terrorist's rationale in consideration to implement a battery of situational crime prevention techniques to increase the effort and risks and reduce the rewards or provocations, whilst removing potential excuses. The outcome of security prevention can be: complete deterrence, displacement to an easier target or that a determined offender studies the current provisions and strategically bypasses them to commit the planned violent offence. Aviation security tends to take a retrospective stance through preventing repetition of past atrocities rather than a proactive one to prevent future incidents. Thus, when a terrorist strategically and successfully creates an innovative method to defeat existing security measures, the security provisions are studied and revised according to the identified weaknesses.

Aviation security commences at the airport. Airports worldwide employ several techniques to detect weapons, bombs or other potentially dangerous objects from making their way into both airports and aircraft, and deter would-be attackers from carrying out their acts. The strict screening of travellers on entry to airports in the US deploys an estimated workforce of 60,000 people, with annual costs of around $5 billion (Riley, 2011). These screeners operate detection machinery such as full-body scanners, metal detectors and baggage x-ray systems. These personnel also conduct pat downs and undertake passenger behav-

ioural profiling. Security measures continue aboard the plane, such as the implementation of hardened cockpit doors in the last decade, as well as an increase of federal air marshals. It is estimated that these security systems amount to $31.4 billion per year (Stewart & Mueller, 2009). It is difficult to justify such expenditure and estimate the cost-effectiveness per life saved and risk reduction as a direct result of the implemented security measures (Stewart & Mueller, 2009).

Expenditure is not the only concern that surrounds the use of these new and improved security systems. An increase in waiting times and long queues indicate that these systems slow down the flow of passengers, especially in busy airports where the checking of every boarding passenger may quickly turn into a nightmare. Even with these detection and security processes in place, innovative violent actors will pass through; most notably and perhaps most recently, the case of Umar Farouk Abdulmutallab in 2009 whose criminal methodology of stuffing his underwear with plastic explosives earned him the title of the 'Underwear Bomber'. Whilst the efficiency of these systems remains open to question, past experience shows that passengers are more aware of the threats that might be encountered aboard airplanes and are more likely to retaliate should the terrorists indicate that they are suicidal (Riley, 2011; Stewart & Mueller, 2008). For instance, the 'Underwear Bomber' and the 'Shoe Bomber' were both subdued by passengers and flight attendants, respectively.

The use of modern technologies in aviation security raises a number of concerns relating to health and privacy. At this point in time there are two types of full-body scanners, the millimetre-wave scanner which uses radio waves and the backscatter x-ray scanner which produces a low amount of ionised radiation. Scanners in the latter category generate alarm in the public because ionised radiation is capable of damaging body cells and eventually causes cancer.

There are also privacy issues based on passenger concerns that unnecessary and inappropriate body images are taken when being scanned. However, software modifications are being carried out in order to blur or obscure body images whilst still detecting possible threats (Riley, 2011).

Aviation security is constantly being modernised to counter the perceived threats, yet terrorist groups observe and keep up to date with these technologies and adopt new tactical approaches. Inspired by drug smugglers, a new potential threat could be bombs implanted in human body cavities that pass unnoticed through airport security. This procedure has been described as 'tough to carry out ... successfully' (Sullivan, 2011), nevertheless it has not been written off as impossible. The major concern that surrounds this new tactic is the disturbing fact that security screening gear and other airport equipment are unable to detect explosive devices, which are planted inside human bodies. Innovative threats such as these show that even a billion dollar security system is still incomplete and imperfect in fighting terrorism effectively. As Mead (2003, p.4) stated, '[t]he need to deploy better, more effective, equipment to meet current and future threats will be an ongoing need for years to come.'

Currently aviation security is mostly based on hindsight, preventing potential copycats from repeating past incidents. Thus prevention in the aviation sector revolves around impeding attacks from occurring for a second time. For instance, amendments in the system and the introduction of new machinery, always take place as the result of an incident or an attempted one. Security aboard planes, removal of shoes at the airport, no liquids in the hand luggage and other measures were all implemented after incidents like the Lockerbie bombing, the 9/11 catastrophe and the 'Shoe Bomber'. Aviation security generally takes a reactive approach rather than foreseeing possible threats and providing proactive counteractive measures before an incident occurs. Against

this, situational crime prevention focuses on pre-emptive interventions that interrupt the flow of events leading to a successful attack, essentially by reducing or eliminating opportunity (Crawford, 2007). This means that crime prevention becomes forward-looking rather than driven by hindsight.

Additionally, securing transportation should include aspects of diligent research and appropriate intelligence gathering on terrorist activity, as well as improved physical security and passenger screening. But as the battery of security measures increases, particularly those that impact directly on the convenience of passengers, the tolerance of the traveller can become ever more strained. Passengers are not security professionals; they are travellers paying to get from A to B in comfort, quickly and at an affordable price. There is potential for an inverse relationship between the coefficient of security and customer satisfaction. This means that security needs to be as non-intrusive as possible and conducted expeditiously. The mechanisms used to safeguard passengers are subject to alterations that improve upon the system already in place. Aviation security does not come without its problems, especially those surrounding the expenditure and the time-consuming nature of some of these systems.

In order to address these issues, Riley (2011) suggests that scanning each and every passenger is not a feasible approach; instead 'trusted traveller' programmes must be developed which would include detailed background checks on passengers. In this manner, these customers will no longer need to pass through all security checks in place, thus moving faster through airports and reducing the strain on the system. Conversely, other time-consuming screenings such as full body scans will keep on being conducted on all those sectors of the population who do not follow a trusted traveller programme, or at random on some passengers following the trusted traveller programme, in order to reduce the prospect of terrorists failing to be identified.

Although numerous equipment and technologies are implemented to enforce security and filter the threat, security staffing is at the core of this system, interacting with passengers and ensuring that the whole security process is working appropriately (Eldar, 2010). These personnel constantly make critical day-to-day decisions as part of their job, but tedious routines coupled with relatively poor pay and a consequential lack of motivation are likely to decrease attentiveness to potential threats. Eldar (2010, p.39) argues that, '[a] determined, imaginative and skilled adversary – the terrorist – will only be deterred by an equally skilled, motivated, dynamic and alert security staff. It is known that a system is only as strong as its weakest link.' The weakest link may be human frailty rather than technological limitations.

Security systems are not invincible and aviation security is no exception. Weaknesses detected by the watchful eye of terrorists are countered by introducing newer technologies in the aviation sector. Security is constantly evolving as new threats emerge and there is an ongoing dynamic between security improvements and would-be offenders trying to overcome them. This ongoing cycle shows no sign of ending; identified threats generate improved security but the imaginative terrorist then counters with ever more innovative menaces. What can be said with some certainty, however, is that the way forward is through a more proactive approach, even though risk reduction through situational crime prevention is a difficult and uncertain enterprise.

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