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The embracement of risks. How to make sense of 'resilience' for safety and security management?¹

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“the capacity of a system, enterprise, or a person to maintain its core purpose and integrity in the face of dramatically changed circumstances ... resilient systems may have no baseline to return to, they may reconfigure themselves continuously and fluidly to adapt to ever-changing circumstances while continuing to fulfill their purpose (Zolli and Healy, 2012: 7, 13).”

Abstract

This essay explores the notion of resilience by providing a theoretical context and subsequently linking it to the management of safety and security. The distinct worlds of international security, industrial safety and public security have distinct risks as well as distinct 'core purposes and integrities' as understood by resilience scholars. In dealing with risks one could argue there are three broad approaches: cost-benefit analysis, precaution and resilience. In order to distinguish the more recent approach of resilience, the idea of adaptation will be contrasted to mitigation. First, a general outline is provided of what resilience implies as a way to survive and thrive in the face of adversity. After that, a translation of resilience for the management of safety and security is described.

Introduction

The notion of resilience is popular these days. As a buzzword it is to be found in properties, people, organizations and even systems (Lentzos and Rose, 2009). There seems to be a recurring set of elements explaining how certain systems are more resilient while others are regarded as complex, concentrated and homogeneous. These systems allegedly lack 'modularity', 'feedback' and 'diversity' (see Zolli and Healy, 2012; Ungar, 2012; Kent, Davis and Reich, 2014; Meijssers,

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2016). Modularity reduces vulnerability to any disruptions of wider networks that might cause cascading effects. Feedback is about detecting thresholds in a timely fashion in order to address disturbances that have yet to become catastrophes. Diversity refers to the possibility of extracting value from multiple origins offering pieces of the puzzle. The beauty but also problem of resilience as a notion is that is applicable to all kinds of situations. Let me give two random but recognizable examples. Think of a marriage between two people who respect individuality (modularity), communicate regularly (feedback) and seem to complete one another in all kinds of ways (diversity). A marriage can moreover change over time since it is possible that the two people will eventually start a family and take up the role of parents alongside that initial role of being romantic partners. With that metamorphosis the essence of resilience has been identified which is transformation in order to adapt to new challenges. For people in a marriage, the possibility to remain together implies upholding 'core purpose and integrity' (Zolli and Healy, 2012) while 'no baseline to return to' (ibid.) refers to the new situation of family life. The second example is a sports team with its inherent capacity to change the game plan during a match whenever it is outclassed by an adversary. Looking at the bigger picture, every player has his or her distinct role to play (modularity) and the team might lose a match because of little mistakes (feedback) requiring the substitution of certain players (diversity) as a real time strategy to keep up with changing circumstances. If a system is to be regarded as resilient there are thus three important requirements. There must be 1) autonomous subsystems, 2) ability to gather firsthand data and 3) appreciation of difference to the extent that various sources of knowledge and experience find their way into the decision-making process.

A resilient system is in constant need of refreshing resources because the immediate environment can always turn into a hostile one.¹ In order to stay fresh, a resilient system remains dependent on a variety of interconnected and interdependent elements that are able to reconfigure whenever necessary. The field of complex adaptive systems covers similar terrain in its focus on diverse and autonomous components or parts which are interrelated, interdependent, linked through many (dense) interconnections and which behave as a unified whole in learning from experience and in adjusting (not just reacting) to changes in the environment (Holland, 2005). The notion of resilience is about constant learning and adapting. In order to achieve this, one needs to keep systems as 'simple, local and diverse' as possible (Zolli and Healy, 2012). With resilience, one is not dealing with closure and protection as that might lead to impoverishment and vulnerability. Resilient systems are much more open and dynamic and do not strive for homeostasis as they are open to change, for this guarantees preservation. In a similar vein Sennett (unknown: 8) writes: "The boundary is an edge where things end; the border is an edge where different groups interact. At borders, organisms become more interactive, due to the meeting of different species or physical conditions; for instance, where the shoreline of a lake meets solid land is an active zone of exchange where organisms find and feed off other organisms. Not surprisingly, it is also at the borderline where the work of natural selection is the most intense." With a bit of imagination one can translate bio-diversity into socio-diversity thus replacing ecology with sociology. In resilient cities one typically finds creativity and prosperity due to a mixed demographic and the possibility of encountering strangers leading to unexpected outcomes often labelled as innovation. The basic argument behind such success is that risks offer opportunities.² It ultimately boils down to getting out of a comfort zone. In a particular sport this means playing against an opponent who is better. It is only after losing that one can learn the most and get better at it.

In abstract, resilience is to survive and thrive in the face of adversity. It has to be understood as the inherent quality of benefitting from challenges and consequently changing, the inherent ability to exploit risks as these might offer benefits and finally the inherent possibility of somewhat spontaneous solutions emerging bottom-up. What this implies for safety and security management will become clear towards the end of this essay.

Theoretical context

Following up on these preliminary notes, resilience is understood as a positive quality with progressive potential for social systems. This take is very different from the one offered by

Neocleous (2013) who argues the notion of resilience is a neoliberal plea for welcoming whatever life throws at you in an increasingly insecure world. Instead of addressing the sources of endemic insecurity throughout society, he argues resilience stands for individual responsibility for collective problems. In his view resilience is an apolitical trap for citizens lacking social support and ignorant of ideas for social change. As a reactive stance this comes down to succumbing to the precariousness of the neoliberal political economy and cherishing its accompanying social instability (see also Hall and Winlow, 2015). By opposing resilience and favoring resistance Neocleous refuses to be addressed as a neoliberal subject for whom social bonds are a burden in an endless quest for more freedom. This position on resilience centering around the individual runs counter to the characterization of resilience as posed in this essay. Resilience it is argued, implies quite the opposite as it is deeply social and based on cooperation. Although advocates of resilience acknowledge uncertainty as a basic human condition, this should not be equated with the continuing crisis of capitalism as an unsustainable economic model with no political alternative. There is no denying that the semantics of resilience are used in the political arena to legitimize or delegitimize certain discourses. This however does not do justice to the more abstract elements identified above. I would argue these elements are quite useful in understanding a lot of problems.

Problems can differ in nature, so it makes sense to categorize. *Simple problems* like following grandmother's recipe in order or to bake a cake have a high assurance of success. A child could do it. *Complicated problems* like driving a car require more coordination and specialized expertise. Only possible when one becomes a teenager. Nonetheless it offers a high degree of certainty. The crux of the matter is that you need to succeed only once in terms of outcome repetition. This is not the case with *complex problems* like raising a child. For an adult, success can never be guaranteed since there is no formula which makes the outcome certain. For good or bad; neglecting or spoiling a child could produce the exact same result for all we know. Parenting is thus unpredictable by nature. The uniqueness of every child defies any preordained approach. On a larger scale this true for countless problems eluding solid evidence and sound policy. Due to accelerating processes of interaction and interrelation between evermore variables in our evermore connected world we are facing more and more problems of complexity (Williams and Arrigo, 2002). With the absence of clear cause and effect relationships it becomes difficult to assess the exact ramification of any particular course of events. Planning for and managing the unexpected has become the norm (Weick and Sutcliffe, 2007). With the increasing complexity of social systems, humanity faces evermore wicked problems which are impossible to solve due to incomplete, contradictory and changing requirements. In line with chaos theory Arrigo (2004) convincingly argues problems are an integral part of bigger systems characterized by a high degree of non-linearity, unpredictability and difference. If the initial conditions alter slightly, disproportionate and unanticipated outcomes are always possible. In the literature on complex systems science a number of concepts resurface in order to make sense of these *complex problems*. With iteration and sensitive dependence, it is argued there is an inordinate and unrestrained growth in any system due to high sensitivity in relation to the ever-changing present conditions (Arrigo and Barrett, 2008). With bifurcation the various stages in a system moving from stability to disorder and from disorder to chaotic are described (ibid.). The so-called tipping point is crucial. From a chaos theory perspective there are always turning points destabilizing a relative equilibrium. Bifurcations can produce cascades to the point of destruction and transmutation. By means of destabilization and reconstitution a system might become something else entirely (Milovanovic, 2006). This also the crucial point of resilient systems; the ability to sacrifice certain parts of the system for the greater good of maintaining the system.

In any given system there is an indefinite variation of forces leading to optimal stable states (Arrigo, 2004). These states are however always transitory because of continuous dislocations and discontinuities affecting the overall configuration of a particular system. A system can be natural such as a swamp with its flora and fauna, but it can also be social such as the quality of life in an urban neighborhood composed of various citizens and professionals. The extinction of an alligator species can radically change the food chain in a swamp just as the demolition of social housing facilities can dramatically impact the residential composition of an urban

neighborhood. In five years, the wetland and the ghetto might be gone for all we know. These qualitative transformations are the result of a system pushed over the edge and turned into something new. For the purpose of linking these insights to criminological theory it is important to grasp the importance of attractors which have a magnetic appeal and are capable of creating high levels of disorder and unpredictability. According to Arrigo and Barret (2008) attractors are usually found in local, situational and micrological encounters. Finally, the dissipative structure is worth mentioning for this is typical of complex systems reckoning with externalities (Arrigo and Barret, 2008). According to Arrigo and Barret (ibid.) these systems are fundamentally open and engage in regular and continuous interaction with their environment. It is only through energy dispersion that a system remains dynamic. The latter two insights are important throughout this article for I will argue resilience emerges from below and is dependent on connections. By accentuating the local and by investing in exploration one recognizes the instability of life and the danger of foreclosing certain avenues. Milovanovic (2006) distinguishes between active forces which have the power of transformation and reactive forces which are conservative. In terms of resilience the latter is problematic as it signals mitigation by means of limitations whereas the former signals adaptation by means of possibilities. For chaos theorists and resilience scholars' disorders are inevitable. They are moreover signals informing the system that present stability and organization might not be sufficient to withstand future turbulence. A transformation can emerge through attractors becoming more influential and changing the system from within and also through dissipation by which the system opens up to its wider environment.

Complex adaptive systems are characterized by rich interactions exerting influence on each element. There is always free will and choice in a social system and this means endless non-linear interactions between various forces. The full complexity is impossible to grasp due to ever-present contingency. For any social system, unexpected results and opposite effects are never out of the realm of possibility. If various actors are part of a social system this means, there are multiple and sometimes contradictory situational definitions and interpretations of various social problems. The capability of absorbing a great variety of views, meanings and desires is beneficial in dealing with disorder. Disorder can provide windows of opportunity to change things for the better. According to Williams and Arrigo (2002) reality and the lived experience is always messy. Everything exists in a state of possibility and ambiguity. Nothing in the past accounts for the presents and nothing in the present will account for the future so we should be careful of path-dependency and gridlocks (ibid.). Due to the always incomplete understanding of future situations one should be cautious in designing tight fit solutions (Sennet, 2018). It is impossible to identify all relations and effects of every interaction influencing a particular system. There is no point guarding against every disorder and that is why openness is so crucial. For resources systems need to take advantage of the internal and external environment. That is why attractors are so important. Drawing on the work by Zolli and Healy (2012) resilience is proposed here as a holistic and multi-agent approach to social problems. The notion of resilience expresses a reliance on social networks and creative solutions to overcome adversity. In lay terms it encapsulates working together and out-of-the-box thinking. The diversity component of resilience suggests that resilient systems are composed of various relationships between a wide range of actors complementing one another on the basis of knowledge, skills and abilities. Since resilience is also about reconfiguration it suggests that adaptation to new situations can lead to a new balance of power giving voice to previously marginalized actors in a given network. Not only does resilience stand for social support it can thus facilitate social change because of its inherent openness.

In thinking this through, it could be argued social support and social change are also related to the problem of crime. Hence providing a familiar context for the meaning of resilience within criminology as a scientific discipline. It is well-known that social institutions such as the family transcend the individual and regulate competitive human behavior via the virtue of cooperation. One could extent the unit of family all the way up to school, work, community, polity and society as a whole. The strengthening of these institutions amounts to the subordination of individual interests to larger collectivities (Messner and Rosenfeld, 2013). The ensuing prosocial behavior is an answer to the exploitive nature of many crimes committed out of egocentric needs and desires. At an aggregate level, a collectivity should be capable of withstanding criminal

elements by offering root cause solutions aimed at socializing estranged individuals. For criminologists studying crime, the notion of resilience might appear as “old wine in new bottles”. That is to say, resilience is very much related to well-known concepts such as social capital and collective efficacy often used in the field of community safety. Ansari (2013) writes the former expresses the potential of collective action on the basis of trust and reciprocity whereas the latter constitutes a degree of organization on the basis of social cohesion and social control. It makes people care for others and it makes them aware of problems. By having such an infrastructure in place it becomes possible to deter and detect crime in an early phase and possibly turn things around before it is too late. It is because of these characteristics that some communities are better than others in addressing crime as a social problem. From a theoretical point of view, resilience shows similarities with the democratic potential of nodal governance (see Wood & Shearing, 2007). Nodal governance is an elaboration of contemporary network theory explaining how a variety of actors operating within social systems interact along networks to govern the systems they inhabit.

As mentioned before, resilience is about relations and taps into the idea of social capital as empowerment. It is through various relationships or social bonds that people are capable of dealing with problems in relative autonomy. Alongside the police it is first and foremost citizens themselves who have a role to play in preventing crime. Hawkins and Maurer (2010) remind us of the work of Putnam who identifies 1) bonding which refers to similar members who have a relationship with one another, 2) bridging which refers to a network composed of people who differ in background and 3) linking which refers to having the right connections with institutions and individuals who have relative power. All three make up social capital and are vital in addressing crime in any given community. The first one stands for strong ties based on kinship and it is about how one becomes social in the first place. Or to put it in a social and political context: how to love your Neighbor before getting acquainted with the Other (Žižek, 2008). Bridging and linking are less intensive but more extensive hence decisive from a resilience point of view. It is only through the Other that people derive creative solutions from social networks. Weak ties offer the diversity which is needed to cope with complex problems requiring the perspective from someone on the outside. In order to be resilient as a community, one needs sufficient bridging and linking as it facilitates the exposure to and development of new ideas, values and perspectives (Hawking and Maurer, 2010). More to the point, resilience is not only about making individuals social but also about developing the social via individuals.

Just like physical conditions, social structures involving social networks can enable or constrain individual and collective resilience (Brown and Kulig, 1996). A community is resilient insofar it has the capacity to recover from negative events and can moreover progress in reaching a new equilibrium. Brown and Kulig (ibid.) argue this comes down to the capacity to transform because it will mitigate against potential negative events in the future. This kind of resilience stands for proactive (longer-term) responsiveness whereas the first and most common understanding is about a reactive (short-term) response (ibid.). In the concluding sections of this essay this crucial distinction will be expanded further. For now, the theoretical context should have become clear for criminologists coming to terms with the notion of resilience.

Three worlds

In complex systems with lots of uncertainty there are numerous threats and vulnerabilities. In a risk society we are increasingly exposed to all kinds of newly perceived risks (Beck, 1992). Risks can be found in all kinds of environments. From a safety and security management perspective it makes sense to establish different worlds with different adversities. How to manage risks in the fields of international security, industrial safety and public security? The most important distinction is that between intentional threat, as in bad people doing bad things, and unintentional threat, as in things going bad because of mistakes with negative consequences (Stol, 2011). *Security* refers to the first case whereas *safety* refers to the second case. Although the impact of a threat can be even bigger, the latter has less to do with morality and tends to cause less commotion (Boutellier, 2011). Throughout this essay a security environment will often

be contrasted to a safety environment although security is made up of two worlds depending on the setting.

International security is basically about the nation state and its relation to other states (Bigo, 2016). Measures taken to ensure mutual survival and safety on behalf of states or international organizations range from diplomatic agreements such as treaties and conventions all the way up to military action such as war. In essence it is about protecting national borders and keeping the enemy outside. In an era of globalization, the enemy is of course everywhere and can be home-grown as in the case of alienated and frustrated third-generation immigrant youngsters wanting to be part of the Jihad. The world of international security is nonetheless the traditional field of military agencies taking care of this type of security, which is increasingly becoming domestic hence merging with the world of public security (Hallsworth and Lea, 2011). Typically, international security deals with state actors who are on the side of either repression such as armed forces or prevention such as intelligence agencies. Repression might be thought of as ordering a drone strike and prevention might be thought of as monitoring terrorist's cells plotting an attack. In the case of prevention, one might tighten control whenever there is a substantial level of threat. This is a different type of prevention than preventing people from turning into terrorists. The latter is usually associated with taking away root causes. Schinkel (2011) captures this confusion nicely when he introduces "prepression" to understand the repressive character of this "non-social" prevention. In the world of international security, a lot of target hardening and enemy profiling is going on in order to protect people, property and information. How will potential offenders exploit weaknesses by using their particular resources? This reasoning is reminiscent of the routine activity theory in the world of public security. An alarm might deter a particular burglar from breaking into a particular home, but it would be naive to assume that the burglar will become a law-abiding citizen. There is displacement because the effect of deterrence is limited in time and space. "Prepression" is situational in nature. It is about protecting assets through a threat analysis, which is the core business of security managers (ASIS International, 2018). International security is of course not only about protecting assets and that is why insights from geopolitics serve the purpose of coming to terms with the genesis of certain threats. In knowing the enemy one might be better prepared. All kinds of socio-economic and cultural tensions in the world might serve as a breeding ground for would-be terrorists. One cannot only prevent the execution of attacks; one can also address the underlying root causes such as relative deprivation, which would be in line with social prevention (Young, 2007). With human security (Wood and Shearing, 2007, chapter 3; Zedner, 2009, chapter 2) the focus on protecting borders is largely gone because this approach is not linked to the interests of states but to the well-being of people. The field of international security is, however, largely dominated by state actors operating on behalf of a state because there can be a lot at stake and security remains one of the few uncontested goods the state has to offer to its citizens. However, this can come with a high price as the Patriot Act post 9/11 makes clear in terms of privacy and constitutional rights. It makes sense to see a trade-off between liberty and security. On the one hand, security is a prerequisite for liberty as social contract thinkers such as Hobbes would argue. On the other hand, providing security is also about handing over a certain amount of liberty. By moving into an authoritarian regime as the answer to terrorism one might end up losing what one intended to protect in the first place. Making sure that normal life within a state can proceed seems to be the 'core purpose and integrity' (Zolli and Healy, 2012) that needs to be defended whenever there is adversity in this world. The much-repeated example of George W. Bush urging Americans to go out shopping after the 9/11 attacks comes to mind.

Industrial safety is basically what organizations have to guarantee in order to make sure that employees return home safely (Heck, 2011). This is also commonly referred to as occupational safety and health (OSH) and it is concerned with the safety, health and welfare of the people at work. In every type of organization, accidents can happen because of work processes and human error (Dekker, 2006). People could get hurt or even die operating a particular machine. Especially in high-risk environments where people perform dangerous tasks it is crucial that these tasks are executed using the highest standards. A substandard performance could affect other people as well. A nuclear power plant might explode because of little mistakes.

The disaster at Chernobyl was not a plan orchestrated by terrorists from the outside but was the result of a poor safety culture stemming from the inside. The materialized threat in the case of Chernobyl had to do with complicated processes and inadequate work practices by employees who were unaware of the disaster being set into motion. Instead of focusing on the enemy as the locus of adversity like in the world of international security, in the world of industrial safety it is regulars with no ill intentions who are at the center of attention as the most important locus of adversity. The question is how to increase more safety awareness among employees. From a human resources management point of view, one might fire the bad ones and hire good ones. The problem is that the metaphor of the rotten apple can be incorrect because an entire organization might be the rotten tree producing rotten apples. The issue of safety culture implies that the problem might be more systemic than a few individuals who are bad at their job (Hudson, 2007). Although routines can yield a lot of returns, it is the standard way of doing things that might be destructive over time. The ingrained practice of cutting corners by various employees who would like to finish work as quickly as possible is a case in point. Hollnagel (2009) refers to this as the ETTO principle whereby there is a fundamental trade-off between efficiency and thoroughness. On the one hand, production increases whenever shortcuts are used. Even more important it is the possibility to deviate from rules at the sharp end of any organization, which is crucial in order to get things done in the first place. The problems caused by work-to-rule protests are a testament to this. On the other hand, cutting corners can lead to dangerous routines. It is also at the level of higher management where this trade-off is apparent for time is money. For any organization the delivery of goods and services should not come to a halt as it is the 'core purpose and integrity' (Zolli and Healy, 2012). This means having too many safety measures are bad for productivity. These measures cost resources like money, time and energy. One can clearly see this ruthless logic in the case of Bangladesh textile factories. The 2013 Savar building collapse took place because any safety investment was regarded as bad for business.³ It goes without saying that workers have more rights in the West. The value of human life in the West has increased across the board due to changes in legislation occurring as a result of political struggles. Newer legislation protects vulnerable groups by giving them more rights. The interesting thing to note is that these rights emerged because it was also more profitable for the people who owned factories to invest in more safety regulations. If employees get hurt or die this means that there is a loss of productivity. Former employees might also go to court demanding compensation from factory owners. A small investment in safety might thus pay off in the future. This strategy of doing something about occupational hazards is omnipresent in the Western world where organizations have to live up to certain safety standards alongside the pressure of reaching production quotas.

Public security is basically about living together as citizens. Governments have a responsibility to ensure the protection of citizens against threats to their well-being and to the prosperity of their communities. In Latin the 'core purpose and integrity' (Zolli and Healy, 2012) is referred to as *modus vivendi*. What it basically deals with is how to uphold a sense of community against quality of life issues ranging from noise and loitering all the way up to burglary and harassment. The threats to public security are less severe than those to international security. Compared to war and peace, law and order are a different ball game. Upholding a sense of community has very little to do with the protection of national borders. When it comes to state actors, it is not the military but rather the police who are tasked to make sure that people do not violate the principle of a sense of community. The sources of threat are usually not politically motivated but mostly driven by short-term profit and hedonism. These motives are to be found in fellow-citizens who have to be understood as adversity in relation to law-abiding citizens. This translates into issues of generational nature like adolescents who might cause trouble because of boredom. The issues can also be cultural in nature in that native and migrant groups might not get along due to different styles of living. How to align the stakes of these stakeholders sharing a particular place? The trade-off seems to be between lively and liveable. On the one hand, it is good to have a lot of people in public space, for this offers social control. To make sure things are lively seems the way to go. On the other hand, it is often this presence of people in public space causing conflict. To make sure things are liveable seems the way to go. The tension centers around the norms and values of living together. The delicate balance between the proximity and

distance of neighbors is often what needs to be sorted out by safety and security managers. What types of bonds among locals are most useful and sustainable? Regarding these bonds, control theory and ecological theory suggest it is the lack of commitment and involvement by citizens, which is the root cause of crime. In order to tackle this, active citizenship is frequently proposed as a cure. By making sure that people are truly part of a community they will be able to guard their territory. The idea of ownership is what defensible space and activity support is all about (see Jacobs, 1961; Cozens and Love, 2015). One of the problems is that we live in an era of global connection and local disconnection. Residents are less bound by a particular place because they have multiple places to be whenever bringing kids to school, going to work, going shopping, spending leisure time etc. This being said, a sense of belonging will always remain a gravitating force for human beings. A different way of approaching liveability issues is via the aforementioned routine activity theory. Instead of natural surveillance via citizens themselves, this approach is more about preventing property crime by relying on formal surveillance such as cameras and police patrolling the streets. As argued for international security, situational prevention suffers from displacement, so deterrence is limited. It is best combined with active citizens reclaiming the streets and offering eyes and ears. The world of public security is typically about police presence and citizen involvement as a means for deterrence and detection (Crawford and Evans, 2012).

Three approaches to risk

It has been argued that crime is increasingly addressed through the lens of probability and risk (Feeley and Simon, 1992). This more recent discourse is very different from the crime and punishment discourse. Risk is about future harms towards society whereas punishment is about undoing the harm inflicted by an offender to a victim (see also Van Swaaningen, 1996; Moerings, 2003). The latter is organized via the principles of criminal justice and is ultimately about retributive judgement for a crime committed by a criminal. The former is organized via the principles of actuarial justice and is ultimately about sorting aggregates with the purpose of reducing the likelihood of crime. In this regard, actuarial justice with its use of statistics is future oriented. Zedner (2007) argues this pre-crime logic is characteristic of the ever-growing field of security which is governed by the logic of risk. The fundamental objective within "criminology" has always been about transforming personal behavior whereas the more recent "crime science" is about opportunity reduction and managing groups posing threats. Crime control is therefore no longer exclusively about resocializing offenders but increasingly about anticipating and forestalling crime by making targets less attractive and keeping an eye on likely offenders. For those belonging to a group identified as a threat it is not so much prison awaiting them but if selected these individuals will have to endure other types of exclusion. Bigo (2006) has coined the term "banopticon" to capture this overarching logic of movement restriction. Through statistical surveillance and digital profiling, the movement of certain individuals will be limited by the mere fact of matching pre-crime indicators (Sellers and Arrigo, 2017). The iconic example would be the blacklist which keeps a person from going places or doing particular things. Banning someone from getting on an airplane because of alleged sympathies for a terrorist cause or banning someone from entering a shopping mall because of vagrancy signs are similar in nature. What transnational policing or policing by private security guards have in common is that they both deal with crimes that have yet to take place.

There are numerous avenues for dealing with risks. One could *avoid* a risk as in removing any opportunity for the risk to cause a loss event thereby limiting gain, *transfer* a risk as in reducing the impact of losses via insurance, *accept* a risk as in tolerating residual risks in light of gaining something in return, *spread* a risk as in splitting up assets and finally to *reduce* a risk as in mitigating the risk to assets by using countermeasures addressing the probability and impact of a threat (Ellis and Hertig, 2010). These strategies are part of bigger frameworks. Managing risks is about predicting the future and allocating resources accordingly. It could be argued there are three broad approaches, which are prevalent within our society when it comes to dealing with risks: cost-benefit analysis, precaution and resilience. The most influential one is *cost benefit analysis* (CBA) as it informs every aspect of security management. Within this approach there are different avenues for dealing with risk but most importantly it combines risk reduction with risk

acceptance. In order to strike a balance, this approach assesses the probability and impact of certain threats and then asks if it is rational to implement countermeasures. A scholar like Pieterman (2008) argues this logic is typical for a culture of risk associated with industrial society. The good and just society facilitates as many possibilities for personal growth and opportunity as possible. To maximize benefits, decisions and interventions should be weighed carefully by considering all costs linked to the initial risks and the second-order risks due to countermeasures. Handling risk and damage in a sober and businesslike way is the spirit of this approach to threat. If the costs of preventive measures are bigger than the calculated damage, one does not take those measures. The great advantage of CBA is that it makes one aware of the fact that every decision has advantages and disadvantages. For example, more governmental regulation of trade and industry for environmental purposes means less economic growth. If one recognizes both the danger and the opportunity costs of a safety measure, then Margolis speaks of fungibility (cited in Ball and Ball-King, 2011). If one is not aware of danger, then Margolis speaks of 'waste not, want not' (ibid.). If one is not aware of the opportunity costs of safety measure, then Margolis speaks of 'better safe than sorry' (ibid.). Not being aware of danger is perhaps reckless whereas not being aware of opportunity is in the spirit of precaution. In the case of not recognizing both danger and opportunity costs of safety measure Margolis speaks of indifference. The absence of knowledge points to the limits of the CBA approach, for it is rather optimistic to assume that one would be able to factor in all intended and unintended consequences of certain risks. There will never be enough data available to make fully rational decisions. Rationality is severely bounded by the amount of information and the extent to which one can make sense of all available information. More on this below. Nonetheless, the rationality of CBA must be appreciated. It is a sensible approach to think and act when it comes to the management of risks. Sometimes doing nothing is the right thing to do given the material and immaterial costs of interventions. Moreover, some risks are worth tolerating because one may gain something in return. These are "tolerable risks" such as travelling by airplane, which might be scary given the impact of a crash. For most people the advantage of covering a huge distance in a relatively short time is well worth the low probability of crashing.

The approach of CBA acknowledges these trade-offs, but this awareness is absent within the approach of *precaution*, which essentially stands for risk avoidance. The logic of precaution can be attributed to the culture of precaution in the risk society. If the possible negative impact of a threat is severe, then the probability of that threat becomes less important. With this reasoning, certain risks are avoided all together. This comes down to handling risks in an emotional way. The basic assumption is grounded in pessimistic scenarios and related interventions. Decisions are not weighed carefully because the possible negative side effects are not taken into account. By focusing on single issues, other issues are typically ignored. According to Sunstein (2005) a belief in the benevolence of nature makes human-created risks seem particularly suspect. That is why environmentalists for example tend to neglect the benefits of risk taking. Douglas and Wildavsky (1982) would refer to this as an orientation of left-wing people who focus more on risks associated with pollution as opposed to right-wing people focusing on war and crime. The ban on genetically modified food and the link to global food security is an illustration when it comes to neglecting trade-offs. By dealing with this complex matter from a special interest point of view the overall consequences in Third World countries are neglected. The same logic becomes apparent whenever dealing with right-wing people who are excessively invested in law and order. By dismissing trade-offs when it comes to parole, they might argue we should do away with early and gradual release from prison. Typically, these opinions are voiced during high-profile cases such as an ex-convict who committed a horrible crime while on parole. By abolishing parole all together the idea of reintegration is largely neglected due to the exclusive focus on potential victims. The interests of an offender who has to re-enter society after serving time are no longer factored in and this blind spot might be counterproductive in terms of recidivism rates in the near future. Whenever particular interests and emotions seem to have the upper hand, there is a possibility of singlemindedness which can be harmful for collective wellbeing. The associated harms of reduction and repression (Arrigo, Bersot and Sellers, 2011) are reminiscent of the reactive forces (Milovanovic, 2006). Arrigo, Bersot and Sellers (2011) argue that fear of crime and fear of would-be criminals are coupled with excessive investments in hypervigilance and panopticism provoking

evermore fear. It is evident CBA and precaution are not very promising paths forward. What can resilience as an active force (Milovanovic, 2006) bring to the table?

The approach of *resilience* is not primarily focused on mitigation. Regarding the particular avenue of dealing with risk this approach is in principle about risk acceptance as it considers the possibility of gain instead of loss prevention. It is about dealing with the inevitable and adapting accordingly. Regarding trade-offs this approach is compatible with CBA. It differs in that it does not pretend to know and control the future. CBA is more optimistic in that it strives to control the future by relying on calculation and expectation (De Mul, 2014). In critiquing CBA it can be argued that the level of uncertainty in all known and unknown factors contributing to all known and unknown problems renders any analysis statistically insignificant (Mandel and Gathii, 2006). That wealth of data and keeping it up to date is unattainable. For a host of issues, accurate predictions are thus impossible. A “false positive” indicates there will always remain error margins and that reducing a risk might not be justified in hindsight. It might come at a too high cost in comparison to the possible benefit of accepting a risk. Next to the false promise of the knowable there is the problematic nature of the governable. All kinds of pre-emptive endeavors only remotely related to crime are expressions of “governing through crime” and “securitization” as Simon (2007) and Zedner (2009) would respectively put it. This can lead to paralyzing the ‘core purpose and integrity’ of numerous settings in which security should be derivative. The damaging effects of security overruling education in inner-city schools, de facto turning these schools into repressive instead of emancipative institutions, might serve as an alarming example of how control might negate trust (Sellers and Arrigo, 2017). Overconfidence in cost-benefit analysis is unwarranted since uncertainty remains the norm in many situations. For numerous problems objective, standardized and exact predictions can never replace subjective expectations based on rules of thumb, experience, foresight, estimation and professional judgement (O’Malley, 2004) by those professionals who face unexpected situations demanding instant action. The logic of resilience assumes unpredictability and seems to be a fundamental preparedness no matter what (Weick and Sutcliffe, 2007; O’Malley, 2011). One of the characteristics of this approach is that it is rather undetermined; it articulates no specific risks. It is because of not knowing the specific risks that one can be resilient in the face of adversity. The strength of resilience is that it does not narrow down risks. The past is no guarantee for the future so there is always a huge margin of uncertainty. In keeping things open, resilience is equipped to deal with that uncertainty. It thus avoids overlooking risks. These pitfalls have everything to do with the human limitation of focusing on salient risks and ignoring less salient ones. In addition to that there are so-called second order effects due to interventions. A well-known second-order risk is risk compensation, which means that people become less careful if they feel more protected. Forcing people to wear safety belts could have the counterproductive effect of encouraging reckless driving. The Germanwings crash in 2015 might serve as a tragic example illustrating the problem with salient risks and second-order effects.⁴ The great irony is that the design for cockpit door policies put in place after the 9/11 attacks did not envision the possibility of an inside threat. The outside threat of terrorists was used to model the cockpit door procedure because this made sure passengers with bad intentions could under no circumstances enter the cockpit. It did not envision a depressed pilot with bad intentions who was already inside the cockpit and could no longer be stopped by outside parties with good intentions. Comfort, Boin and Demchak (2010) argue that there will always be low-chance and high-impact risks that cannot be assessed or controlled. This is where resilience comes in. It prepares for “unimaginable contingencies” and this requires a flexible stance in a highly uncertain environment (O’Malley, 2010; Walklate, Mythen and McGarry, 2012).

Applying resilience

In his classic study on searching for safety, Wildavsky (1988) makes a distinction between anticipation and resilience. The former is a CBA approach to threats not yet materialized. Mitigation is the answer. The latter is about unavoidable threats. Adaptation is the answer. This shift in thinking is clearly detectable when it comes to terrorist attacks post 9/11. No longer do authorities promise that new attacks will not happen. Intelligence agencies do not have enough information, or they have too much information and cannot make sense of it. The question is not

“if” but where and when an attack will take place. Consequently, the talk is less about *preventing* attacks than about *responding* to them (Hardy, 2014). The logic of resilience does not so much amount to intelligence agencies tracing the bad guy before the bomb has been set off but more importantly citizens reclaiming the streets after the bomb has exploded. “If we cannot control the volatile tides of change, we can learn to build better boats. We can design and redesign organizations, institutions and systems to better absorb disruption, operate under a wider variety of conditions and shift more fluidly from one circumstance to the next (Zolli and Healy, 2012: 5).” To continue operating under adverse conditions and circumstances (see also Comfort, Boin and Demchak, 2010) is an important aspect of resilience for it signifies maintaining ‘core purpose and integrity’ (Zolli and Healy, 2012). This is the first and most common understanding of resilience. Below I will distinguish a second one.

In the case of international security and terrorist attacks, a curfew may be a defeat because it undermines the liberty, which is constitutive of being a citizen. In the same way, it is a defeat for industrial safety whenever a factory has to shut down due to an accident: there is no production. Finally, when dealing with public security, it is a defeat once gentrification leads to areas, which are sterile and homogenous and where nothing ever happens. What these three examples have in common is that resilience is about tolerating a certain degree of risk that comes with living in an open democracy (international security), running a factory (industrial safety) and living in a diverse neighborhood (public security). The logic of resilience urges safety and security managers to broaden their scope and be attentive to the ‘core purpose and integrity’ (Zolli and Healy, 2011), which can be compromised by too much safety and security. What is more, the ‘core purpose and integrity’ (ibid.) can benefit from disturbances. These can improve the overall quality of a social system. The logic of resilience implies that one can learn from disturbances in that one needs to politicize conflicts over scarce resources (for the field of human security see Eriksen, Bal and Saleminck, 2010), learn from mistakes whenever performing tasks (for the field of resilience engineering see Woods, 2006) and value interpersonal conflicts (for the field of positive criminology see Schuilenburg, Van Steden and Oude Breuil, 2014). Dekker (2006) argues that resilience engineering is all about learning from mistakes as it is valuable for any organization. With a bit of imagination, the same could be argued for neighborhoods. Building resilient neighborhoods requires conflicts as a means to strengthen norms and values (Christie 1977). Just as a disaster at a chemical plant might lead to better work processes, public order crimes might lead to more social cohesion. What does this “surviving and thriving” imply for safety and security management?

The chain of safety and security management consists of five stages for dealing with adversity (Liebregts, 2011). *Pro-action* implies taking away structural conditions with the aim of eliminating certain risks altogether. One might invest in education so youngsters follow the right path, or one might replace a dangerous machine so as to make sure no one working in a factory loses a hand during the process of manufacturing goods. The stage of *prevention* is about taking measures of precaution to prevent unsafe situations and undesirable consequences. More technically this comes down to reducing risks. In this case, stop and search policies and the placing of smoke alarms might serve as an example. *Repression* means any intervention designed to stop and end an unsafe situation. The police arresting someone or the fire brigade extinguishing a fire are concrete manifestations of repression. Another stage in the chain of safety and security management is *preparation*, which comes down to the act of planning in case things go wrong. In this context one can use scenarios related to riots or a fire drill. The final stage is *after-care*, which is aimed at activities that will lead to reinvigorating the ‘core purpose and integrity’ (Zolli and Healy, 2012). Aftercare implies coming out of an adverse situation in a somehow better condition than prior to the adverse situation. This is because lessons have been learned. By moving from aftercare to pro-action one comes full circle in applying the safety and security management chain.

How to relate resilience to this chain? As a notion, resilience is not about risk and loss but about opportunity and gain. As such it should be understood as enabling properties, people, organizations and systems to deal with distinct events as well as latent processes. An

exemplification of this could be the difference between a riot and ethnic tensions. A riot might be seen as an acute shock whereas ethnic tensions might be seen as chronic stresses.⁵ The ethnic tensions might be considered as fuel waiting to be ignited by a trigger such as police brutality (see for example Katz 2016). In the case of a riot one would place more emphasis on after-care. In the case of ethnic tensions, one would be more interested in addressing the conflicts between various cultural groups and the authorities such as law enforcement hence doing something in terms of pro-action. Resilience, it could be argued, is thus not only about 1) speedy recovery, 2) severe disturbances and 3) the capacity to remain functioning as Comfort, Boin and Demchak (2010: 8) put it. It also includes 1) timely adaptation, 2) little disturbances and 3) the capacity to transform functions. It implies there must be sensors in place that function as early warning signals that something is going wrong.

Some afterthoughts

Resilience assumes not all risks can be known, nor should all risks be ruled out. In cultivating resilience for safety and security management it is necessary to translate the aforementioned autonomous subsystems, firsthand data and difference. As argued, CBA makes for a rational approach in managing risks, but it has its limits due to the complex and unpredictable nature of new circumstances. In dealing with this volatility, it is important to have flexible decision-making strategies that allow for trial and error (Wildavsky, 1988). At the same time, learning is crucial to keep up with the growing complexity and dynamics of the current world order. This is what chaos theory teaches us. As an afterthought on how not to design safety and security systems I will refer to a representation in popular culture. The film *Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb* exemplifies the absolute lowest point a system can reach in terms of resilience. In the film the central and hierarchical organization of safety and security implies the inability to deal with the threat of a United States Air Force Brigadier General. The management is not resilient because it focuses on the risk of a bomb dropped by Russia as the communist threat and not on an alternative sequence of events. Because of the strict procedures aimed at the known danger of Russia dropping a bomb it seems impossible to readjust. This example illustrates how risks are easily overlooked and this all the truer when it concerns second-order risks. In keeping systems 'simple, local and diverse' as Zolli and Healy (2012) argue, it is possible to adapt to new circumstances.

In *Dr. Strangelove* the problem comes down to irreversibility. After setting a nuclear holocaust in motion, it is no longer possible to reverse things. The administrative and technological system is geared towards use in wartime and de facto abuse during peacetime. The lack of proper authorization and the fact that communication is only possible via a secret three-letter code is based on the outside threat of Russia potentially benefitting from problems in the chain of command. Schlosser (2014) asks: "What if Soviet bombers were en route to the United States but the President somehow couldn't be reached? What if Soviet tanks were rolling into West Germany but a communications breakdown prevented NATO officers from contacting the White House? What if the President were killed during a surprise attack on Washington, D.C., along with the rest of the nation's civilian leadership? Who would order a nuclear retaliation then?" The US aircraft sent on a mission to bomb Russia and trigger the doomsday device can no longer be reached to undo the dramatic consequences. This impenetrable and irresponsive system might keep the Russians out, but it also keeps the US out. Once again, the great irony is that the design put in place does not envision the possibility of an inside threat. The important lesson is flexibility and discretion, which is impossible if safety and security is too centrally and hierarchically organized and thus not sensitive to real time improvisation by key players (see also Tabot and Jakeman, 2009; Rodenhuis and Van Dijk, 2011; Verhaege, 2015). In the world of industrial safety an interesting distinction is made between a top-down, rational and optimistic view of rules versus a constructivist view of how rules are actually observed hence proposing a bottom-up and participative approach to rule emergence. This distinction is useful for safety and security management in any setting for it urges us to think of procedures as a tool to coordinate and structure creativity and innovation, not as a control to limit freedom (Hale and Borys, 2013, 209).⁶ This resonates with the local, situational and micrological encounters of the attractors in a system (Arrigo and Barret, 2008). These attractors can also be external due to the dissipative

structure of such a system. As argued a vast social network including many actors addressing many aspects of a problem is crucial in dealing with disturbances. In combining different ways of thinking and pooling many resources, previously untapped sources can become decisive in an overall positive way.

The example above taken from the film *Dr. Strangelove* illustrates the danger of limiting opportunities. It is better to seek possibilities and change plans by those who are directly involved, who trust one another and who are consequently willing to cooperate (Fiksel, 2003; Molotch, 2011; Waal, 2011). As discussed previously the benefit of resilience is that it allows room for the most relevant stakeholders in that a rigid top-down design might be counterproductive in terms of safety and security.⁷ At the same time, resilience acknowledges other stakes than safety and security. These stakes could even benefit safety and security in the long run. With that we have come full circle in arguing that resilience signifies new encounters, embracing risks and the promotion of creativity. Is resilience a plea for irresponsibility? No, it should be understood as an addition to CBA. It is sensible to do risk assessment and address threats requiring mitigation and not adaptation. As a parent it is thus wise to assess the risk of one's child crossing a busy street and prevent such a thing at all costs. At the same time, it makes sense to allow one's child to do some outdoor playing, which might be beneficial in becoming streetwise and less vulnerable. Resilience understood this way is an act of balancing mitigation and adaptation since besides preventing loss there might be something to gain. Resilience is less about specific defenses protecting assets and more about maintaining resources that might be of use in the future (Wildavsky, 1988). Resilience stands for more adaptation in accepting the inevitable like mistakes in a factory and conflicts in a neighbourhood. These might lead to more insight and mutual understanding.

Notes

¹ A forest burn is a concrete example of refreshing resources in that these burns are crucial for a sustainable ecosystem where the composition of subsystems needs rearrangement every now and then (see Brennan et al., 1998). This prevents the system from collapsing and it leaves room for new things to emerge.

² The approach of resilience aligns with the neo-liberal imaginary of each subject being the 'entrepreneur of oneself' in an environment that is highly uncertain. This model of doing business US style encourages risk taking but is severely hampered because of the claim culture also present in the US. Although venture capitalism is about experimentation the prospect of liability limits such a spirit.

³ <https://www.theguardian.com/sustainable-business/2015/apr/24/bangladesh-factories-building-collapse-garment-dhaka-rana-plaza-brands-hm-gap-workers-construction>

⁴ The Germanwings airplane led to the death of 144 passengers and 6 crewmembers because of a depressed co-pilot who deliberately crashed the plane. It is said that the captain had left the cockpit leaving the co-pilot alone who then deliberately prevented the captain from re-entering through the locked cockpit door.

⁵ <http://www.100resilientcities.org/resilience#/-/>

⁶ This is to make sure procedures do not become straightjackets. A combination of both models would be best in order to deal with incidents. Without procedures, precious time will be lost due to unfamiliarity, communication issues and in general a lack of preparedness. In any organization some bureaucracy is crucial for actions need to be repeatable and transmissible. Making actions completely dependent on individuals is a liability for organizations tend to be bigger than individuals and they tend to outlive individuals.

⁷ Think also of the shared space notion as devised by Dutch road traffic engineer Hans Monderman who encouraged each person to negotiate their movement directly with others by removing formal regulations like traffic signs

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