Malevolent Creativity: A Functional Model of Creativity in Terrorism and Crime

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Although creativity is often seen as an aspect of self-fulfillment, it is important to recognize its social effects. The traditional view is that these should be beneficial, creativity thus being benevolent. However, those who wish to do deliberate harm to others can also display creativity, in this case malevolent creativity. This is governed by the same principles as benevolent creativity, differing only in its intended purpose. Like any creativity, malevolent creativity can be examined through its products. Concepts from research on creative products provide important insights into the activities of terrorists and criminals, especially the idea of competing solutions. The key ideas in malevolent creativity are summarized in 11 principles; recognizing these helps in developing more effective means for counteracting terrorism.

Creativity has sometimes been treated as a form of self-expression that involves personal dignity, expression of one's inner being, self-actualization, and the like (e.g., Maslow, 1973; May, 1976; Rogers, 1961). Although it may not have been the intention of the writers just mentioned, creativity theory has thus been exposed to the risk of “glorification of individuals” (Boden, 1994, p. 4), and even as somehow above social constructs such as good or bad. However, from almost the beginning of the modern era, creativity was seen as involving the “four Ps” (e.g., Rhodes, 1961, pp. 305–310): not just person, process, and product, but—of particular importance for this article—“press” (i.e., the social context).

The social dimension can scarcely be examined without reference to another of these Ps—products. These constitute, as it were, the public face of creativity. Guilford himself (e.g., 1950) referred to the need for creativity to lead to something useful. Other early writers also emphasized the necessity of including products in discussions of creativity (e.g., Clifford, 1958; Gordon, 1961; Rossman, 1931). More recently, the emphasis on creative products was put with particular vigor by Bailin (1988): “The only coherent way in which to view creativity is in terms of the production of valuable products” (p. 5). The idea of product should be understood in a broad way: Products are often tangible, and may take the form of works of art, musical compositions, or written documents; or of machines, buildings, or other physical structures such as bridges and the like. They can also be intangible, although relatively specific, such as plans and strategies in business, manufacturing, government, and other less frequently discussed areas (see below). Finally, they can consist of more general thoughts or ideas—systems for conceptualizing the world—as in philosophy, mathematics, or, indeed, all reflective disciplines, but also in religion, morals, and ethics.
From the social point of view, creative products are not the personal playthings of aesthetes and intellectuals seeking to express their individuality and realize themselves, but are helpful reactions to practical problems in the world. In other words, they aim at providing socially useful solutions to problems. However, as is discussed in detail below, usefulness on its own is not enough: The second vital element of creativity is, of course, novelty, without which a product would not be creative, even though it might be valuable. Bruner (1962, p. 1) summarized the two basic criteria of creativity in a psychological way: A creative product must cause effective surprise in beholders. Although interest in creativity as a source of useful, novel solutions to problems of society is not new, it has been given increased emphasis in some modern discussions (e.g., Higgins, 1994; Walberg & Starinha, 1992). Socially useful creative products are seen as necessary to make the nation prosperous, stable, and—of particular interest for this article—safe.

To be socially useful, creativity would obviously have to benefit the system into which it is introduced (King, 1992). This idea is by no means new, nor is it confined to aesthetic creativity. For instance, both Bacon and Descartes, two of the founders of modern science who were writing approximately 350 years ago, saw scientific creativity as involving the harnessing of the forces of nature for the betterment of the human condition. Thus, traditional studies of creativity focus on what can be called benevolent creativity. In general, this is creativity directed towards what most civilized people would regard as appropriate, ethical, or desirable purposes, whether the field is artistic/aesthetic (the production of art, music and poetry, for example), business (the provision of goods or services in exchange for payment), or engineering and design (the development of tangible objects for the benefit of society). In a newer and more wide-ranging discussion, Sternberg (2003) argued that creativity (along with intelligence) must be balanced or tempered by wisdom, and assumed that creative people’s wisdom will ensure that their creativity serves the common good. There have been several papers that have proposed a moral creativity (Gruber, 1993; Runco, 1993; Runco & Nemiro, 2003; Schwebel, 1993).

MALEVOLENT CREATIVITY

However, some studies of morality and creativity have indicated that the two may not be as closely related as would be ideal. Andreani and Pagnin (1993) found that creativity-gifted high school students gave more original solutions to moral questions and puzzles. It was the less gifted students who were more likely to endorse altruistic values. Rappoport and Kren (1993) discussed amoral altruists—people who saved Jews from the Holocaust yet otherwise showed poor moral behavior. Thus, there is no automatic link between creativity and doing good.

In fact, it is clear that creativity can have a “dark side” (McLaren, 1993, p. 139). At the very least, its benevolence can be ambiguous. Clark and James (1999) gave a number of examples of “negative creativity” (p. 311) in organizational settings. These included finding effectively novel ways of stealing from a company or of avoiding having to do unpleasant or demanding work at the expense of others. There is obviously a benefit for the person avoiding the unpleasant work, but the person who has to do it instead will not enjoy much benefit from the creativity. Such negative creativity, however, need not have actual destructive intent: People stealing from a company may not wish to harm the company, but merely to benefit themselves—indeed, they may have a vested interest in seeing the company prosper. It is even the case that negative creativity may arise from well-intentioned creativity or creativity that really is beneficial to the common good: For instance, the discoveries of Pasteur and Jenner laid the foundation for germ warfare.

In this article, however, we are concerned with another aspect of the dark side—creativity that is deliberately planned to damage others. Such creativity is deemed necessary by some society, group, or individual to fulfill goals they regard as desirable, but has serious negative consequences for some other group, these negative consequences being fully intended by the first group. We call this malevolent creativity. Such creativity is frequently seen in time of war. There are many examples from the history of warfare where the deliberate application of creativity in order to harm other people has played an important role in ensuring the success of one of the protagonists, both through technological innovation (for example, the widespread introduction of radar into British convoy escorts in 1942–1943; Encyclopedia Britannica, 2005e), and also through innovative tactics and strategies (for example, the development of the practice of “breaking the line” used by the Royal Navy in the late 18th and early 19th centuries; Encyclopedia Britannica, 2005a). Although regarded as highly beneficial by the British, these two pieces of military creativity would have been seen as malevolent by the German Navy and Franco-Spanish fleet, respectively.

Thus, benefit is a subjective notion. One person’s benefit may be another’s ruin. This idea of subjective benevolence, where creativity may benefit one group but not another, makes it possible to apply concepts from creativity to discussing fields of activity that are not usually analyzed in terms of creativity, for instance
Crime and terrorism. Where criminals and terrorists produce surprising products (in the broad sense of product outlined above) that are effective in achieving their purposes, they may be said to have displayed creativity, despite the fact that the products do not benefit our common good. Referring to Al Qaeda, Benjamin and Simon (2002) made this point succinctly: “They are genuinely creative, and their ingenuity and desire to inflict massive casualties will continue to drive them” (p. 400).

Creativity and Crime

One area where malevolent creativity might be expected to occur is crime. Possible links between creativity and crime can be looked at in at least three ways. Criminality may sometimes be a kind of accidental by-product of creativity: Because creativity requires deviating from the conventional, there is a permanent tension between being creative and producing products that go too far, sometimes to the point of breaking the law (whether or not other societies or later generations would approve of the law in question). The actions of artists who violate social taboos for artistic purposes are an example. Brower (1994, 1999) has looked in detail at this aspect of creativity and crime. Close to this is the idea that personality traits such as recklessness or unconventionality, or subclinical patterns of personal adjustment (Schulberg, 2001) may encourage characteristics that are favorable for creativity (e.g., willingness to break rules), and these traits may lead to behavior in aspects of life (other than producing creative products) that is adjudged to be criminal in the society in question at the particular time. An example would be Oscar Wilde’s imprisonment for homosexuality. However, links of these kinds are not the focus of this article, because the creativity does not have infringing against the law as its principal purpose.

A second kind of link between creativity and crime is seen when creative individuals break the law, not as part of their creativity or as a direct result of their creativity but, so to speak, on the side. A creative individual who committed a murder or robbed a bank would be an obvious example. The fact that the murderer was highly creative might help him or her to plan and carry out the crime in a novel way, but by and large the fact that the murderer was creative would be coincidental. Once again, despite the fact that it may be very interesting, this is not the constellation that we have in mind for the purposes of this article.

Of interest to us here is the case of the criminal individual who deliberately generates novelty in order to be a better criminal: A criminal intent is at the core of the person’s motivation, and creativity is deliberately and consciously employed as an instrument for achieving illegal ends. Fortunately, the evidence is that most criminals are not particularly novel or innovative.

Eisenman (1999) showed that prisoners rated by guards and other inmates as creative typically generated little or no effective novelty, but rather showed lack of inhibitions and low levels of social conformity—what Cattell and Butcher (1968) called “pseudo-creativity” (p. 217). As a result, anticrime measures are reasonably successful, even without high levels of creativity.

Creativity and Competition

Malevolent creativity involves effective novelty that is beneficial to one side in some conflict of interests, but is bad for the other. Some ideas from business creativity offer insights into understanding this state of affairs. In a business context, a creative solution offers the potential to capture, at least for a short time, a particular market. The more creative a product, the less likely it is that competitors will have anticipated it. It is self-evident that a business entering a market with a product that has never been seen before will, at least initially, have no competition. A less creative product, for example one that is simply an incremental improvement on an existing product, will not exhibit the same degree of revolutionary impact. Competitors will be quick to respond with their own incremental improvements. In simple terms, creative products (or, more generally, creative solutions) are harder to anticipate than routine (noncreative) solutions. For this reason, it is hard to compete against a truly creative, revolutionary product. This characteristic of creativity (gaining a competitive edge on the opposition), like the ability to exhibit creativity itself, is open to all sides in a competitive environment.

Creativity and Terrorism

In the same way that businesses see creativity as a means for gaining a competitive edge—one company’s creative product gives it an advantage over competitors until those competitors, in turn, generate a creative product of their own—law enforcement in general, and the war on terror in particular, can be seen as a dynamic struggle between competitors. Instead of the products being, for example, consumer goods, they are the subway gas attack, the airport metal detector, the aircraft hijacking, and the facial recognition system. In the context of criminal activity more generally, these products include, for example, bank robberies, alarm systems, car theft, and locks. Although the business imperative may be economic survival, the imperatives for ourside in the war on terror and law enforcement are, respectively, the survival of a way of life and the survival of ordered societies. Our position is that creativity plays as vital a role
in the competition between terrorist and counterterrorist or criminal and police as it does in the contest between rival businesses.

A creative act of terror or crime is as hard to anticipate, and therefore to defend against or to counteract, as is a creative counterterrorist or law enforcement weapon or process. The events of September 11, 2001, stand as testament to this fact. If the terrorist acts of 9/11 had not been novel, it stands to reason that they would have been anticipated. If they had been anticipated, in other words if the mode of attack had been known in advance, successful action would, or at least could, have been taken to prevent them. There is also no doubt that the terrorist acts in question were highly successful (regardless of whether we agree with what was done), so that it must be conceded that they were both surprising and also effective. In other words, the attacks of 9/11 must be regarded as highly creative. How can we conceptualize such creativity?

FUNCTIONAL CREATIVITY

We have argued that, repugnant as the idea may be, terrorists and criminals can use creativity to develop effective, surprising products that give them an advantage over their opposition. Fortunately, as we have discussed, counterterrorist and law enforcement agencies can also develop creative products of their own to cope with the efforts of terrorists and criminals. What is needed now is an understanding of the nature of creativity in effective, surprising products, to work out how to deal with malevolent creativity.

Effective Novelty

The model of creative products that we now describe is founded on the concept of creativity in an engineering setting. This has been termed functional creativity (Cropley & Cropley, 2005). This model is based on the now widespread view summarized by O’Quin and Besemer (1999) that for a product to be regarded as creative it must possess not only novelty but also relevance and effectiveness. In other words, a creative product must be not only original and surprising (novel); it must also satisfy the need for which it was created. Without relevance and effectiveness, the product is merely aesthetic. This is not to say that aesthetic products are, by nature, ineffective. Instead, we argue that without effectiveness, a product cannot be anything other than aesthetic. Thus, a bridge only possesses functional creativity if, in addition to being original and surprising (novel), it can also allow vehicles to cross a river successfully (relevance and effectiveness).

Higher Order Characteristics of Functional Creativity

In addition to the prerequisite characteristics described in the last section, creative solutions may also exhibit additional properties. In an early study, Taylor (1975) emphasized generation, reformulation, originality, relevance, hedonics, complexity, and condensation. The criteria of hedonics, complexity, and condensation evoke a pleasing way. They are reminiscent of Jackson and Messick’s (1965) very early distinction between external criteria of the effectiveness of a novel product (i.e., does it work?) and internal criteria (i.e., do its elements fit together in a pleasing way?). Taylor thus added what are, to some extent, aesthetic criteria.

More recently, Besemer and O’Quin (1999) identified three dimensions of a creative product: novelty (the product is original, surprising and germinal), resolution (the product is valuable, logical, useful, and understandable), and elaboration and synthesis (the product is organic, elegant, complex, and well-crafted). Again, the ideas of internal logic, understandability, and well-craftedness are raised. We call this elegance. Good solutions look like good solutions. Wernher von Braun, architect of the Saturn V moon rockets, is credited with the aphorism “the eye is a fine architect, believe it,” which neatly captures the notion of elegance.

Generalizability, by contrast, is an expression of the broad applicability of a product. It refers to the degree to which a product not only solves the current problem, but also suggests solutions to other problems, shows how to go about finding solutions to other problems (germinality), or raises new problems that had not previously been noticed (seminality). An elegant solution solves the present problem in a pleasing way, a generalizable solution leads on to other uses above and beyond the present problem, even though they may not, at first, be obvious.

The order of the criteria of functional creativity is not random. A functional solution must always do what it was supposed to do (i.e., be effective), before other criteria can be considered. A bridge, for instance, must get traffic across a river and must not fall down, before any discussion of novelty, elegance, and generalizability can take place. An example of a solution that was novel and elegant was the Tacoma Narrows Bridge in the northwest United States.

Unfortunately, it collapsed and, thus, although it was widely regarded as a beautiful design, it was not functionally creative. Probably very few people would argue that this was a good bridge, and that others should be like it. This example makes it obvious that novelty alone is not sufficient in functional products (see below), yet elegance and generalizability are also insufficient on their own.
Functional Creativity and Competition

The functional creativity model operates as a hierarchy. Relevance and effectiveness, on the one hand, and novelty, on the other, are necessary prerequisites for a product or solution to be regarded as creative. Elegance and generalizability are only applicable when the first two characteristics are present in a solution. Furthermore, there is a dynamic relationship between these four characteristics. Put differently, novelty adds value to a solution that is effective. The addition of elegance to a solution that is effective and novel adds even more value, and at the highest level, the addition of generalizability to a solution that is effective, novel and elegant adds further overall value.

Cropley and Cropley (2005) went on to suggest that in a competitive situation, where, for example, two businesses are competing in the same market, greater creativity in one product can actually reduce the effectiveness of a competing product. This is illustrated with the example of the British Harrier V/STOL (Vertical and/or Short Take-Off and Landing) aircraft in competition with Argentinean supersonic jets (the French Mirage and the American F-102 Dagger) during the Falklands War of 1982. The novel capabilities of the Harrier (specifically the technique known as VIFFing, or, vectoring in forward flight) resulted in tactical surprise that enhanced its effectiveness in air-to-air combat and, it is argued, actually subtracted value from the Argentinean aircraft, which, had they been faced with a different opponent, may well have proved to be extremely effective. Thus, effective novelty in one side’s products may cancel out the effective novelty of the other side’s.

Functional Creativity and Crime and Terrorism

In crime, criminals may adopt a standard method of operations (a *modus operandi*). In our terms, by doing this they deny themselves the advantages in their competition with law enforcement agencies yielded by generation of novelty. Indeed, advances in computers and statistical techniques have allowed international databases to be compiled with modus operandi automatically scored for similarity (Yokota & Watanabe, 2002). Presumably, the compensation for criminals is that their modus operandi makes them very good at what they do, and helps them to feel familiar, perhaps even at ease, in situations that less experienced people would find frightening. In effect, they may well find themselves in the same position as any expert: Once they have perfected a set of skills and become familiar with and comfortable in a domain in its existing form, they actually have a vested interest in things remaining the same. As Gardner (1993) pointed out, there may be “tension between creativity and expertise” (p. 52). To achieve surprise, criminals must be prepared to abandon the tried and trusted way (their *modus operandi*) and return to the status of beginners (Root-Bernstein, 1989).

Criminal profiling is a rapidly growing area that already incorporates ideas of functional creativity. For example, the routine activity theory of criminal profiling studies the relationship between possible criminals, possible victims, and the lack of an appropriate police presence. If there is the right level of all three (or perhaps we should say the “wrong” level), a crime will be more likely to occur (Beauregard, Proulx, & Rossmo, 2005; Cohen & Felson, 1979). The criminal product has already been copiously analyzed, and based on these patterns, anticrime forces can work to combat crime. However, if a criminal were familiar with the routine activity theory and specifically generated novelty by (for example) choosing unpredictable victims or selected areas where there was already an established police presence, then the criminal could use novelty to better his or her odds of being successful.

Recent events suggest, unfortunately, that this is also true in the case of terrorism. Thus, the model of functional creativity should be applied to the study of terrorism, as well as to the development of effective counterterrorist solutions. How does the functional model of creativity help to combat terrorism? It is axiomatic that terrorists will continue to develop creative solutions to their particular problem—namely, how to achieve “the systematic use of violence to create a general climate of fear in a population and thereby to bring about a particular political objective” (Encyclopedia Britannica, 2005b). Thus, in order to combat terrorism successfully, counterterrorist agencies must see their activities in the context of competing functional creativity. This applies to not only counterterrorist products that are physical, engineered products (e.g. metal-detectors) but also to counterterrorist systems, services, and processes. The concept of functional creativity dictates that counterterrorist agencies must, as a minimum, continuously generate effective novelty in order to stay one step ahead of the terrorist competitor. Furthermore, by understanding the terrorist product in terms of the characteristics of functional creativity, it is possible to tailor counterterrorist solutions to maximize their effectiveness and even to subtract value from the terrorist products.

CREATIVITY DECAY

The Decline of Novelty

There is one problem, however, that all creative solutions suffer from—*decay*. It is self-evident that, from the moment a product is made public, its novelty begins...
to decline as it becomes less surprising. The longer a product is exposed to scrutiny, the less novel it will become. Because novelty is a prerequisite for functional creativity, any decline in novelty will result in a decline in the creativity of the solution. The solution will then lose the value that was added to it by its novelty, and may well lose its ability to subtract effectiveness from competing solutions. Thus, to maintain a high level of functional creativity over time requires either the continuous generation and regeneration of effective novelty, or some other means for preserving the surprise value of an existing product.

The acts of terror in New York and Washington, DC on September 11, 2001, are a stark example of not only the advantages of a creative solution, but also of the concept of novelty decay. The idea of hijacking a plane and crashing it into a building was extremely surprising (novel) and very effective in the first minutes of the attack. However, its novelty decayed so much when the passengers on United Airlines Flight 93 heard about the morning’s events that they were able to generate their own competing response, which was, in its turn, surprising to the terrorists on their plane. It competed so well against the terrorist product that the passengers succeeded in foiling the terrorists’ main aim; the passengers’ solution subtracted much of the value of the oppositions’. In that case, the half-life of the novelty of using passenger aircraft as suicide bombs was a matter of minutes.

We have already used an analogy from radioactivity—half-life. In Figure 1 we continue to use this analogy, speculating that the decay function for novelty, like radioactivity, will be exponential. Figure 1 shows a graph of the hypothesized exponential decay of the novelty of the 9/11 mode of attack over time. Although the exact shape of the graph is unknown at present and will need to be determined by appropriate research, it is possible to speculate about certain points on the graph.

The Pentagon and World Trade Center attacks can be assumed to have had the maximum possible novelty. They were original and surprising, and were clearly not anticipated. The attack that resulted in the aircraft crashing in Pennsylvania, on the other hand, did not have the same level of novelty. We know that passengers on that flight were aware of the other attacks and that they took some action against the terrorists. Had they not done so, the terrorists would not only have taken over the plane (which they successfully did), but would have crashed it where they chose. Thus, this attack achieved only partial success. One of the two goals (hijack the aircraft) was achieved; the other (crash it at a selected target) was not. For this reason, we have shown this attack’s novelty as having degraded to 50% (compared to the other attacks).

It is also reasonable to assume that if the passengers on the unsuccessful flight (from the point of view of the terrorists) had not heard about the other attacks, they would not have taken any action. Had that situation occurred, the novelty of the fourth attack would have remained at, or close to, 100%, thus producing a different decay function. The dotted line in Figure 1 speculates on the shape of the graph had the decay of novelty through exposure of the product been slower than actually occurred. The greater the exposure of the product, the more rapidly its novelty decays.

For an example from the area of ordinary crime, consider the 2002 sniper murders around Washington, DC. John Muhammad and John Lee Malvo murdered 10 people in attacks that captured worldwide attention. The first murders took the country by surprise; most past sniper attacks (such as those by Charles Whitman) were one-time events. The 2002 murders, however, were multiple shootings taking place at different locations. In addition, the victims uncommonly encompassed all ethnicities and came from a wide age range. Thus, Muhammad and Malvo adopted a novel method of attack that, from their point of view, initially proved highly effective. However, they did not change their modus operandi, so that the surprise effect of their attacks decayed, and people were able to adopt countermeasures, such as being more guarded and alert. Eventually, the two snipers were caught, as the surprise effect dropped to a lower and lower level.

One measure of the creativity (and effectiveness) of police and government officials is to see if they can take advantage of a decline in novelty. For example, the recent disaster in New Orleans following Hurricane Katrina and its aftermath has been particularly devastating because most levels of government were caught unprepared. Ideally, the American government can learn from this tragedy and apply functional creativity
in their future responses. A less creative response—one that focuses only on problem solving—would be limited to reinforcing levees and hurricane response teams. A more creative response might be to test out multiple disaster scenarios (such as a major earthquake in California) so that the country would be better prepared for a multitude of possible disasters.

Decay of Effectiveness

Figure 1 dealt with decay in surprisingness (novelty). Figure 2 now examines the hypothetical behaviour of a solution’s *effectiveness* over time.

Continuing to use the 9/11 example, it is clear that, initially, the effectiveness of the Pentagon and World Trade Center attacks was at, or near, 100%. Those aircraft were successfully hijacked, and successfully crashed into major structures. The Pennsylvania attack, however, fulfilled only some of its goals: Although the terrorists succeeded in taking control of that plane, it did not reach its intended target. The decay of effectiveness that occurred over time (during which passengers on the United Airlines Flight 93 learned about the earlier attacks) reduced the effectiveness of the terrorists’ creative solution to their problem (causing maximum destruction), although insufficient time passed for the solution to be rendered completely ineffectual, which would have occurred, for instance, had authorities on the ground had time to work out a way for the passengers to regain control of the aircraft. Once again, it is possible to fix two points on the graph, the time point $t_0$ (when the attack was highly effective) and $t_1$ (when it was becoming less effective, so that its functional creativity had decayed to some extent). It is also reasonable to speculate on other possible levels of effectiveness that might be observed as the solution’s effect decayed (i.e., the nature of the terrorists’ solution became more apparent to their opponents, who were then able to take countermeasures), in order to construct the curve shown in Figure 2.

The Interaction of Novelty and Effectiveness Decay

These graphs suggest that not only do novelty and effectiveness decay over time, but also that the two criteria of functional creativity are linked together in a dynamic way. If a solution’s novelty did not decay (for instance because it was not detected), its effectiveness would be more likely to remain high. It is also interesting to note that the effectiveness of the terrorist attack was reduced to an estimated 50% by a counterterrorist solution that, itself, possessed some degree of novelty and effectiveness (the passengers’ counterattack). This clearly surprised the terrorists—otherwise they would not have allowed it to disrupt their plans. The passengers’ counterattack also displayed a certain elegance (for instance, it seems somehow fitting that the immediate victims should frustrate the main goal of their attackers, even if the passengers’ main motivation was probably survival, rather than frustrating the terrorists). Thus, the elegant effective novelty of the passengers’ counterattack subtracted substantial value from the terrorists’ solution.

If the novelty of the terrorists’ product had decayed rapidly but there had been no competing solution (for instance because the passengers were too disorganized or dispirited to mount their counter-attack, or because their action had been fully anticipated by the terrorists and thus displayed no novelty), the effectiveness of the terrorists’ “product” would have had the potential to remain high. Thus, novelty decay may be a prerequisite for effectiveness decay in most cases, but may not be sufficient on its own to guarantee effectiveness decay. The curve shown with a dotted line in Figure 2 speculates on the shape of the graph in the case where the competition (from the point of view of the terrorists) is weak. In the extreme case (no competition), the effectiveness would have remained at, or close to, 100% regardless of the decay of novelty.

PRACTICAL IMPLICATIONS

Figures 1 and 2 are not based on exact data, and are intended only to suggest how what was observed on September 11, 2001, might be analyzed in terms of general principles. Nonetheless, they provide a starting point for working out what is to be done to combat terrorism. It is worth noting here that we are focusing on frustrating murderous attacks; we do not, for instance, discuss issues such as eliminating the social, economic, and political conditions that lead people to carry out such attacks.

Understanding the Effects of Terrorism Over Time

Although this article is not attempting to predict future behaviors, it is possible to speculate on the time intervals
for the example of the September 11 attacks. It is clear that within minutes of the first attack, passengers were aware that an unusual pattern of hijackings was taking place, and were no longer surprised by the attack on United Airlines Flight 93. This reduction in the novelty of the method during the minutes between $t_0$ and $t_1$ enabled passengers to begin to formulate a counterterrorist solution that reduced the effectiveness of the terrorist attack. In other words, they began to develop a competing solution. Had the passengers on Flight 93 been unaware of the other attacks, it is reasonable to conclude that the novelty, and therefore the effectiveness, of the terrorists’ method would have remained higher for longer, and suggested other possible solutions, such as training passengers to resist hijacks, thus displaying generalizability.

We may also speculate that, in the days following the attacks, further wide exposure of the method, as well as increasing counterterrorist activities, meant that the novelty and effectiveness of the method declined through a phase where further unsuccessful attempts might have been made (the days between $t_1$ and $t_2$), until a point was reached where exposure and counterterrorist solutions reduced the method’s effectiveness to no more than a lingering psychological effect on society ($t_3$). However, the importance of this long-term, primarily psychological effect should not be underestimated. Indeed, in some cases, such as the Bali bombings on October 12, 2002, and October 1, 2005, or the London bombings in July 2005, this lingering effect may be the main goal of the terrorism, for instance because of its potential to damage a country’s economy by frightening off tourists or to cause an atmosphere of suspicion and intolerance that is favorable for recruiting new terrorists. It may be possible to anchor the point $t_3$, for instance in the case of 9/11, by examining the impact of the attacks on patterns of air travel. The time that elapsed before the number of people traveling to Bali from Australia after the October 12, 2002, terrorist attack returned to earlier levels was several months, suggesting that the interval $t_2$–$t_3$ is of the order of months.

Designing Proactive Counterterrorist Solutions

Terrorists typically want their acts to become well known as quickly as possible. Thus, the problem for counterterrorists of achieving novelty decay may be secondary to that of causing effectiveness decay. The preceding examples have all assumed that counterterrorist efforts are reactive, and do not swing into action until after the terrorists have achieved their first effective surprise, thus giving the terrorists, as a gift, the period $t_0$–$t_1$, when they can do maximum harm. It is important to examine the possibility of proactive counterterrorist solutions. The proactive solution is one that is in place before the terrorist act takes place. Such competing solutions are in a position to subtract value from the terrorist solution as soon as it becomes known.

In the case of the September 11 attacks, what would the outcome have been had a counterterrorist solution already been in place? If, for example, each aircraft had carried armed guards on board, what would have happened? It is reasonable to assume that an attempt to hijack the planes would still have taken place. The decay of novelty would, most likely, have followed a similar path; however, the effectiveness of the terrorist attacks would almost certainly have decreased much more steeply. In other words, once guards were expecting an attack, it is likely that the later attacks would have been less effective. A key in this example is that the initial effectiveness of the terrorist attack method is likely to have remained high. In other words, at least one of the attacks (probably the first chronologically) would still have succeeded.

A more desirable situation would be to have in place a proactive solution that does not allow the terrorist method to reach 100% effectiveness under any circumstances. It is difficult to speculate what this could have been on September 11, 2001. It is possible, however, to use the functional model of creativity to identify the kinds of characteristics that a proactive solution would need to possess. A truly proactive counterterrorist solution that is able to preempt a terrorist attack and prevent it achieving 100% effectiveness must exhibit the following characteristics:

1. It must be relevant and effective. It must be able to achieve its desired objective. It must, therefore, have a well-defined goal.
2. It must be novel. It must be original, surprising, or unexpected. This requirement may dictate a high level of secrecy, something that represents a departure from the traditional concept of deterrence that grew out of the Cold War (nuclear) defense policy. It would, thus, require a fundamental change in the mindset of policy makers. Secrecy is also contrary to the social/political ideal of openness that is now widely accepted, and seems to raise the specter of secret agencies and covert operations. How the speed of counterterrorist novelty decay can be reduced while preserving the present open value system needs to be worked out.
3. It must guard against premature exposure that reduces this novelty. Many current methods of counterterrorism inadvertently advertise themselves. This contributes to the decay of their novelty and effectiveness. Members of the public know, for example, that it is hard to get a knife on a plane. Smart, creative terrorists will react accordingly and look for creative solutions that subtract value from the
counterterrorism measure. The proactive counterterrorist solution must surprise the terrorists.

4. Ideally it will be elegant. It must make sense and be fully worked out and well engineered. It should not only work (effectiveness), but also be beautiful or polished. This may well mean that it is expensive to develop. A Heath-Robinson machine is an example of a solution that is effective but not elegant. The Tacoma Narrows Bridge (see above) is an example of a solution that was elegant, but not effective.

5. Ideally, it will be generalizable. It must be adaptable. The best solutions are those that are flexible and can solve problems that have not yet been foreseen. A claw hammer with a claw to remove bent nails has foreseen the eventuality that something undesirable may happen. The claw hammer is more adaptable than a plain hammer. This characteristic is also the hardest to build into a solution.

Because terrorists are actively seeking new solutions to their problems, the terrorist/counterterrorist problem space is dynamic. As soon as one problem has been solved, or one novel solution created, counterterror organizations must begin working on the next solution, just as we now know terrorists do. The lifecycle of terrorist and counterterrorist solutions is, perhaps, even shorter than the notoriously rapid product lifecycles in software and high technology. The proactive counterterrorist organization will borrow extensively from other industries where rapid development is required and defenses against novelty decay and effectiveness decay are already well developed. Many of these solutions can already be seen in sophisticated anticrime procedures. Professional profilers use information about past crimes and criminals to prevent future crimes and to identify and apprehend current criminals. The same basic procedures can be used for such disparate crimes as arson, theft, and rape (e.g., Kocsis & Irwin, 1997).

EVALUATING COUNTERTERRORISM MEASURES

The concept of functional creativity also sheds light on how to evaluate the effectiveness of counterterrorism solutions. Many approaches to counterterrorism focus only on problem-solving—they assume a well-defined, conventional problem and attempt to solve that. Creative problem-finding reexamines the nature of the problem and asks whether the right problem is being addressed (Runco & Nemiro, 1994; Runco, Nemiro, & Walberg, 1998). This is akin to the difference between verification and validation in engineering. Verification asks, “Are we solving the problem right?” whereas validation asks, “Are we solving the right problem?”

Problem Finding

In recent times, creativity researchers have recognized that understanding the real core of the problem is an important element in finding creative solutions (e.g., Jay & Perkins, 1997), and Mumford, Baughman, Threlfall, Supinski, and Costanza (1996) identified “problem construction” (p. 63) as one of the main processes involved in creative problem-solving. Thus, part of the process of generating effective solutions is to ensure that the right problem is being addressed. This idea is by no means new. It was recognized early in practical discussions of developing novel solutions: Gordon (1961), for instance, emphasized stating the essential core of the problem that is to be solved as the first step in Synectics.

If a creative problem-finding approach is taken, in conjunction with the model of functional creativity, it is possible to see terrorist problems in a new light. For example, is the problem of terrorists hijacking passenger aircraft really one of preventing them from getting guns onto the aircraft? Or is it really a problem of negating the danger posed by a terrorist who has succeeded in getting a gun onto an aircraft? The first definition of the problem focuses attention on things like metal detectors, and security screening; the latter might focus attention on arming other passengers as a means of negating the effect of an armed terrorist. Both are directed at solving a common core problem (preventing hijacking), but the second definition has analyzed the problem to a deeper level to find the real operational problem that must be solved.

The former problem statement generates solutions, some of which (like metal detectors) are not in the least novel, are not 100% effective, and are, therefore, easier to counteract. The metal-detector solution also gives potential terrorists ample opportunity to study their competition and devise their own creative ways to counteract it. The first principle of malevolent creativity (see below) states that terrorists will not always behave the way that society wants them to behave. On the other hand, a solution to the latter problem might, for example, involve providing guns to all passengers at the first sign of a hijacking. Although radical, it is certainly original and surprising (not least for the terrorist). Arguably this “auto-immune” aircraft solution would have stopped the September 11 events within seconds of the first terrorist brandishing a box cutter, and saved thousands of lives.

The purpose of this example is not to suggest an actual solution, but to illustrate the kinds of thinking and analysis, based on concepts of creativity, which would yield other real, workable solutions. Such solutions, realistically, may only work once, because that is the nature of creative solutions when they are
confronted with highly creative competing solutions. It is no longer so much a case that the price of freedom is eternal vigilance; rather, it is now the case that the price of freedom is eternal creativity.

CONCLUSIONS

This article argues that successful counterterrorism—and any anticriminal work—requires continuous creativity based on a functional understanding of the characteristics of creativity. We close by summarizing the concept of functional creativity in the context of terrorism and counterterrorism and crime through 11 principles of malevolent creativity. These principles should be applied as a guide to the development of creative counterterrorist and anticrime solutions.

In summary, the eleven principles of malevolent creativity are:

1. People whose intentions are antisocial can, and do, exhibit creativity in their actions, irrespective of whether the majority social environment approves of their aims.
2. Creativity, whether benevolent or malevolent, is a competitive lever that does not respect societal conventions. Its benefits are available to all who choose to use it.
3. Creative products (solutions) are characterized by a hierarchy of four parameters: relevance and effectiveness, novelty, elegance, and generalizability. We must analyze terrorist products, as well as our own counterterrorist solutions, against these criteria.
4. The more creative a solution is (i.e., the more novel, elegant and generalizable), the more effective it becomes.
5. The more creative a solution is, the more it reduces the effectiveness of competing solutions.
6. A solution’s novelty will decay over time.
7. Exposure of a solution will accelerate the decay of its novelty.
8. As a solution’s novelty decays, so does its effectiveness (provided that countermeasures are put in place or activated).
9. Competing solutions, especially creative competition, will accelerate the decay of novelty and effectiveness.
10. Proactive, preemptive counterterrorist solutions are also highly creative solutions. They exhibit the characteristics of functional creativity.
11. Highly creative, preemptive counterterrorist solutions must be deliberately engineered. They will not happen of their own accord.

REFERENCES


